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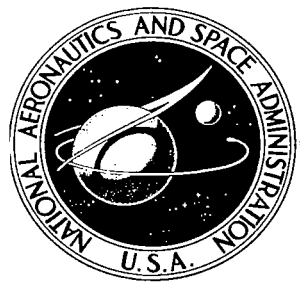

PUBLIC REACTIONS TO SONIC BOOMS

Prepared by
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for

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16. Abstract This report assesses the nature of public reaction to sonic booms in selected metropolitan areas of the United States, and identifies the major social or psychological factors that are associated with one or another type of public reaction to sonic booms of relatively modest overpressure levels. The sonic booms were generated by the supersonic SR-71 reconnaissance airplane during Air Force training and test flights. A bibliography of boom studies and a bibliography re news media studies are included. A tentative causal model relating the hearing of sonic booms to attitudes and reactions indicates that a negative attitude to the boom must be developed before the respondent reports an increase in disturbance of his activities. It is this disturbance of activities that then relates to the level of annoyance of the respondent. The importance of this finding is that the reaction pattern appears to be different for sonic booms and subsonic aircraft noise. Although the evidence is limited and it is hoped that further work of this nature can be done,**

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**the results suggest that scientific questions may well be raised as to the meaning of "controlled" experiments equating acceptability of booms and subsonic noise.

FOREWORD

This survey was performed by TRACOR, Incorporated, under NASA Contract NASw-1704. The work was done under the auspices of the Office of Advanced Research and Technology, NASA Headquarters, specifically under the Biotechnology and Human Research Division; and the Office of Noise Abatement, FAA Headquarters.

TRACOR was under contract with NASA to study community reactions to airport noise (subsonic aircraft), and was asked by FAA and NASA, based upon the recommendations of the Office of Science and Technology's Sonic Boom Coordinating Committee, to expedite a study, specifically aimed at measuring the reactions of communities to booms generated by the AF supersonic SR-71 aircraft. The Committee on Hearing, Bioacoustics and Biomechanics of the National Research Council/National Academy of Sciences and the NAS Committee on SST-Sonic Boom provided scientific advice and guidance to the program. The major support for the program was provided by FAA.

In the course of this study, many individuals made significant contributions, all of which unfortunately are too numerous to acknowledge. Dr. Wayne Rudmose was Program Manager; Dr. William R. Hazard was Project Director. Mr. Harrold Patterson was in charge of the analysis of social data. Mr. Ralph Wright was the field supervisor for the social survey program. Finally, special recognition is due to the advisory contributions made by Dr. Raymond Bauer, Mr. Paul Borsky, and Dr. Walter Gieber.

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SUMMARY OF RESULTS

One of the areas relating to the development of a supersonic transport is the effect of its sonic boom upon communities. It is difficult to carry out controlled experiments although two such studies have been conducted, one in St. Louis (1962-1963) and the other in Oklahoma City (1965). An opportunity arose in 1967 to conduct an "uncontrolled" experiment because the U. S. Air Force was planning to fly their supersonic SR-71 airplane on routine training flights over six major metropolitan areas. These were Atlanta, Chicago, Dallas, Denver, Los Angeles, and Minneapolis.

The summary, given below, lists only those items which are well justified by the data. Much more information is included in the main body of the report, and most of the raw data, as well as the questionnaires and references, are in the Appendix.

It should be remembered, while reading the summary, that the boom exposure from the SR-71 flights was not severe. The peak overpressures ranged in mean values from slightly less than one psf to about two psf. The average number of booms varied from one to three booms every three days.

The findings are:

1) Respondents have a negative attitude toward the sonic boom, and this attitude increases rapidly in strength as the number of booms per day increases.

2) Respondents rank the boom at the top of the list of "most unwanted" sounds in the neighborhood even though

they indicate their normal household activities are not disturbed any more during the SR-71 flight booming than they were before the flights. Since the majority of respondents described the boom as startling, it seems reasonable to expect that this impulse type sound would not cause disturbance of activities but certainly it would rank high as an unwanted sound.

3) The annoyance of respondents toward the boom increased by a factor of two during booming as compared to the level of annoyance prior to the SR-71 flights. The absolute level of annoyance, even under booming, is, however, not unusually high when compared with their annoyance to other sounds. The pre-SR-71 flight annoyance level for booms was essentially the same as the annoyance level for "dogs and other pets"; whereas at that same time the level of annoyance for automobiles and trucks was one and one-half times that for sonic booms.

4) Turning to the comparison of complainants and non-complainants, there are no real differences in the socioeconomic level (i.e., level of occupation, income, education, etc.) of the complainants and non-complainants. The only real difference is that more than 90 percent of the complainants own their homes and feel that the boom has damaged their homes.

5) The complainants are not unusually sensitive to noise in general (when compared to non-complainants).

6) Complainants choose the sonic boom as the most unnecessary and hence the first sound they would like to eliminate; whereas non-complainants rate, on the same basis, the boom slightly below hot rods/motorcycles and subsonic aircraft operations.

7) Almost three-fourths of all complainants have a strong negative attitude toward the boom compared to about one-half of the non-complainants who have the same strong negative attitude.

8) There is not a large difference in the negative attitude toward the boom between renters and non-renters; but of those who complain, over 90 percent are home owners.

9) Complainants report that their household activities are twice as disturbed compared to non-complainants.

10) There is, at best, only a slight effect of negative news media coverage upon the attitudes of the respondents toward the boom.

11) A tentative causal model relating the hearing of sonic booms to attitudes and reactions indicates that a negative attitude toward the boom must be developed before the respondent reports an increase in disturbance of his activities. It is this disturbance of activities that then relates to the level of annoyance of the respondent. The importance of this finding is that the reaction pattern appears to be different for sonic booms and subsonic aircraft noise. Although the evidence is limited and it is hoped that further work of this nature

can be done, the results suggest that scientific questions may well be raised as to the meaning of "controlled" experiments equating acceptability of booms and subsonic noise. Specifically, should the extrapolation of such data be heavily relied upon to predict an acceptable sonic boom level based upon an acceptable subsonic noise level?

CHAPTER I

THE RESEARCH SETTING AND PROCEDURE

1.1 Introduction

The purpose of this report is to assess the nature of public reaction to sonic booms in selected metropolitan areas of the United States, and to identify the major social or psychological factors that are associated with one or another type of public reaction to sonic booms of relatively modest overpressure levels.

For some time TRACOR has been engaged in scientific studies of community reactions to environmental noise, particularly subsonic aircraft noise. The Air Force was to begin controlled training and test flights of the supersonic SR-71 reconnaissance airplane during the period when TRACOR was conducting extensive survey interviews and noise measurements around airports in major metropolitan areas of the Midwest, Southwest, and West Coast in early 1967. Some of the projected SR-71 flight paths covered cities where TRACOR was conducting field work, and the firm was asked to broaden its research to cover the effects of sonic booms generated by the SR-71.

The research, recommended by the Office of Science and Technology Sonic Boom Coordinating Committee, Committee on Hearing, Bioacoustics and Biomechanics (CHABA) of the National Academy of Science, National Research Council, and the NAS Committee on SST-Sonic Boom, is part of an intensive investigation undertaken by the Federal Aviation Agency (FAA), the National Aeronautics and Space Administration (NASA), and the United States Air Force (USAF). A number of laboratory and field tests have been sponsored and directed by these agencies in an effort to forecast the

reaction of the public to regular supersonic flights over populated land areas. The British and French have conducted similar investigations.

1.2 The Experimental Design

In May 1967 TRACOR, under contract NASW-1549, was conducting interviews in Dallas designed to study the relations of community reaction to airport noise exposure at the time that the Air Force, Federal Aviation Administration, and the National Aeronautics and Space Administration realized that supersonic SR-71 flights were scheduled to begin over Dallas the first of July 1967. In addition, TRACOR was scheduled to conduct its subsonic noise study in Denver, Chicago, and Los Angeles. The Air Force had also scheduled its SR-71 training flights over these cities as well as over Atlanta and Minneapolis.

TRACOR was asked to expand its field test crews as quickly as possible to sample the population in the six cities prior to the start of the SR-71 training flights. TRACOR was told that these training flights would continue for some time, possibly for as long as two years. We were asked to develop an experimental design based upon preflight tests, during flight tests and post-flight tests.

Initially the basic pattern of the overall research plan was one of identifying common social and behavioral reactions of populations exposed to the sonic boom over time, as compared to similar populations not exposed. Such a research task calls for a scheme widely used in social science termed "the method of difference," which requires observations of matched experimental and control

populations prior to the introduction of a stimulus for the experimental population but not for the control population.[1]

Because of the shortage of time, there was little choice in developing a completely new questionnaire before the SR-71 flights started. Questionnaire A being used in the subsonic noise study was modified to include questions related to sonic boom noise, and this became Questionnaire B which was used in the first part of this study. Approximately one month after field testing started, the SR-71 training flights started. By this time 5,005 preflight interviews had been obtained; however, during the next month the Air Force decided to change their training flight schedule in September or October to avoid flying over the six metropolitan areas which were scheduled for tests. At this point the experimental design was changed, and emphasis was shifted from a before-during-after type of study to one which studies not only the change in annoyance with booming but also studies complainants as well as non-complainants.

During the four to six month period that followed cessation of the SR-71 flights TRACOR was unable to conduct field tests due to circumstances beyond our control. Lists of complainants were being tabulated by Federal Agencies however; and in February 1968 when field testing was resumed, the design now included approximately 36 percent complainants in the postflight interviews. It must be kept in mind that the total postflight test sample was purposely biased toward complainants, as the typical level of complaint was less than one percent of the exposed population (compared to 36 percent in the post-test sample).

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[1] For a concise explanation of this experimental procedure, see Goode, William J., and Hatt, Paul K., Methods in Social Research, New York: McGraw Hill Publishing Co., Inc. (1963).

Of the 1,019 postflight respondents 360 were registered complainants (those who called to complain plus those who claimed damage to their house), 456 were chosen from preflight respondents for reinterviewing, and 203 were chosen randomly. Partial analysis of the preflight data obtained using Form B indicated a need to modify some of the questions. Also because of the long delay since the SR-71 flights had stopped and the slight change in emphasis toward understanding the nature of the complainants, a new questionnaire (Form C) was devised. This questionnaire was used for all Time II respondents.

1.3 Sampling Plan Schedule

Six metropolitan areas were to be sampled. Because there was less than two months time to develop a questionnaire, draw samples, and obtain the interviews, it was not possible to test all six areas before the flights started. Four cities were tested before the flights, however the flights began over Los Angeles and Chicago while the field crews were interviewing. In Los Angeles 339 respondents were interviewed before the flight period. The details of the schedule as finally carried out are shown in Table 1.1 and Figure 1.0.

It is important to recognize that the post-boom interviews were taken four to six months after the SR-71 flights had stopped.

Table 1.1

DATA COLLECTION SCHEDULE

City	Interviewing Period: Time I: Prior to SR-71 Program (6/3/67-7/2/67)	Time I: During SR-71 Program (7/3/67-7/31/67)	Time II: Following SR-71 Program (2/13/68-4/30/68)
Atlanta	1,018	XX	87
Dallas	860	XX	194
Denver	908	XX	146
Los Angeles	339	266	592
Chicago	980	84	XX
Minneapolis	900	01	XX
TOTALS	5,005	351	1,019

	Time I	Time II
Number of fully completed interviews obtained:	5,356	1,019

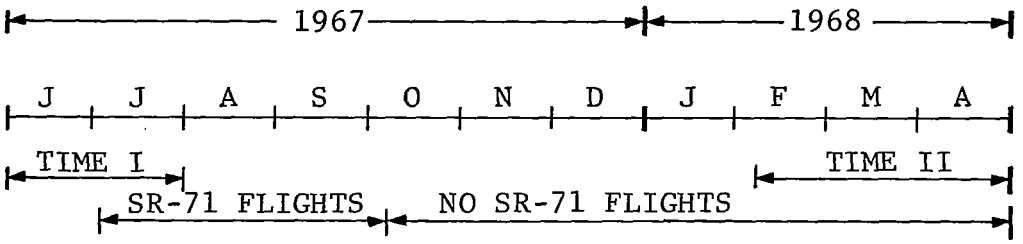

FIG. 1.0 - INTERVIEWING AND SR-71 FLIGHT SCHEDULES

1.4 Physical Characteristics of the Sonic Boom

Part of this study was designed to identify the behavior and reactions of communities exposed to sonic booms. A discussion follows of terms and definitions relating to the physical stimulus, i.e., characteristics of the sonic boom.

At altitudes normally maintained for supersonic flight, the airplane's sound pressure signature takes the form of an abrupt pressure rise followed by a linear decline in pressure to a value below ambient and a subsequent recompression to atmospheric pressure. Figure 1.1 shows the various categories of the sonic boom Class "N" waveform. Two types of measures are used, namely pressure and time. The overpressure is measured in terms of the deviation from mean ambient pressure to the first peak following break point (P_1). A secondary measure is the deviation from the mean ambient pressure of the minimum recorded pressure (P_2).[2]

[2]Sonic Boom Data Reduction Specification, Revision No. 2, August 30, 1968, FAA, NA-720, pp. 2-3.

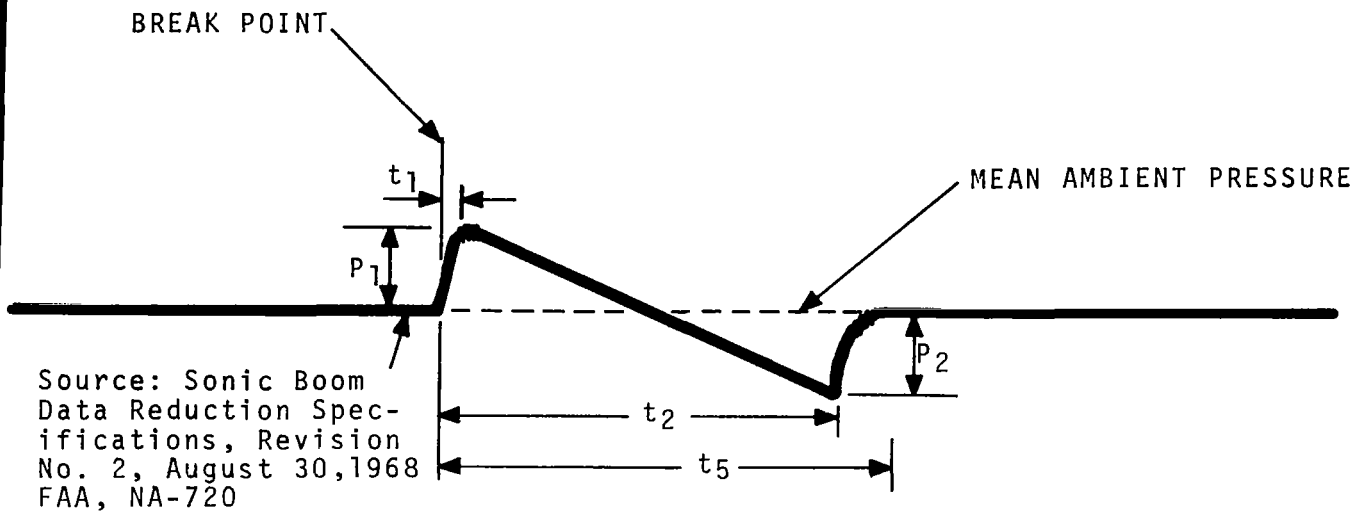

FIG. 1.1 - SONIC BOOM CLASS N WAVE FORM

Time is measured in terms of the interval from the initial break point to the maximum overpressure indicated by P_1 (t_1); the interval from the initial break point to the minimum overpressure indicated by P_2 (t_2) called "rarefaction," and the interval from initial break point to final return to mean ambient at the tail wave return (t_5). All time intervals are measured in milliseconds. The N type waveform is the usual form for the ground-level signature, and it is this pressure signature that is responsible for the boom from the SR-71.

The peak of the positive portion of the N wave (P_1), the overpressure, varies at ground level due to varying cruising altitudes from less than one pound per square foot (psf) to not much more than four psf for normal high altitude operations of supersonic airplanes. However, pressures of over 100 psf have been recorded for low level passes of fighter airplanes.

The term "rise time" refers to the time between the initial onset of the boom and when it reaches its peak overpressure (t_1 in Figure 3.1). Rise time and time duration (t_2) are significant in terms of loudness determination and aural identification.

There are many factors that affect the magnitude of the pressure change of shock waves and hence the sonic booms produced by a supersonic airplane. Some of these factors are associated with the airplane's weight, size, shape, speed, altitude, and attitude.[3] Others are related to weather conditions and the terrain below the airplane.

The altitude of an airplane influences sonic boom intensity because it determines the distance the shock wave travels before reaching the ground. As the shock wave travels away from the airplane, it spreads out conically. The energy contained in the shock is thus spread over a larger area and the strength of the shock is reduced. Therefore, flight at higher altitudes provides a greater distance for the shock to travel and reduces sonic boom overpressure at any one point on the ground.

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[3]Performance characteristics of the SR-71 are classified. For this reason such factors as altitude and mach number are not given.

The effects of weather conditions, flight path variations, and changes in ground terrain on sonic booms are very nearly independent of airplane configuration. Wind speed and direction, and air temperature and pressure, influence the direction of travel and the strength of shock waves. Local air turbulence near the ground also may cause large variations in the shape of pressure waves recorded at ground level.

According to von Gierke (1966), the outdoor boom is a progressive shock wave. He states that diffraction of the wave around the human body leads to pressure doubling for the higher frequencies on the two sides of the body and could be significant enough in high level booms to produce the vibrotactile sensation of being "hit" by the boom. In addition, the particle velocity of the shock wave could lead, in high level booms, to asymmetrical forces on the body surface.

He continues by pointing out that the boom environment inside buildings is quite different. First, the airborne shock wave is filtered by the transmission properties of the building structure, which acts essentially as a low-pass filter. The pressures and particle velocities are lower, but oscillations continue, usually for a much longer time. Second, the sound field inside will usually be more like a reverberant field so that unilateral proprioceptive stimulation will be reduced. The vibrations to which one is exposed will be the result of the airborne and ground-shock-excited building vibrations. These vibrations in turn will vibrate glassware and bric-a-brac, generating rattling and other noises.

1.5 SR-71 Training Mission Flight Paths

Figures 1.2 through 1.5 show the SR-71 flight paths over the four cities in the study between June 3 and October 2, 1967 and the sampling tracts used for the selection of respondents.[4]

The Dallas/Fort Worth area had multiple flight paths while the other cities each had one. (The dotted line in the upper right corner of the Los Angeles map is not a boom path. It shows the outer limit for sampling in that city.) In all of the cities, the flight paths indicate that a major proportion of the population was directly exposed to the boom. Exceptions were the southern part of Atlanta, which was approximately 15 miles from the flight path, and the northeastern parts of Los Angeles County, which were approximately 20 miles from the flight path.

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[4]Figures 1.2 through 1.5 also show the sampling design, called a "Thunderbird" pattern, and the sampling tracts for the study of airport noise in Dallas, Los Angeles, and Denver under NASA contract NASW-1549. The darker shaded tracts refer to the noise study and the lighter shaded tracts refer to the boom study. (At a later date a comparison will be made between the effects of subsonic aircraft noise and booms on persons living in these cities.)

SR-71 BOOM PATHS AND SAMPLING TRACTS

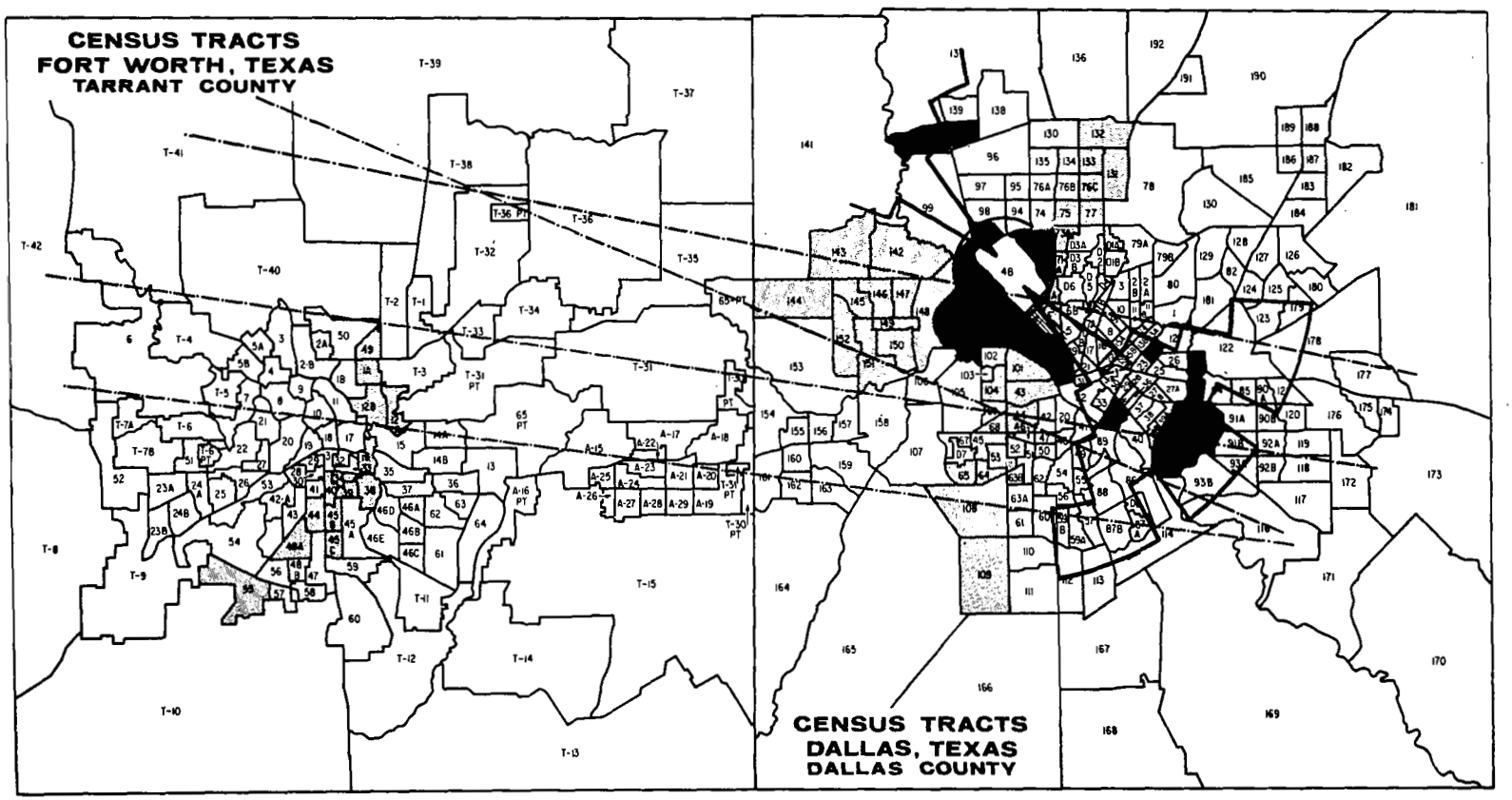


FIG. 1.2

SR-71 BOOM PATHS AND SAMPLING TRACTS

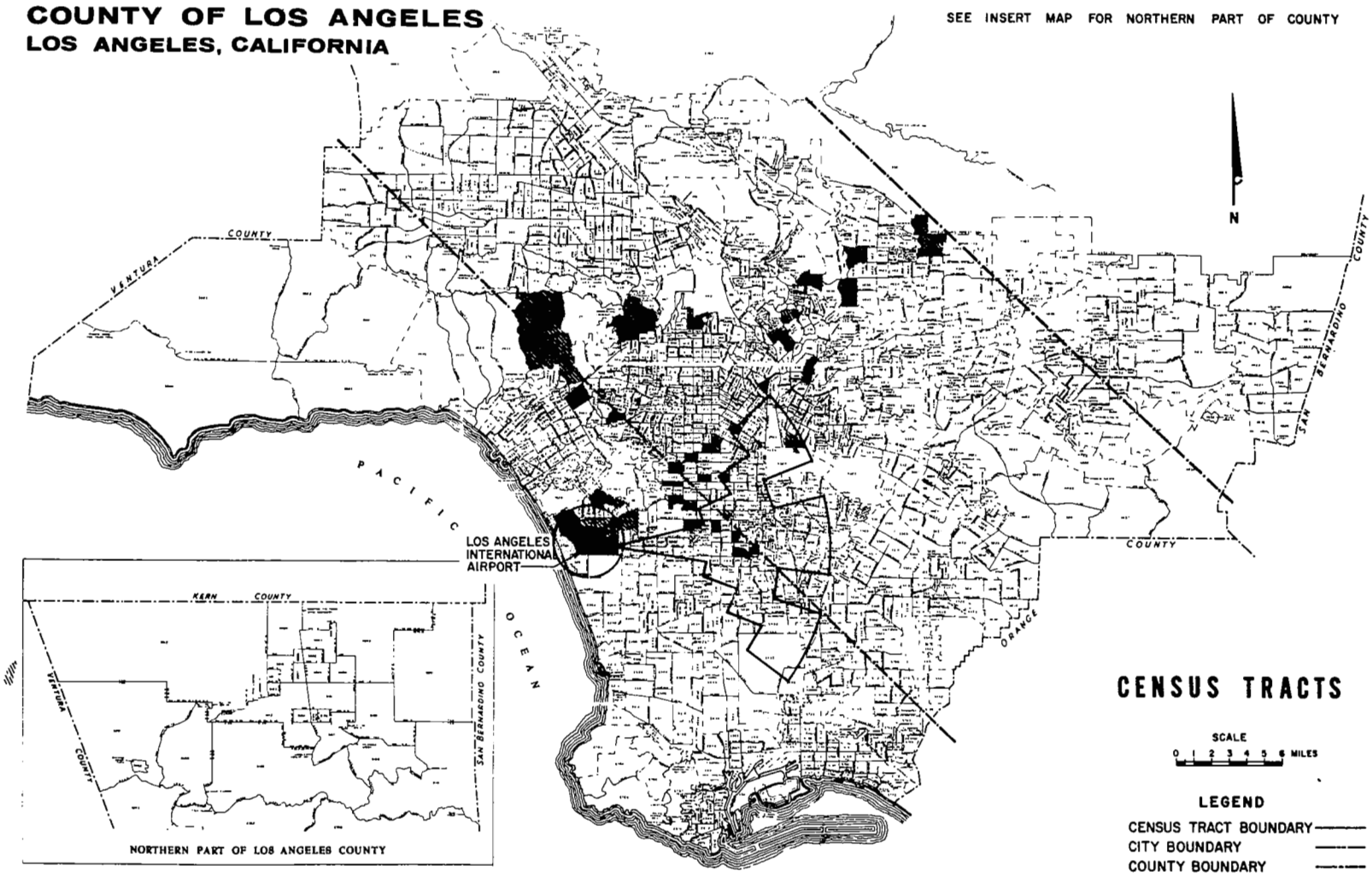


FIG. 1.3

SR-71 BOOM PATHS AND SAMPLING TRACTS

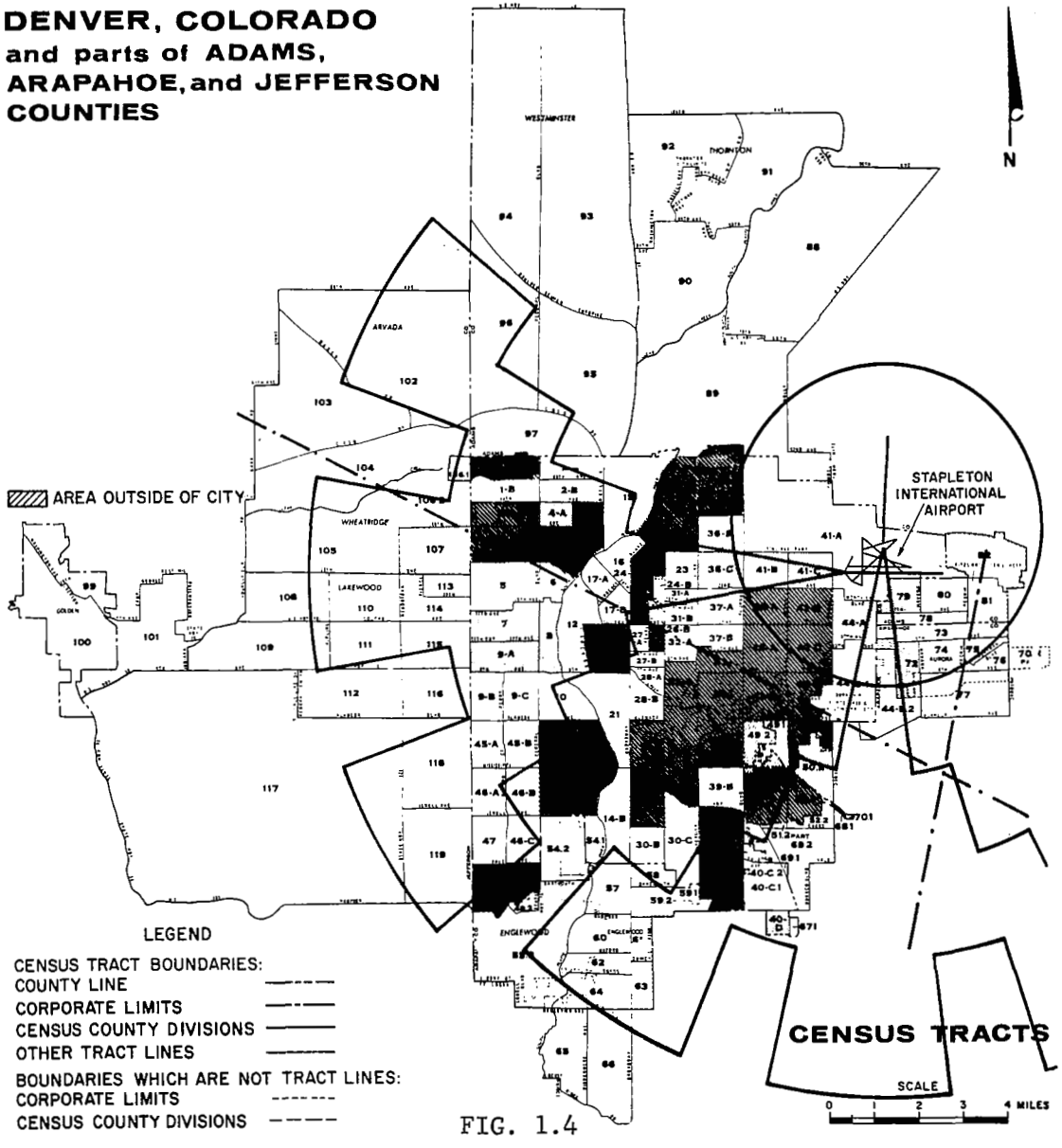
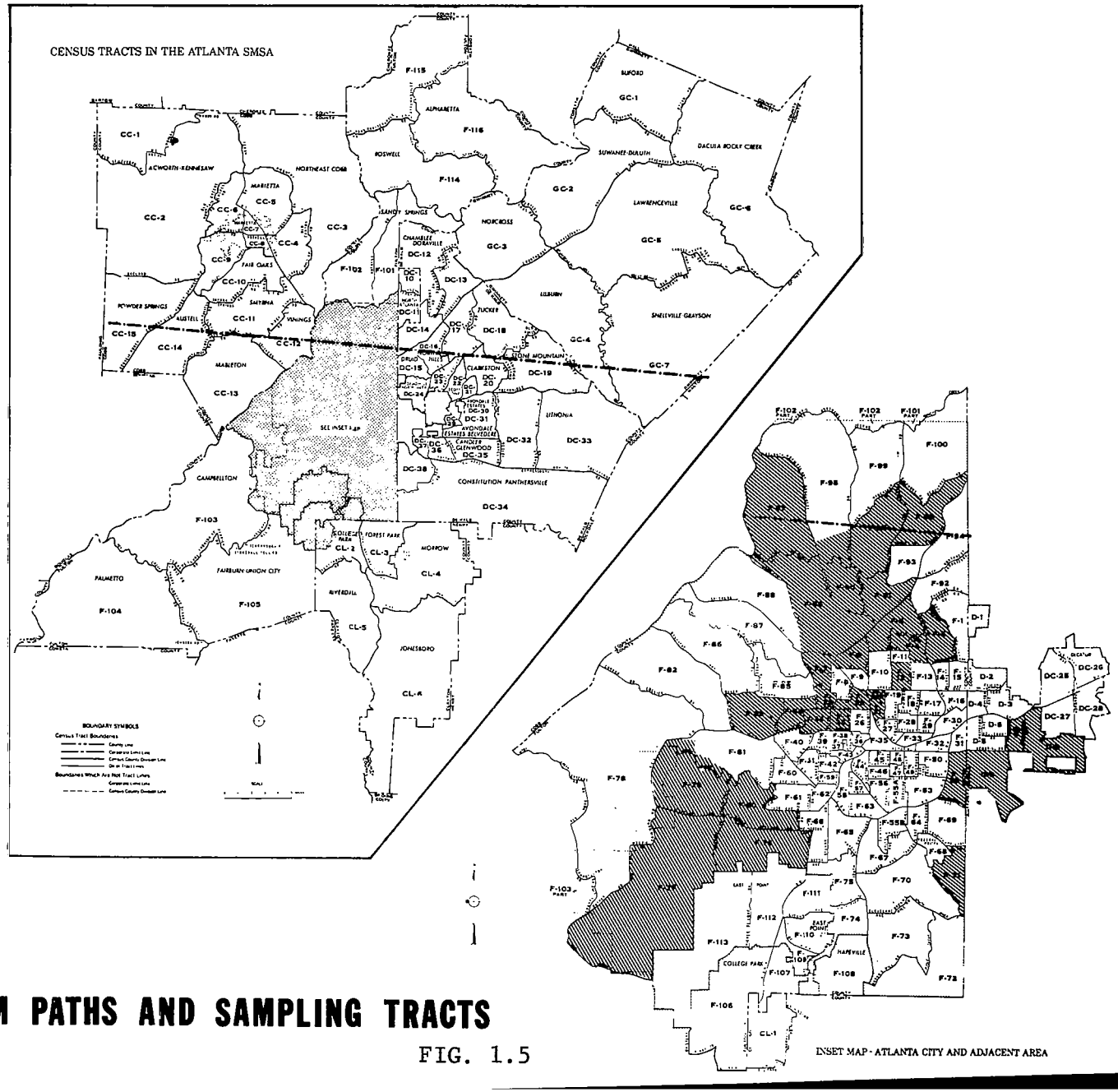


FIG. 1.4



SR-71 BOOM PATHS AND SAMPLING TRACTS

FIG. 1.5

Table 1.2

OVERFLIGHTS AND
AVERAGE RECORDED PEAK OVERPRESSURE (P_1)
FOR SELECTED BOOMS*

City	Overflights	Number of Booms Recorded	Mean Peak Overpressure	Standard Deviation
Dallas/Ft. Worth	60	15	1.66*	.6063
Los Angeles	20**	--	---	----
Denver	36	1	0.95	----
Atlanta	5	1	1.81	----
Chicago	51	25	1.77	.4974
Minneapolis	48	--	---	----

*Source: "Selected SR-71 Damage Complaint and Claim Statistics through 15 November 1967," FAA document dated 3 January 1968, from records at Edwards AFB.

*TRACOR field supervisors in Los Angeles reported hearing approximately two sonic booms every three days during the interviewing period of March 25 to April 30, 1968. This estimate is corroborated by the number of booms heard by respondents in the Los Angeles sample indicating the city was exposed to other supersonic aircraft than the SR-71, although at substantially lower overpressure, estimated at about .65 psf.

Table 1.2 shows the number of SR-71 overflights from July 3, 1967 through October 2, 1967 over each of the study cities. The Dallas/Fort Worth area received by far more booms from the SR-71 flights than any of the other cities. Atlanta, on the other hand, received very few booms.

Table 1.2 shows the average recorded peak overpressure (P_1) for a selected number of booms. The data for this table are derived from FAA sonic boom reports which give the boom serial number, recorder location code, recorder serial number, recorder coordinates, the date, the GMT time, pressure values in psf, time values in milliseconds, wave classification, and other data. In almost every case the waveform was reported as type N. Boom numbers 1 through 39, corresponding to June 3, 1967 through October 2, 1967 were selected for study since they most nearly approximate the times of the SR-71 test overflights. From these booms, 17 were by the SR-71. The criterion for this determination was a t_5 value of between .20 and .25. Table 1.2 shows that 15 of these booms occurred in Dallas/Fort Worth while one each occurred in Denver and Atlanta. No data were available for Los Angeles, since measurements were taken at Edwards Air Force Base, which is located approximately 50 miles northeast of Los Angeles. It is not known whether booms which occurred at that location also occurred in Los Angeles. However, the nominal overpressure for the SR-71 overflights has been listed as 0.90 psf.[5] Without other information it will have to be assumed that this value applied to the booms in Los Angeles.

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[5]Information provided by Headquarters, Aeronautical System Division (AFSC), Wright-Patterson Air Force Base, Ohio, May 2, 1968.

It is clear that the lack of adequate physical data makes it unfortunately impossible to describe the physical stimulus received by the respondents. It would be a most difficult and expensive experiment to assign "boom noise exposure" to each respondent even if time had permitted because it now appears that the overpressures can vary significantly within a short distance in a metropolitan area. In this study there is no chance of obtaining the relations between boom exposure per se and community reaction.

CHAPTER II

ANNOYANCE AND ACTIVITIES DISTURBED

One of the objectives of this study was to compare the annoyance of the respondents to the sonic boom either during or after the SR-71 flights to the annoyance prior to the flights. Theoretically, if none of the respondents had ever heard a sonic boom before the SR-71 flights had started, the change in annoyance with respect to the boom could not be measured. However, 81 percent of the total pre-SR-71 sample had heard sonic booms; hence it was possible to measure their level of annoyance with the boom at that time.

It is somewhat unfortunate that the changes[1] in questionnaires between Time I and Time II resulted in making it impossible[2] to compare Time II data with Time I data using the same measure; however, the four to six months delay (after the SR-71 flights had stopped) in obtaining Time II data might, of itself, make these comparisons somewhat questionable. In one special case (Los Angeles), however, it is possible to compare changes in annoyance since interviews using the same questionnaire (Form B) were obtained just prior to the SR-71 flights and during the training flights.

In the section which follows, the interviewees have been assigned to one of four groups for purposes of analysis and comparison. Group (a) consists of 5,005 persons who lived under the projected

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[1]The reasons for the changes are discussed in Chapter I.

[2]The reasons why this comparison cannot be made are discussed in Chapter III.

flight paths of the SR-71 and were interviewed prior to its test flights over Chicago, Dallas, Denver, Minneapolis, Atlanta and Los Angeles. Interviews were conducted with the Form B questionnaire, which was administered between June 3, 1967 and July 2, 1967 (Time I). Respondents in these cities had been previously exposed to infrequent sonic booms, primarily from Air Force and test aircraft operating out of Carswell (Texas), Lowry (Colorado) and Chanute (Illinois) Air Force bases.

Group (b) respondents were those 266 persons in Los Angeles who were interviewed after the SR-71 program started on July 3, 1967. These respondents, who were also administered the Form B, Time I, questionnaire, had been exposed to an average of ten booms from the SR-71 at the time of their interviews.

Group (c) respondents from Los Angeles, Dallas, Denver and Atlanta were interviewed with the Form C, Time II, questionnaire in February, March and April 1968, following the test flights. Of these respondents 203 interviewees were randomly selected from under the flight paths of the SR-71, and 456 were chosen randomly from the preflight sample to form a controlled panel. None of the persons in this group had complained to public officials as the result of the SR-71 exposure.

Group (d) respondents were 360 known complainants living in the four post-test cities. They were also interviewed with the Form C, Time II questionnaire. The total sample on which the study is based is thus 6,375 interviews, of which 456 were re-interviews in all four cities at Time II.

At Time I interviewees were asked to indicate which of eleven listed sounds they heard in their neighborhood. Analysis showed

that 81 percent had heard sonic booms (prior to the start of the SR-71 training flights). They were then asked to indicate their level of annoyance for each sound which they heard by using an "opinion thermometer" (0-4 scale). In addition they were asked to name the "most annoying" sound which they heard, and to rate the disturbance of this sound (using the 0-4 scale) on each of nine social activities.

At Time II, respondents were queried about sounds they would most want eliminated from their neighborhoods, which, it was assumed, would make it possible to evaluate the importance of the boom in the context of other sounds. Unfortunately, the question used in Form B (Time I) relating to the "most annoying" sound in the neighborhood followed by a measure of how disturbing this sound is (using a 0-4 scale) was replaced in Form C (Time II) by a question relating to the sound which the respondent felt was "unnecessary and should be eliminated." It does not appear proper to compare directly the answers to these two questions to determine the change in annoyance due to the booms from the SR-71 flights especially since at Time II the major adjective associated with the "first sound to eliminate" was "startling," and the major reason for wanting to eliminate the boom was "costly, causes damage." On this basis, the Los Angeles study made in Time I using Form B is used to show change in annoyance by comparing the responses of 339 respondents interviewed just prior to the start of the SR-71 flights with the responses of 266 respondents interviewed during the period of the training flights. The data taken at Time II are used to compare the complainants with the non-complainants and to develop the social model.

The major effects of the SR-71 sonic booms as compared with the sporadic, low intensity booms previously experienced are shown in Tables 2.1 through 2.4. It has already been explained why

only the Los Angeles sample is used to show the change in level of annoyance due to the SR-71 flights. The fact that column (b) of Table 2.1 (for Los Angeles only) compares favorably with the total sample in column (a) gives confidence that the Los Angeles sample, even though small by comparison to the total sample is representative of the sample. The data indicate that there is certainly an awareness of the SR-71 flights since the percentage of respondents hearing booms was 81 percent before the flights started and was 97 percent during the flights.

During the interview if the interviewee said he heard certain sounds, he was asked to judge the annoyance of that sound by means of a 0-4 scale. Table 2.2 presents the distribution of annoyance for both sonic booms and conventional subsonic aircraft noise. There is no question that there was a significant increase (20 percent versus 42 percent) in the number of respondents who were highly annoyed (score of 3 or 4) by the booms from the SR-71 flights. By contrast, there was little change (38 percent versus 39 percent) in the number who were highly annoyed by subsonic aircraft noise, and the percentage who were highly annoyed by the sonic booms was essentially the same as the percentage who were highly annoyed by the subsonic flights (42 percent versus 39 percent).

The interviewee was then asked to list the neighborhood sound which he felt was most annoying (Table 2.3), and once he had identified the most annoying sound he was then asked to judge the level of disturbance of various named activities resulting from the exposure to this most annoying sound. If he selected the sonic boom, and only 6 percent, or 20 interviewees, did during the pre SR-71 flights (Los Angeles), then he was asked to rank how badly the boom disturbed the activities. Those who scored 3 or 4 (0-4 scale) are shown in terms of percentages in Table 2.4. There is certainly ample evidence that the number of respondents

Table 2.1

PERCENTAGE OF RESPONDENTS WHO REPORTED HEARING THE LISTED SOUNDS - TIME I

Listed Sounds	Pre SR-71 Flights (a)	Los Angeles Only	
		Pre SR-71 (b)	During SR-71 (c)
Autos and/or Trucks	95 %	93 %	98 %
Motorcycles and/or Hot Rods	92	84	93
Aircraft Operations	95	93	99
Dogs or Other Pets	90	83	89
Sonic Booms	81	84	97
Neighborhood Children	92	83	95
Sirens	91	85	91
People	87	81	91
Lawn Mowers and/or Garbage Collection	90	79	91
Trains	72	47	77
Construction	69	53	79
	N = 5,005	N = 339	N = 266

Note: Column (a) includes column (b) as part of N = 5,005.

Table 2.2

PERCENTAGE OF RESPONDENTS WHO RATED SONIC BOOM AND AIRCRAFT OPERATIONS ON ANNOYANCE SCALE 0-4

Los Angeles - Time I

Scale Rating of Annoyance	Sonic Boom		Aircraft Operations	
	Pre SR-71	During SR-71	Pre SR-71	During SR-71
Not Heard	16 %	3 %	7 %	1 %
0	24	19	17	24
1	26	26	17	20
2	15	11	21	16
3	9	18	16	18
4	11	24	22	21
	N = 339	N = 266	N = 339	N = 266

0 = least annoying 4 = most annoying

Table 2.3

PERCENTAGE OF RESPONDENTS WHO SELECTED
THE LISTED SOUND AS THE MOST ANNOYING SOUND

Los Angeles - Time I

Listed Sounds	Pre SR-71	During SR-71
Automobiles and/or Trucks	11 %	10 %
Aircraft Operations	29	24
Neighborhood Children	7	6
Dogs, Other Pets	14	5
People	4	3
Motorcycles and/or Hot Rods	12	8
Trains	1	0
Sirens	6	6
Construction	1	0
Lawn Mowers and/or Garbage Collection	0	2
Sonic Booms	6	25
Others	2	2
No Sound	7	9
	N = 339	N = 266

Table 2.4

PERCENTAGE OF RESPONDENTS[1] WHO JUDGED THE LISTED ACTIVITIES AS BEING HIGHLY DISTURBED[2] BY THE SONIC BOOM

Los Angeles - Time I

Listed Activities	Pre SR-71	During SR-71
Relaxing or Resting Inside House	50 %	55 %
Relaxing or Resting Outside House	32	31
Sleeping	40	28
Face-to-face Conversation	31	25
Telephone	24	22
Listening to Records or Tapes	27	19
TV or Radio Reception	38	30
Reading or Concentrating	31	24
Eating	14	15
	N = 20	N = 66

[1]Respondent had previously selected the sonic boom as most disturbing neighborhood sound (see Table 2.3).

[2]A score of 3 or 4 on a 0-4 scale.

choosing the sonic boom as the most annoying sound increased significantly (6 percent versus 25 percent) during the SR-71 flight period. It is difficult to be as definitive about any shift in level of activity disturbance with booming because the samples are small. The evidence seems to be that there is really very little difference in disturbance levels between preflight conditions and during-flight conditions.

In summary, the Time I data show that the level of annoyance rises significantly with the SR-71 booms, the boom becomes one of the top members of most annoying sounds, and the booms interfere significantly with many of the usual household activities as far as those respondents are concerned who choose the boom as the most annoying sound.

Turning now to the matter of Time II data, as indicated at the beginning of this chapter the questionnaire was changed somewhat between Time I and Time II interviews. During Time II, the first question relating to sounds used the sentence "Would you please tell me what kind of sounds you notice around here." After the respondent answered this question, the interviewer then asked "Do you hear any of the following sounds in this area?" and proceeded to read a list of sources of sounds. During the Time I study, the corresponding part was presented somewhat differently. The first question related to sounds was presented as follows: "Now I will read a list of sounds and sources of sounds. For each one, please tell me whether it is a sound you hear in this neighborhood . . . ." The interviewer then read the list of sounds and sources of sounds. The distributions of responses to the Time II question are given in Table 2.5 divided by non-complainants and complainants. If the data for the non-complainants are compared with the data obtained during Time I (from non-complainants since there were no known complainants at Time I)

Table 2.5

PERCENTAGE OF RESPONDENTS WHO REPORTED HEARING THE LISTED SOUNDS - TIME II

Listed Sounds	Non-Complainants	Complainants
Automobiles and/or Trucks	73 %	68 %
Motorcycles and/or Hot Rods	57	56
Aircraft Operations	76	79
Dogs or Other Pets	45	43
Sonic Booms	68	91
Neighborhood Children	4	4
Sirens	69	68
People	30	28
Lawn Mowers and/or Garbage Collection	53	52
Trains	25	20
Construction	1	1
	N = 659	N = 360

given in Table 2.1 column (a) or (b), the first conclusion is that the distributions are different. Whether this difference is due to the questions and the manner of presentation, whether it is due to the difference in time of the year (June and July for Time I vs February and March for Time II), whether it is due to a six months time lapse, or whether it is due to some other reason such as sample differences is unresolved. This difference, however, is another reason why it seems best not to compare Time II data to Time I data. Even so the Time I-Time II studies are very useful as separate studies and little is lost by virtue of the above problem.

Table 2.5 indicates that the non-complainant does not notice the boom as much as he does the more common sounds from automobiles, trucks, subsonic aircraft, and emergency vehicles. On the other hand it would be expected that the complainants would list the sonic boom as being most consistently noticed. Their responses to the other noises are essentially equivalent to the responses of the non-complainants, thus it is seen that the complainants do not notice the usual neighborhood sounds any more often than do the non-complainants. On this basis one concludes that the complainants are not unusually sensitive to noises in general compared to non-complainants.

The questions of which sounds the Time II respondents felt were unnecessary and should be the first ones eliminated as well as how much the sonic boom disturbs household activities are answered by the data of Tables 2.6 and 2.7. The non-complainant respondents ranked the boom in the same general category with motorcycles, hot rods, and subsonic aircraft, whereas the complainant felt very strongly that the sonic boom was a noise in a class by itself and voted overwhelmingly to eliminate it. Again this is not an unexpected result. It is also reasonable to expect the

Table 2.6

PERCENTAGE OF RESPONDENTS WHO SELECTED THE LISTED SOUND AS UNNECESSARY AND SHOULD BE THE FIRST ELIMINATED - TIME II

Listed Sounds	Non-Complainants (a)	Complainants (b)
No Sound	5 %	6 %
Automobiles and/or Trucks	9	4
Motorcycles and/or Hot Rods	26	10
Aircraft Operations	20	7
Dogs or Other Pets	7	3
Sonic Booms	19	63
Neighborhood Children	0	0
Sirens	4	3
People	4	0
Lawn Mowers and/or Garbage Collection	1	0
Trains	0	1
Construction	0	0
Other Sounds	3	0
	N = 659	N = 360

Table 2.7

PERCENTAGE OF RESPONDENTS[1] WHO JUDGED[2] THE LISTED ACTIVITIES AS BEING DISTURBED BY THE SONIC BOOM - TIME II

Sounds	Non-Complainants (a)	Complainants (b)
Relaxing or Resting Inside	30 %	61 %
Relaxing or Resting Outside	26	49
Sleeping	19	36
Telephone	20	36
Listening to Records or Tapes	18	35
TV or Radio Reception	22	39
Reading or Concentrating	28	55
Eating	12	29
	N = 125	N = 227

[1]Respondent had previously selected the sonic boom as an unnecessary sound and the first sound he would like eliminated.

[2]No scale of level was used, just a simple yes or no answer was requested. If yes, then the activity was scored as disturbed.

complainants who chose the boom as the first to be eliminated to show a higher percentage who state that their routine household activities listed in Table 2.7 are disturbed when compared to the responses of the non-complainants. The data show that about twice as many complainants compared to non-complainants feel their activities are disturbed.

CHAPTER III

ATTITUDINAL RESPONSE - THE ADJECTIVE INDEX

In the second wave of interviewing, from February through April 1968, respondents were presented a list of neighborhood sounds, including sonic booms, from which they selected a single sound they would most like to eliminate. It can be assumed that since interviewing took place approximately six months after conclusion of the SR-71 training program, an individual's recall of precisely how he felt about the booms would be somewhat more difficult or subject to more distortion than if the stimulus were currently operating at the time of interviewing.

To tap the nature of attitudinal reactions that occurred as the result of booms from the SR-71 program, respondents at Time II were presented a list of 15 adjectives and were asked which three (plus any other terms they could think of) best described the effect of the sonic boom on them. A total of 42 terms were used by the sample as a whole, including the original list of 15, to describe the boom's effect.

Almost two-thirds of the sample described the boom as "startling," as can be seen in Table 3.1. The next most used adjective was "disturbing," followed by "annoying" and "no effect at all."

It is interesting to note that only 2 percent mentioned the boom as "painful"; that 3 percent or less chose either of the positive terms "thrilling," or "reassuring"; and 24 percent chose "no effect at all."

In spite of the fact that the respondents selected an additional 27 adjectives beyond the 15 supplied by the interviewer, very few of these 27 adjectives were repeated by other respondents. Examples of these respondent-provided adjectives are: frightening, costly, destructive, expensive, damaging, jolting, worrisome, scary, sign of the times, interesting, curious, awesome, fascinating, exciting, loud, irksome, and dangerous.

Table 3.1

ADJECTIVES CHOSEN TO DESCRIBE THE BOOM: MERGED SAMPLE

TIME II

Adjective	Percentage Choosing This Adjective First, Second, or Third to Describe Boom
Startling	65
Disturbing	38
Annoying	29
No effect at all	24
Irritating	16
Aggravating	12
Bothersome	11
Troublesome	9
Exasperating	8
Offensive	5
Depressing	4
Reassuring	3
Painful	2
Thrilling	2
Boring	1

N = 360 Complainants and 659 Non-Complainants

An "Adjective Index" was constructed based upon the nature of the first three adjectives mentioned. The index should not be considered as a scale[1] but simply represents the number of negative type adjectives which the respondent used as the first three descriptors of the boom noise. A score, based on a 0-3 scale, was constructed, however, for purposes of analysis. Thus a score of zero indicates that the respondent answered "no effect at all" or that the first three adjectives chosen were either neutral (e.g., boring, curious, etc.) or positive (e.g., fascinating, exciting, etc.). A score of three indicates all adjectives chosen were negative (e.g., startling, disturbing, etc.). There were a total of 36 categories, of which 25 were negative and 11 were neutral or positive.

In subsequent parts of the report the adjective index score is referred to many times. Distributions and mean values are reported in various tables. From an administrative decision point of view it seems useful, and almost a requirement, to be able to associate some human attribute with these scores. Attitudes are certainly described, in many cases, by the verbal use of adjectives, and since the choice of the definition and measurement of "attitude" is somewhat arbitrary in any given situation, it seems advantageous, for purposes of this report, to associate a "negative attitudinal position" with the "adjective index score." It would be expected that a negative attitude would correlate positively with the adjective index score, i.e., a group with a mean score of 2.1 seems certain to have a more negative attitudinal position with respect to the boom than a group with a mean score of 1.4. On this basis adjective index

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[1] If a respondent picked "startling" as his first adjective he was not asked to rate the degree of startle on a numerical scale.

scores may be thought of as negative attitudinal positions and the phrase "negative attitude" will be used in referring to the adjective index.

One final point--the adjective index may be but is not necessarily correlated with annoyance since one may be startled by the boom and not necessarily annoyed with the boom. Since data were not taken to prove or disprove this relationship, it does not seem reasonable to compare adjective index scores from Time II with annoyance scores (obtained by asking the respondent to rate the intensity of his annoyance on a 0-4 scale) at Time I. It is for this reason that no Time I-Time II comparisons of this nature are made.

Table 3.2 shows the distribution of the adjective index scores according to cities and categorized according to complainants and non-complainants. For all of the complainants, approximately 70 percent used either two or three negative adjectives whereas for all of the non-complainants only about 50 percent chose two or three negative adjectives. In Atlanta, where there were only five SR-71 overflights, two-thirds of the respondents selected either neutral or positive type adjectives. This compares with about 20 percent of the respondents in the other three cities who selected either neutral or positive type adjectives. Thus the data indicate that for the non-complainants the adjective index score rises rapidly as the boom exposure changes from very low to approximately one boom every two or three days. It is not unexpected that the score for the complainants would be high and to some degree independent of the exposure.

Table 3.2

ADJECTIVE INDEX SCORE BY COMPLAINT BEHAVIOR AND CITY

TIME II

Cities	Complainants						Non-Complainants						Number SR-71 Flights
	Adjective Score (0)	(1)	(2)	(3)	N	Mean Score	Adjective Score (0)	(1)	(2)	(3)	N	Mean Score	
Dallas	4%	30%	37%	28%	67	1.9	21%	26%	33%	20%	127	1.5	60
Denver	6	20	34	40	240	2.1	17	23	34	26	96	1.7	32
Los Angeles	10	22	35	33	50	1.9	18	25	32	25	352	1.6	20*
Atlanta	0	0	67	33	3	2.3	68	13	11	8	84	0.6	5
Merged	8	22	36	33			25	23	30	22			
N Totals	30	83	129	118	360		164	154	197	144	659		

$X^2 = 7.00$ d.f. = 9 p = 0.64

$X^2 = 97.9$ d.f. = 9 p = 0.00

*See Chapter II for a discussion of Los Angeles Exposure.

Table 3.3 indicates that the respondent's house value relates to the adjective index score in that respondents in the higher valued homes have, in general, higher scores. There appears to be little difference in scores between respondents who rent and those who own their homes as far as the adjective score is concerned although the number of respondents in the three price range categories who rent is small enough to cast some doubt on the generality of the statement of "equality."

Since the SR-71 flights over the cities were limited to a comparatively small number, there was really no way that "tolerance" to sonic booms could be measured. A series of questions was asked, however, to determine what the respondents "thought" they could tolerate in terms of number of booms per day. The series involved five questions starting with "Have you formed any definite opinions about sonic boom?" followed by others relating to whether the respondent felt he would object to a specific number of booms on a daily basis. The questions and the results are shown in Table 3.4. It is interesting that even though only 34 percent of the non-complainants had formed no previous opinion of the boom, 53 percent felt they would object to booms even if they occurred only once or twice a day. Seventy-five percent felt they would object if there were five or more booms per day, although this feeling was modified considerably if they felt the booms could be restricted to daytime only. Under these latter conditions only 51 percent felt they would object.

Although asking someone "what he thinks he would tolerate" is not the same as being able to measure his tolerance, there certainly is a strong indication that at least one-half of the population is of the opinion that they fully expect booms to be objectionable.

Table 3.3

ADJECTIVE INDEX SCORES BY RENTAL VALUES AND HOME OWNERSHIP

TIME II

Adjective Index	OWNS Estimated Rental Value				RENTS Rental			
	$1-99	$100-174	$175+	N	$1-99	$100-174	$175+	N
0	29%	16%	11%	103	41%	28%	14%	49
1	22	26	23	165	25	23	19	35
2	29	37	34	239	21	25	33	36
3	21	21	33	189	14	25	33	31
TOTALS	101% (87)	99 (243)	101 (366)	(696)	101% (73)	101 (57)	99 (21)	(151)

Table 3.4

RESPONSES RELATED TO ANTICIPATED TOLERANCE OF BOOMS

TIME II

		Complainants		Non-Complainants	
		%	(N)	%	(N)
Have You Formed An Opinion[1]	Yes	55	(199)	32	(213)
	No	34	(123)	53	(348)
	Undecided	11	(38)	15	(97)
Objects To The Boom[2]	Yes	70	(185)	34	(157)
	No	25	(65)	52	(239)
	Undecided	5	(14)	14	(66)
Objects If Once Or Twice[3]	Yes	83	(206)	53	(194)
	No	13	(33)	28	(103)
	Undecided	4	(10)	19	(69)
Objects If Five Or More[4]	Yes	93	(232)	75	(276)
	No	3	(8)	11	(41)
	Undecided	4	(9)	13	(49)
Objects If Only During The Day[5]	Yes	81	(199)	51	(184)
	No	12	(29)	30	(108)
	Undecided	7	(18)	20	(72)

Questions

[1]Have you formed any definite opinions about sonic booms? Yes ____; No ____; Undecided ____.

[2]Do you object to sonic booms? Yes ____; No ____; Undecided.

[3]Would you object to sonic booms if they occurred only once or twice daily? Yes ____; No ____; Undecided.

[4]Would you object to sonic booms if they occurred more than five times each day? Yes ____; No ____; Undecided.

[5]Would you object to sonic booms if they occurred only during the day and not at night? Yes ____; No ____; Undecided.

CHAPTER IV

COMPARISONS OF COMPLAINANTS AND NON-COMPLAINANTS

One of the main questions answered by the Time II part of this study is "What are the differences between complainants and non-complainants assuming each has had essentially the same sonic boom exposure?" As expected, complainants describe the boom by using a higher number of negative adjectives than do the non-complainants. Table 4.1 shows that a total of 69 percent of complainants used either two or three negative adjectives (out of a total choice of three) compared to 51 percent of the non-complainants. Less than 10 percent of the complainants used either neutral or positive adjectives compared to 25 percent of the non-complainants.

Table 4.1

ADJECTIVE INDEX SCORE BY COMPLAINT BEHAVIOR

TIME II - PERCENT

Adjective Index Score	Complainants	Non-Complainants
0	8.47 %	24.96 %
1	22.68	23.58
2	36.34	29.55
3	32.51	21.90

The real question, however, relates to whether there are true differences between the nature or socioeconomic description of the two sets of people. Data shown in Table 4.2 indicate that there are differences; however, these differences are not great. House cost and income might be expected to correlate and for these two socioeconomic indices there is little difference in attitude between complainants and non-complainants. Similarly, education and occupation should correlate and it is here that we note a difference in attitude between complaiants and non-complainants. This difference is that individuals in the high categories of occupation (a score of 60-99 on U.S. Census scale of occupation) and education (college level or higher) tend to complain more about the booms, but there are almost as many individuals in these two classes who do not complain. As an aside, of those who complain, over one-half are in the high category of education and over three-fourths are in the high category of occupation. In general, however, there is little socioeconomic difference between complainants and non-complainants.

The major difference between the complainants and non-complainants is simply that complainants own their homes and feel that the sonic booms have damaged their homes. This statement is based on the data of Tables 4.3 and 4.4 as well as on the data obtained from Federal Agencies which furnished the list of complainants. Table 4.4 also shows that the complainants gave rational answers for wanting to eliminate the boom since the percentage listing other reasons were, in general, less than the percentage of non-complainants listing these same other reasons. In fact only 6 percent of the complainants felt the boom should be eliminated because it is "aggravating, irritating, worrisome or annoying." It should be pointed out that the number of non-complainants answering the question related to Table 4.4 is quite small

Table 4.2

SOCIOECONOMIC DISTRIBUTION OF COMPLAINANTS AND NON-COMPLAINANTS

TIME II - PERCENT

	HOUSE COST		INCOME		EDUCATION		OCCUPATION	
Category	Comp.	Non-Comp.	Comp.	Non-Comp.	Comp.	Non-Comp.	Comp.	Non-Comp.
Low	42%	45%	17%	21%	9%	21%	3%	12%
Medium	23	26	50	42	37	33	19	26
High	34	29	33	37	54	47	78	62
N	281	407	310	639	356	639	263	469

Comp. = Complainants Non-Comp. = Non-Complainants

NOTE: Socioeconomic data were unavailable for the entire sample because certain respondents exercised the always present privilege of not answering any question.

Table 4.3

HOME OWNERSHIP BY COMPLAINANT BEHAVIOR
TIME II - PERCENT

Home Ownership	Complainant	Non-Complainant
Owner	93	76
Renter	7	24
N =	350	611

$X^2 = 47.84$ 1df $P < .001$

Table 4.4

REASON TO ELIMINATE NOISE BY COMPLAINANT BEHAVIOR
Based on Respondents Who Selected
the Boom as First Sound to Eliminate
TIME II - PERCENT

Reason to Eliminate	Complainant	Non-Complainant
Costly, cause damage	52	26
Danger to life, frightening	8	13
Unnecessary	8	6
Startling	7	15
Aggravating, irritating, worrisome, annoying	6	17
Bad for nerves	6	6
So house wouldn't shake	5	4
Makes too much noise	4	6
Harmful to health	2	0
Interferes with TV	1	2
Make this more pleasant place to live	1	2
Would like to eliminate but realize is necessary	1	2
Are disturbing at night	1	0
N	144	47

(47 out of 659) because these were the only non-complainants who listed the boom as the first sound they wished eliminated from their neighborhood. Thus the distribution of answers for the non-complainants may not be a true representation of this category.

Complainants also have formed opinions and have carried on discussions with family and acquaintances to a greater extent than non-complainants, as shown in Table 4.5. This tendency of complainants to participate in conversations, and the fact that 52 percent had crystallized their opinions about the boom, indicates that the nucleus of protest organizations could be expected to form around persons who believe their property is damaged by the boom and who register formal complaints.

Table 4.5

LEVEL OF DISCUSSION BY COMPLAINANT BEHAVIOR

TIME II - PERCENT

Level of Discussion	Complainants	Non-Complainants
Have an opinion	56 %	32 %
Generally discuss	50	32
Discuss with family	89	68
Hear discussed	78	58
	N = 360	N = 659

Tables 4.6 and 4.7 compare complainants and non-complainants in terms of how they like their neighborhood, the things about their neighborhood which they feel are important, and the nature of the changes in their neighborhood which have taken place since they have lived there. The data show that there is essentially no difference between these groups. Certainly the data refute the idea that the complainants are dissatisfied with their neighborhood and complain because of this dissatisfaction.

Table 4.6

COMPARISON OF COMPLAINANTS AND NON-COMPLAINANTS IN TERMS OF THEIR RATING OF ITEMS OF IMPORTANCE TO THEIR NEIGHBORHOOD
(In Percent)

	Complainants						Non-Complainants					
	1st	2nd	3rd	4th	5th+	N.R.	1st	2nd	3rd	4th	5th+	N.R.
Nice Homes and Yards	30%	14%	14%	9%	15%	18%	29%	13%	11%	9%	22%	16%
Convenience of Location	13	16	10	8	25	28	17	17	11	9	23	24
Quality of Community Facilities	8	11	9	8	32	32	10	15	12	8	27	28
Safe Place to Live	20	15	8	10	23	24	15	13	13	11	29	20
Economic Advantages	4	7	5	5	37	41	3	5	6	8	42	36
Convenience of Transportation	2	7	6	6	39	39	3	4	9	7	42	34
Zoning	3	4	5	4	41	43	2	2	3	5	44	45
Neighbors	6	9	13	9	31	31	10	12	12	9	35	22
Quiet Area	4	8	10	9	37	32	4	8	10	9	39	31
Preference for House	6	5	6	5	35	43	6	3	5	4	43	40
Little Traffic	2	2	5	4	44	44	2	3	3	5	49	39

QUESTION: Which of the following items do you consider most important, second most important, etc.?

Table 4.7

COMPLAINANTS AND NON-COMPLAINANTS RATINGS
OF THE CHANGES IN THEIR NEIGHBORHOOD
(In Percent)

	Complainants				Non-Complainants			
	Better	Same	Worse	N.R.	Better	Same	Worse	N.R.
Homes and Yards	22%	65%	11%	2%	24%	60%	15%	1%
Convenience of Location	26	71	2	2	24	69	4	2
Quality of Community Facilities	27	64	6	3	24	66	8	2
Safe Place to Live	13	74	10	4	15	75	7	3
Economic Advantages	3	39	56	2	3	39	55	3
Convenience of Transportation	9	75	12	4	15	76	6	3
Zoning	3	83	9	4	4	83	7	6
Neighbors	8	79	11	2	11	75	11	2
Quiet Area	2	58	37	2	7	53	37	2
Preference for House	11	80	7	3	14	73	9	4
Traffic	5	58	35	2	7	53	38	2
	N = 360				N = 659			

QUESTION: Consider each of the listed characteristics and tell me if it has undergone a major change, either for the better or for worse since you have lived here, and what the change was.

CHAPTER V

THE MASS MEDIA AND THE SONIC BOOM ISSUE

This section of the study is concerned with the ways the mass media handled stories of the sonic boom and the SST and the manner in which these stories affected the reactions among publics toward environmental noise and sonic boom. A special type of content analysis called "theme analysis," particularly suited for such a study, was used.

Theme analysis of editorial and news articles dealing with the sonic boom classifies content according to the recurrent and significant ideas or propositions that can be found by experienced analysts who study the material over an extended period of time. Such classifications or "themes" may be analyzed in terms of the context in which they occur, the slant for or against supersonic aircraft which they represent, and the community from which they originated.

Although it was originally planned to restrict the analyses to coverage of the sonic boom, it was found to be an almost impossible task to separate the topic of the sonic boom from supersonic aircraft. The two terms are often used synonymously in the coverage. Therefore, it was decided that to treat the sonic boom coverage adequately in this study, it should be studied in the framework in which it so often appears, i.e., supersonic aircraft.[1]

[1]The term "supersonic aircraft" refers to the SST and the military supersonic transports involved in testing, such as the SR-71. It does not include coverage of military supersonic transports which are mentioned out of the context of testing and boom. If Concorde were mentioned in its context of boom testing or problems, it was also included in the material analyzed.

The coding scheme allowed for from one to fourteen different themes to be recorded from a single article. For the majority of the articles, this was more than an adequate allowance. However, for some of the longer feature or magazine articles, all of the themes appearing in the article could not be included. In such cases, the most representative themes were chosen, using the criteria of order of appearance and amount of text devoted to the particular theme. Themes buried within the article would not receive the same priority as themes appearing in the first part of the article. Likewise, a sentence merely mentioning a theme would not receive the same priority as a paragraph discussing a particular theme.

The coverage by the media will be described from newspaper data collected in five test cities (Atlanta, Chicago, Dallas/Fort Worth, Denver and Los Angeles) and from twelve national magazines and newspapers. The publication period covered for the study was June 1, 1967 to December 1, 1967.[2]

The analysis to follow is based on a reduction of 2,030 coded themes to 21 categories. The 21 categories were further reduced to four categories: themes favorable to the SST; themes unfavorable to the SST; themes favorable toward the sonic boom; themes unfavorable toward the sonic boom.

The item context category defines the area of interest or the overall topic of the articles in which there was coverage of the sonic boom or the SST.

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[2]With the exception of data from Los Angeles which includes articles from as late as January, 1968.

Table 5.1 ranks the categories and gives the number of themes appearing within each context and the percentage that this number represents from the total coded 2,030 themes.

Table 5.1

INCIDENCE OF THEMES BY ITEM CONTEXT

Item Context Category	Theme Number	Percent
Trouble over Aircraft Noise and Sonic Booms (damage, complaints, protest action)	413	20
Study of, report of, conjecture of sonic boom, effects	279	14
Political and economic factors in SST development	249	12
Air transportation growth, development	159	8
Announcement of, report of, theory of testing	151	7
Report of SST, Concorde, TU-144 development (orders for, testing of)	116	6
Sonic boom	89	4
Economic factors in SST development	79	4
Scientific-technological phenomenon or developments in aircraft world	79	4
Noise, safety regulations	60	3
SST program	59	3
Progress, science-technology in general	51	3
Legal matters, new laws, litigation over SST/Boom	49	2

Table 5.1 - Continued

Item Context Category	Theme Number	Percent
Aviation industry, other "private industries"	45	2
Military factors in SST development	39	2
About SST assets/defects as a plane	25	1
Conservation, related social problems	21	1
Combination of trouble over aircraft noise and economic factors	21	1
Non-aircraft related	9	1
Political factors in SST development	6	1
Government budget, fiscal affairs	2	1

It is observed that the two categories of highest theme incidence were about the sonic boom and its noise effects on the community. The main concern was obviously the adverse human effects of the boom, followed closely by the third ranked category dealing with the main items of controversy in the development of the SST--the political implications and economic predictions.

The distribution of positive, neutral and negative direction of coverage of the SST and sonic boom was considered for all of the articles included in the study. The total number of articles considered was 705, drawn from 21 selected publications such as national magazines and suburban and metropolitan newspapers published both in the SR-71 cities and elsewhere, depending on where the stories originated.

The difference between the direction of coverage in the SR-71 cities and elsewhere is revealing. The overall negative direction was higher among the SR-71 cities, with the exception of Los Angeles. The overall positive direction was somewhat the same for the total sample as for the SR-71 cities (30 percent) due to the unusually high percentage of positive articles in Los Angeles (40 percent). Among the SR-71 cities, Chicago had 74 percent overall negative articles, the highest percentage of negative articles in terms of direction. Denver was second among the SR-71 cities for negative direction. Atlanta and Dallas may be grouped together with slightly more than half of the articles being of negative direction. Los Angeles scored 44 percent negative articles, which is a lower percentage than the national sample. In summary, press coverage in the SR-71 cities was less neutral and more negative than was the coverage originating from cities not overflown by the SR-71. Tables 5.2 and 5.3 illustrate these findings:

Table 5.2

ARTICLE DIRECTION FOR SR-71 AND OTHER CITIES

(In Percent)

DIRECTION	SR-71 CITIES		OTHER CITIES	
	N	Percent	N	Percent
Positive	78	30	132	30
Neutral	44	15	91	21
Negative	142	55	218	49
Totals	264	100	441	100

Table 5.3

ARTICLE DIRECTION AMONG SR-71 CITIES
(In Percent)

CITIES	POSITIVE		NEUTRAL		NEGATIVE	
	N	Percent	N	Percent	N	Percent
Atlanta	4	27	3	20	8	53
Chicago	8	23	1	3	26	74
Dallas	11	24	10	22	24	54
Denver	7	15	11	23	30	62
Los Angeles	48	40	19	16	54	44

The symbol used in the headline and the favorable or unfavorable direction associated with it is important for the primary impression that it evokes. If the sonic boom "makes the headlines" in a negative framework, the association between the two is likely to be lasting, even if within the article there are positive comments. It was found that 43 percent of all of the articles had unfavorable headlines. The favorable and neutral categories were evenly divided with 28 percent of the articles falling within each of the two classifications. The symbols most frequently used were sonic boom and SST. Twenty-seven percent of the headline symbols were sonic boom and 23 percent were SST. The SR-71 and/or other military supersonic aircraft represented only six percent of the headline symbols. Airport and airplane noise appeared in four percent of the articles relevant to the study, and environmental noise composed only one percent of the headlines.

Each SR-71 city was analyzed also for its editorial coverage and direction. The results of this analysis showed the test cities to be highly disparate. Atlanta had an almost even distribution of editorial and news articles. Of the editorial articles, the sonic boom was only slightly emphasized over the SST. The sonic boom was represented favorably in 50 percent of the editorial themes, and unfavorably in 40 percent. The same slant in coverage was present in the news articles, with 53 percent of the themes on sonic boom being favorable and 38 percent unfavorable. The coverage of the SST in the editorial articles was more negative than positive, 55 percent to 44 percent. In the news articles, the favorable and unfavorable themes balanced exactly, with 45 percent favorable and 45 percent unfavorable toward the SST.

Chicago had an unusually high percentage of editorial articles as compared to the other test cities. Sixty-six percent of the articles examined in the study were editorial in character. Of the editorial articles in Chicago, the sonic boom was treated as highly unfavorable (84 percent), and the SST was treated as mildly unfavorable (54 percent). Of the news articles, 21 percent were about the SST, and 78 percent were about the sonic boom. The news themes were 68 percent favorable to the SST. For news coverage of the sonic boom, 56 percent were unfavorable and 38 percent favorable.

The distribution of editorial articles and news articles in Dallas also was uneven. Seventy-six percent of all of the themes in Dallas were presented in news articles. This news coverage emphasized the SST. The editorial coverage was ambivalent. The SST was treated favorably and unfavorably in a balanced manner. The sonic boom received 46 percent negative coverage and only 26 percent positive editorial comment.

The articles in Los Angeles were divided similarly to those in Dallas, with 78 percent of the themes coming from news articles and 21 percent coming from editorial articles. The news coverage in this city was also similar to Dallas. The sonic boom was treated negatively by 62 percent of the themes, and the SST was treated positively by 58 percent of the themes. The editorial coverage of the SST was also similar, with 50 percent receiving favorable treatment, and 50 percent negative. However, the coverage of the sonic boom was more negative in nature. This might be explained by the difference in exposure to the sonic boom in the two cities. Los Angeles was continually exposed to the sonic boom, whereas Dallas had been subjected to only a limited exposure. The similarities between the two cities might possibly be explained by the cities' interest in the aircraft industry. Both economies profit by the presence of aircraft industries.

The editorial and news coverage in Denver was fairly balanced. Sixty-two percent of the themes in the editorial category were about the sonic boom. Of these themes, 88 percent were unfavorable. The SST, as distinguished from the sonic boom, was treated in a balanced editorial manner. The news category, however, treated the SST unfavorably. Also, the sonic boom received more favorable coverage than unfavorable, with 47 percent of the themes being favorable. This characteristic in the news coverage probably is due to the large number of military announcements appearing in the Denver media.

The distribution of news and editorial coverage in the five cities is shown in Table 5.4.

Table 5.4

EDITORIAL AND NEWS COVERAGE BY SST+, SST-, BOOM+, BOOM-, BY CITY

Distribution of Coverage

(In percent)

CITY	SST			Boom		
	Percent of Total	Positive	Negative	Percent of Total	Positive	Negative
ATLANTA (N=43)						
Editorial (N=19)	47	44	55	52	50	40
News (N=24)	45	45	45	54	53	38
CHICAGO (N=219)						
Editorial (N=146)	41	42	54	58	9	84
News (N=73)	21	68	31	78	38	56
DALLAS (N=213)						
Editorial (N=50)	48	50	50	52	26	46
News (N=163)	57	59	37	42	27	67
DENVER (N=182)						
Editorial (N=85)	37	50	50	62	11	88
News (N=97)	21	47	52	78	47	44
LOS ANGELES (N=487)						
Editorial (N=105)	49	50	50	50	24	73
News (N=382)	51	58	36	48	32	62

Just as we have classified interviewees in this study by their levels of dissatisfaction with environmental noise, annoyance with the sonic boom, or complaint behavior, we can also classify them by the press environment in which they live. This classification is achieved by locating individuals in their own cities, for which the percent of overall negative press coverage of the sonic boom or SST is available, and by looking for aggregate descriptors in each city for complainants and non-complainants.

The underlying strategy in such comparisons is to determine the effect of the press environment on the adjective index score while examining between-group differences in the adjective score of complainants and non-complainants.

In Figure 5.1, there are two basic axes of comparison. Along the abscissa are the rankings of the SR-71 cities according to their percentage of negative press treatment of the sonic boom and SST issues, with Los Angeles residents exposed to the least negative stories, in proportion to the number of articles published concerning the boom or SST, and with Denver residents exposed to the highest proportion of negative press content. Mean adjective index scores for complainants and non-complainants are plotted along the ordinate.

As can be seen, there is a slight effect of press treatment on score levels. Scores for complainants and non-complainants rises in the city with the most negative press treatment, i.e., Denver.[3] No direction of association is imputed; it is not known

[3]Atlanta was eliminated from Figure 5.1 since the size of the complainant sample consisted of only three persons.

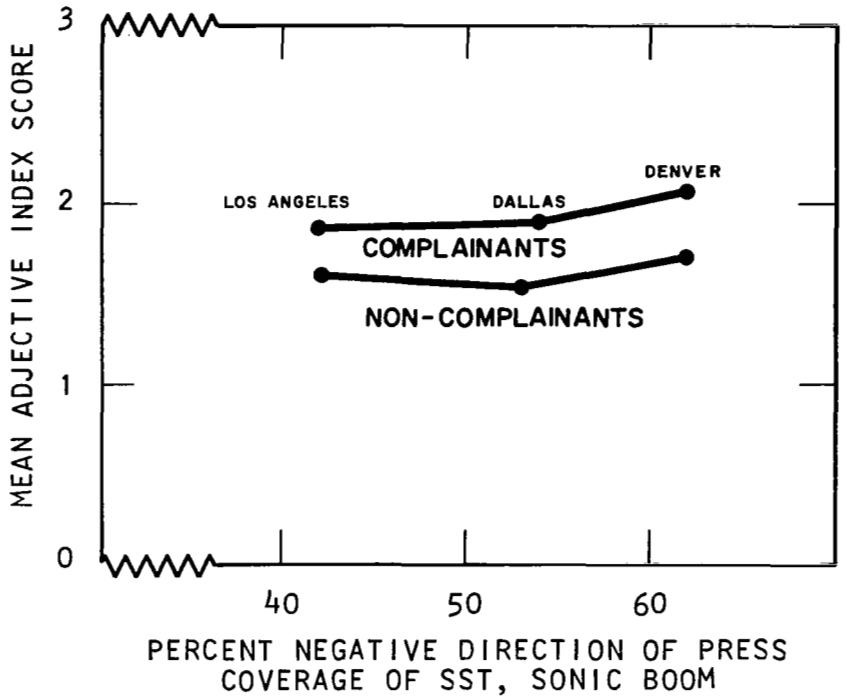

FIG. 5.1 ADJECTIVE INDEX SCORE BY PRESS DIRECTION AND COMPLAINT BEHAVIOR - TIME II

if the press in Denver influences score levels by negative editorials and news, or simply reflects the editor's estimate of popular opinion that already exists in the community based on letters to the editor or on personal acquaintanceship with business and community leaders.

More can be said about the differences between the mean score levels for complainants and non-complainants, with complainants maintaining a higher score level in all cities. As shown earlier, the high score level of complainants is accounted for primarily by the belief that homes are damaged by sonic booms.

The conclusion that can be made from these observations is that the attitudes as expressed by positive or negative adjectives is a product of individual characteristics and beliefs rather than of negative press treatment of the sonic boom and SST issues, although there is some evidence that extensive negative press coverage exerts influence of its own.

CHAPTER VI

CAUSAL MODELS

Part of the sampling design resulted in the interviewing of a certain small (N = 456[1]) group twice, once during Time I prior to the SR-71 flights and again during Time II some four to six months after the SR-71 flights had stopped. This group, which contained no complainants, was used to explore various causal models. A final tentative model was developed to show the likely direction of causation and the sequence of the variables. Data for this analysis are limited to Time II data (Form C) since at Time I (Form B) most of the respondents did not report the boom as the most annoying sound in the neighborhood. This model should be considered as an hypothesis rather than as a final statement. It is hoped that it may be used by others to guide future research.

The analysis begins by examining intercorrelations between all variables. The largest correlations are noted and are assumed to indicate causal links. The direction of causation is tested or evaluated by means of partial correlations, explained below.

Some of the assumptions of causal analysis are as follows. (A three variable network is used as an example.)

1) Y is assumed to cause neither X nor Z.
2) None of the variables can be both a cause and an effect of any other variable.
3) All other variables influencing X (outside of the network under examination) are uncorrelated with the variables Y and Z.

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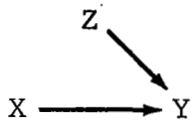
[1] 214 in Los Angeles, 107 in Dallas, 76 in Denver and 59 in Atlanta.

4) Two way causation is ruled out. Thus, X and Y cannot cause each other simultaneously.

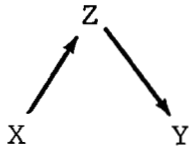
With these assumptions in mind, the following logical causal relationships can exist between X, Y and Z:

a)



Z is an "outside" disturbing influence which produces random variations in Y with respect to variations in X. Therefore, by "controlling" for Z the magnitude of the X-Y relationship is increased.

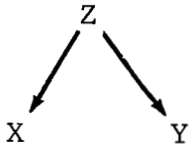
b)



X causes Z which causes Y. By holding Z constant the relationship between X and Y disappears since X cannot vary independently of Z. If Z can be shown plausibly to exist between X and Y in time, a causal chain has been identified.

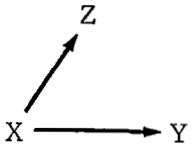
OR

c)



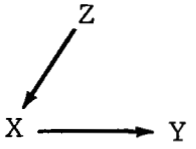
Relationship between X and Y is "spurious" (false) since Z causes variation in both X and Y. By controlling for Z, correlation between X and Y approaches zero.

d)



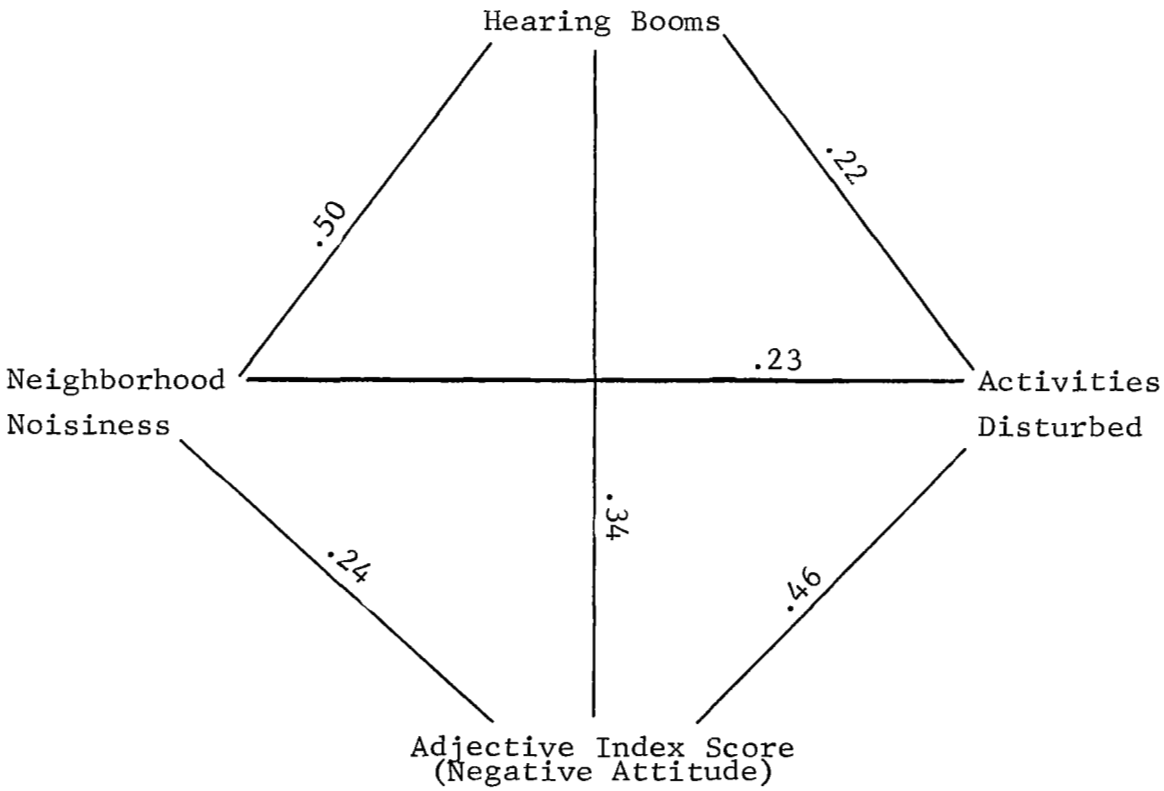
These models are similar in that the X and Y relationship is direct, whereas that between Y and Z is indirect. In both models, the correlation between Y and Z, controlling for X, would vanish.

e)



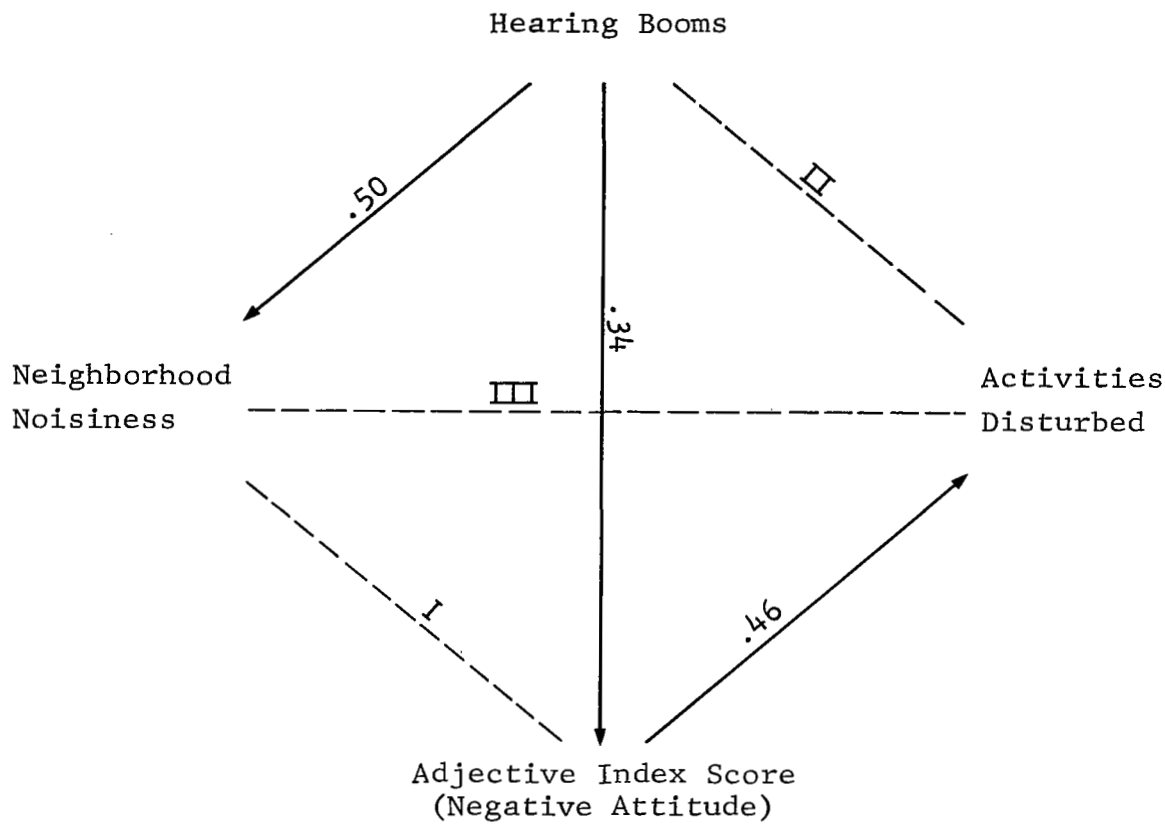
None of these models proves that the connection between two variables is necessary. By ascertaining the degree to which they vary together, and by making inferences about the logical sequence involved, it is possible to make an intellectual leap to a causal model. The model emerges by progressively eliminating the models that do not hold.

The first step in the process of elimination is to examine the magnitude of the correlations between each pair of variables shown in Figure 6.1. Three reasonably possible relations appear to exist: 1) between hearing booms and neighborhood noisiness (.50), 2) between hearing booms and the adjective index score (.34), and 3) between the adjective index score and activities disturbed (.46). Figure 6.2 shows that the first causal model is composed of the interrelations of these three variables. The solid lines show the causal links and the dotted lines show the possibly spurious links.



INTERCORRELATIONS AMONG MAJOR VARIABLES

FIG. 6.1



MODEL I

FIG. 6.2

Table 6.1 presents evidence suggesting that Model I is correct. For each of the possibly spurious relations (designated I, II, and III) the partial correlation resulting from controlling on other variables is much smaller than the original zero-order correlation. If the partial correlation were equal to or greater than the original zero-order correlation, the relation could not be called spurious.

Table 6.1

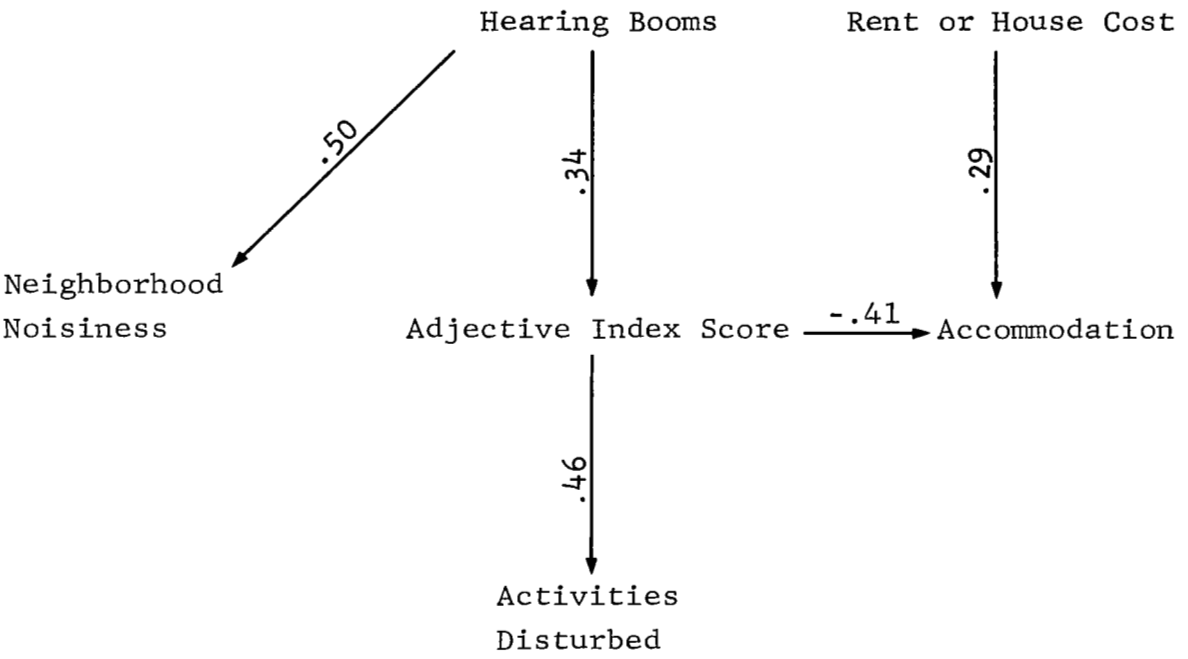
DISTRIBUTION OF CORRELATIONS IN MODEL I

	Correlated Variables	Controls	Partial Correlation	Zero Order Correlation
I.	Noisiness and Adjective Index Score	Hearing.....	.09.....	.24
		Hearing and Activities.....	.04.....	.24
II.	Hearing and Activities	Adjective Index Score.....	.07.....	.22
		Adjective Index Score and Noisiness.....	.02.....	.22
III.	Noisiness and Activities	Hearing and Adjective Index Score.....	.11.....	.23

For example, in Figure 6.2 let hearing booms be Z, neighborhood noisiness be X, and the adjective index score be Y. The situation is identical to logical model "C," explained earlier. This model shows that the correlation between X and Y (.24) is actually the result of the correlation between Z and X (.50), and, Z and Y (.34), and should be only .09. Notice that this actual correlation can be reduced further (to .04) if the relation between Y and the fourth variable in the system (activities) is controlled. This is just more confirmation.

The analysis proceeds by searching for other relevant variables, introducing them into the causal network, and testing their

effects. After an exhaustive search two more variables (rent/house cost and accommodation)[2] were added to the model. Figure 6.3 shows how rent/house cost and accommodation are connected to the network. The addition of these variables constitutes Model II.



CAUSAL MODEL II

FIG. 6.3

The information for evaluating Model II is found in Table 6.2. This evaluation is rather complex but essentially consists of

[2]The "accommodation" variable is based on responses to questions about whether or not the respondent would object to twice as many, or five times as many booms as he presently (at time of interviewing) receives. "Rent/house cost" is the amount of rent payment, if renting, or the equivalent payment, if owning.

Table 6.2

DISTRIBUTION OF CORRELATIONS IN THE CAUSAL MODEL

Correlated Variables	Controls	Partial Correlation	Zero Order Correlation
Noisiness and Adjective Index Score	Hearing	.09	.24
	Hearing and Activities	.04	.24
	Hearing, Activities and Accommodation	.03	.24
	Hearing, Activities, Accommodation and Rent/House Cost	.02	.24
Hearing and Activities	Adjective Index Score	.07	.22
	Adjective Index Score and Accommodation	.05	.22
	Adjective Index Score and Noisiness	.02	.22
	Adjective Index Score, Accommodation and Noisiness	-.00	.22
	Adjective Index Score, Accommodation, Noisiness and Rent/House Cost	-.02	.22
Noisiness and Activities	Hearing and Adjective Index Score	.11	.23
	Hearing, Adjective Index Score and Accommodation	.11	.23
	Hearing, Adjective Index Score, Accommodation and Rent/House Cost	.12	.23
Hearing and Accommodation	Adjective Index Score	-.12	-.24
	Adjective Index Score and Noisiness	-.09	-.24
	Adjective Index Score, Noisiness and Activities	-.08	-.24
	Adjective Index Score, Noisiness, Activities and Rent/House Cost	-.06	-.24

Table 6.2 Continued

DISTRIBUTION OF CORRELATIONS IN THE CAUSAL MODEL

Correlated Variables	Controls	Partial Correlation	Zero Order Correlation
Noisiness and Accommodation	Hearing and Adjective Index Score	-.05	-.18
	Hearing, Adjective Index Score and Activities	-.03	-.18
	Hearing, Adjective Index Score Activities and Rent/House Cost	-.05	-.18
Activities and Accommodation	Adjective Index Score	-.20	-.35
	Adjective Index Score and Hearing	-.19	-.35
	Adjective Index Score Hearing and Noisiness	-.19	-.35
	Adjective Index Score, Hearing, Noisiness and Rent/House Cost	-.15	-.35
Hearing and Rent/House Cost	Noisiness, Adjective Index Score and Addommodation	.10	.14
	Noisiness, Adjective Index Score, Accommodation and Activities	.10	.14
Noisiness and Rent/House Cost	Hearing, Adjective Index Score and Accommodation	-.09	.01
	Hearing, Adjective Index Score, Accommodation and Activities	-.10	.01

Table 6.2 Continued

DISTRIBUTION OF CORRELATIONS IN THE CAUSAL MODEL

Correlated Variables	Controls	Partial Correlation	Zero Order Correlation
Activities and Rent/House Cost	Adjective Index Score and Accommodation....	.14.....	.23
	Adjective Index Score, Accommodation and Hearing.....	.14.....	.23
	Adjective Index Score, Accommodation, Hearing and Noisiness.....	.15.....	.23

inspecting the model, hypothesizing what should happen, and then testing this by means of partial correlation. For example, it was shown earlier that the relation between neighborhood noisiness and the Adjective Index Score is mainly due to the relation of each of those variables to hearing booms. Since more variables have been added to the system, we could expect that by controlling for these also, the relation between noisiness and the Adjective Index Score would be reduced further. This is exactly what happens in row one of Table 6.2.

The rest of Table 6.2 is a complete check of all possible relations among the variables in Model II. The procedure was to relate variables at the ends of chains, to control successively for all other variables in the system, and to note what happens to the correlation coefficient (partial). It was hypothesized that the partial correlation coefficient will be considerably less than the zero-order coefficient. It was further hypothesized that by adding successive controls the partial correlation coefficient will be reduced in a step-wise manner.

Table 6.2 shows that at no time does any partial correlation coefficient match the zero-order coefficient. However, not all of the partial coefficients regress in a step-wise manner.

In some instances, the addition of the rent/house cost variable to the chain of controls raises the partial correlation slightly; in others it lowers the value. What appears to be happening is that the variable rent/house cost has ubiquitous effects. There is indeed an effect on the Adjective Index Score--activities and Adjective Index Score--accommodation relations. But rent/house cost is an indicator of socioeconomic status, which is basic to the understanding of behavior and attitudes in this study.

Relations which involve noisiness appear particularly affected. This influence can be understood since the amount of monthly rent paid or the house cost equivalent is probably directly related to type of neighborhoods. Areas which require large amounts of rent or house payment typically have better built structures and are located in preferred, quieter, parts of the city.

In spite of these differences Table 6.2 tends to confirm our expectations. There are no outstanding reversals; at the most, the introduction of more controls simply produces no effect.

Implications of the Model

Some inferences from this final, tentative model (II) are as follows:

1) The number of sounds in the neighborhood reported heard depends upon the incidence of hearing booms.
2) The disturbance of activities by hearing booms is contingent upon the development of a negative attitude toward the boom.
3) The development of a negative attitude toward the boom is associated with an attitude of non-accommodation to the boom.
4) Accommodation to the boom, however, is also related directly to a socioeconomic indicator (rent/house cost).

An important feature of this model is the central role of the Adjective Index Score. This variable, which measures a subjective attitudinal state, is an intervening variable between hearing booms and the number of activities disturbed by the boom, and between hearing booms and accommodation to the boom.

These data suggest that a simple stimulus-response model is inadequate with respect to human response to the boom. All evidence points to the development of a negative attitude toward the boom which affects further attitudes (accommodation) and behavior (disturbance of activities). This attitudinal state is important since previous research has not indicated its existence, and since the reaction following disturbance of activities should be annoyance. According to this model, activities are not disturbed by the boom unless a negative attitude has been developed. Thus, annoyance would depend on both negative attitudes and disturbed activities--and on accommodation in a peripheral manner.

The fact that neighborhood noisiness, which is the number of sounds heard (out of eleven) in the respondent's neighborhood, is dependent solely on hearing booms suggests that this may be a characteristic of the individual. Apparently, hearing the boom sensitizes individuals to other sounds in the neighborhood.

Future research should at least consider some of the implications of this causal model. As tentative as it is, it still departs widely from previous conceptualizations of the problem. Strong emphasis should be placed upon the attitudes developed by the individual.

CHAPTER VII

COMPARISON WITH OTHER BOOM RESEARCH

The bibliography of boom studies in the Appendix lists some 13 references. These have been studied for initial guidance and for final comparisons. Most of these studies relate to laboratory or laboratory-like experiments. In many cases "forced choice" data were obtained. The results of these studies have no corresponding counterparts in the TRACOR study.

There are three studies, however, where limited comparisons can be made. Nixon and Borsky[1] have reported the results of the St. Louis study. During the latter part of 1961 and the early part of 1962 supersonic flights associated with the SAC training program occurred using the B-58 bomber airplane to generate about 40 sonic booms over the St. Louis area for a four-month period. In addition there were 13 other flights made over the area at various times of day and night during a six-month period beginning 6 November 1962. Four special flights on 3 and 6 January 1963 produced booms at higher overpressures than those produced by earlier flights. Approximately 1,000 residents were interviewed twice, once in the latter part of 1962 and then following the special flights in early 1963. Sampling for the St. Louis study and the TRACOR study are generally similar.

Nixon and Borsky report 35 percent of the sample as annoyed. There is no description of how annoyance was defined and computed and because of this it is difficult to make comparisons. The

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[1] C. W. Nixon and P. N. Borsky, "Effects of Sonic Boom on People: St. Louis, Missouri, 1961-1962," Journal of the Acoustical Society of America 39:S51 (May 1966).

TRACOR study indicates that 42 percent of the respondents rated annoyance either 3 or 4 on a 0-4 scale, whereas 45 percent of the respondents rated their annoyance as either 0 or 1. The two studies appear comparable. Nixon also reports that 74 percent reported they were startled, whereas the TRACOR study reports that 65 percent of its group used the adjective "startle" as a major descriptor of the boom.

Nixon and Borsky in effect postulated the pattern of response as

STIMULUS → INTERFERENCE → ANNOYANCE → REACTION → COMPLAINT.

The TRACOR causal model shows an addition to the above pattern in that "negative attitude" occurs between stimulus and interference. Since the St. Louis study did not measure attitude, there is no real discrepancy and TRACOR's model does not contradict the Nixon-Borsky response pattern.

One final comparison is that the St. Louis study reported only a fraction of one percent of the sample registered complaints. The total number of complaints associated with the B-58 flights, however, was approximately 2,500 and the population exposed was in excess of 1,000,000. This is in reasonable agreement with the TRACOR study which reports an average of 1.6 complaints per 10,000 exposed especially in light of the more concentrated exposure of the St. Louis area.

The Edwards AFB study reported by Kryter was predominately a psychological study as contrasted with the TRACOR sociometric study; however, one finding reported by Kryter can be compared with the TRACOR work. He reported that 26 percent rated the boom environment at Edwards AFB as "just acceptable" to "unacceptable." Although the measure of acceptability was not used in the TRACOR

study, it could be postulated that respondents who rated the boom as 4 on a 0-4 annoyance scale might well feel the boom was "unacceptable" and respondents who rated the boom as 3 might consider the boom as "just acceptable." The TRACOR results showed 24 percent rated annoyance as 4, and 18 percent rated annoyance as 3. The uncertainty in making the comparison lies in extrapolating from annoyance to acceptability. Furthermore, it must be remembered that the Edwards AFB residents must, in general, have a positive attitude toward aircraft operations. This would tend to lower the percentage who felt the boom environment was acceptable by comparison to respondents in a city such as Los Angeles.

The Oklahoma City study on community reactions to sonic booms by the National Opinion Research Center was reported by Borsky[2] in 1965. There were significant differences between the NORC study and the TRACOR study. The NORC study was well publicized and was to last for a limited time. It was widely understood that this was an experiment to determine the effects of physical damage and the impact on the community due to sonic booms. The eight flights per day were on a precise schedule. Oklahoma City residents were generally favorably disposed toward the aircraft industry and especially toward the FAA. Newspaper, radio and TV coverage was widespread and continued during the approximate six-month test period.

The TRACOR study had none of the above characteristics, in fact the conditions were in many respects the direct opposite of the NORC study. It is interesting, however, to compare results where comparisons are possible. It must be recognized that the

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[2] "Community Reactions to Sonic Booms in the Oklahoma City Area," Paul N. Borsky, National Opinion Research Center, October 1965, for the U. S. Air Force, Wright-Patterson Air Force Base, Ohio.

questionnaires used in the two studies were different, and these differences make comparisons on an absolute basis somewhat questionable. Nevertheless, similar or divergent trends should be valid comparisons.

Fundamentally there are four major areas of comparison, namely 1) disturbances of activities, 2) annoyance with the sonic boom, 3) willingness to accept the boom, and 4) the differences between complainants and non-complainants. Table 7.1 compares the first three areas. It is interesting that agreement is quite reasonable in terms of reporting disturbances with activities and the levels of annoyance. The major discrepancy is in the area of willingness to accept the boom. The Borsky study was based upon data from respondents who had experienced eight booms per day for many weeks. This was not so for the TRACOR study; in fact it was almost the opposite, i.e., the data were from respondents who had never experienced such steady exposures and were simply speculating whether they would object to (not tolerate) sonic booms.

Turning now to the comparisons of complainants and non-complainants. Borsky reports that:

1) Complainers were not chronic gripers.
2) Complainers liked their areas as well as the non-complainers.
3) Complainers were equally sensitive to noise but reported 3-4 times as much interference with activities as did non-complainants.
4) Complainers were four times as annoyed as non-complainers.
5) Complainers were above average in education and income.

By comparison on a point-by-point basis with the above, the TRACOR study reports that:

Table 7.1

COMPARISON OF NORC OKLAHOMA CITY STUDY

AND TRACOR STUDY

Percentage Reporting Disturbances

	Borsky-Urban	TRACOR
Sleep	14 %	19 %
Rest	13	26
Conversation	10	16
Radio-TV	6	22

Percentage Reporting Annoyance With Sonic Boom

	Borsky-Urban	TRACOR
Little or none	54 %	56 %
More than a little	46	44

Borsky:	Ability to accept eight booms/day:	Couldn't	18 %
		Very likely	60
		Don't know	3
TRACOR:	Do you think you would object to more than five booms/day	Yes	75 %
		No	11
		Undecided	13

1) Complainants do not differ in general from non-complainants, except that complainants feel the booms have damaged their homes.
2) Complainants consider important the same things in their neighborhood as do non-complainants.
3) Complainants and non-complainants report alike in terms of hearing neighborhood noises; however, complainants report only twice as much interference with activities as non-complainants. Considering the very low booms per day (one per day or less) in the TRACOR study as contrasted with the regular eight booms per day in Oklahoma City, this difference (2 versus 4) is not surprising.
4) The TRACOR study did not measure, directly, the annoyance level of the complainants. However, since annoyance level is generally correlated with activities disturbed (twice as many re non-complainants) and since complainants felt their homes had been damaged in addition, it seems conservative to say that the complainants are certainly more than twice as annoyed as non-complainants.
5) More than one-half of the complainants were in the high category of education (college level) and more than three-fourths were in the high category of occupation. In terms of income, the distribution for complainants was 17 percent (low), 50 percent (median) and 33 percent (high) which correlates with Borsky's statement that complainants were above average in income.

Thus for the major items of comparison, there is generally good agreement between the Oklahoma City study and the TRACOR study. The two studies do not disagree except where the test condition differences would make such disagreement something to be expected.

APPENDIX

It is only natural that in survey work of this type a large amount of raw data is collected. It is not possible to know in advance which responses to what questions will be the most useful.

The foregoing report is a distillation of all of the data contained in this Appendix. The raw data, however, must be reported as substantive evidence supporting the report. In addition, the raw data may also prove useful in other research. Only the tables are presented except in the case of the news media study. A detailed verbal description is presented along with additional raw data.

For any specific table, the actual question or questions used may be found in Form B for all Time I studies and in Form C for all Time II studies. Data containing the answers to every question in the two questionnaires are not tabulated; however, computer printouts for the missing questions are available at TRACOR.

Finally, a detailed verbal description of the sampling plan is presented since this is a key factor in interpreting and understanding sociological survey work.

PROGRAM
IN
COMMUNITY STUDIES

attitudinal & opinion series

FORM B

Deck A (1-32)

Respondent Number: ___ (1-4)

City: ___ (5-6)

COMMUNITY ATTITUDES SURVEY

1967

Interviewer Number ___ (7-9)

Interviewer Name _____

Respondent's Address:
INCLUDE APT. OR OFFICE NUMBER AND FLOOR NUMBER AND LOCATION IN BUILDING.

_____

Telephone Number:

_ _ _ _ _ _ _ _ _ _

Respondent's Name:
ASK AT END OF INTERVIEW.

_____

Census Tract ___ (10-15)

Block Number ___ (16-19)

TIME RECORD:

Date
___ (20-21) (Month)
___ (22-23) (Day)

Began Interview: ___ (24-27)

Finished Interview: ___ (28-31)
(USE 24-HOUR CLOCK)

CODE 1 IF NAME IS MENTIONED, 0 IF NAME IS NOT MENTIONED. ___ (32)

NOTE TO INTERVIEWER: YOUR INSTRUCTIONS ARE IN CAPITAL LETTERS. DO NOT READ THESE INSTRUCTIONS TO RESPONDENT.

INTRODUCTION GUIDE:

1) INTRODUCE SELF.
2) INDICATE SUBJECT AND PURPOSE OF STUDY--FOR EXAMPLE, I am a research interviewer working on a study of community and neighborhood problems here in (CITY). My job is to help conduct a public opinion survey to find out about people's opinions of the neighborhoods in which they live. The results of this survey will be used to help plan for future community improvements. Any ideas you wish to give us will be kept confidential.
3) SHOW CREDENTIALS IF NECESSARY.
4) INDICATE THAT INTERVIEW WILL TAKE ABOUT HALF AN HOUR.
5) INTERVIEW MAN OF HOUSE IF POSSIBLE--IF NOT--INTERVIEW ANY ADULT (> 18) MEMBER OF HOUSEHOLD.

IF NECESSARY TO MAKE CALL-BACK, ASK FOR APPOINTMENT AND NOTE DATE AND TIME OF APPOINTMENT ON YOUR BLOCK ASSIGNMENT SHEET.

Don't Know=X
No Response=Y
Not Applicable=Z

DO NOT READ ALTERNATIVE RESPONSES TO R. UNLESS INDICATED.
CODE ANSWERS IN CODE BLANKS PROVIDED AT RIGHT.

1. What is this neighborhood called?

   1.....R. GIVES SPECIFIC NAME
   2.....R. GIVES GEOGRAPHIC DESIGNATION 33 ____

2. What would you say are the boundaries of (ABOVE NAMED NEIGHBORHOOD)--such as streets, geographic features, or other neighborhoods?

   1.....ONE BOUNDARY
   2.....TWO BOUNDARIES
   3.....THREE BOUNDARIES
   4.....FOUR OR MORE BOUNDARIES 34 ____

3. What would you say are the dimensions of (ABOVE NAMED NEIGHBORHOOD)? How many blocks long and how many blocks wide?

   IF ANSWER IS OVER 2 DIGIT NUMBER, CODE 99 IN APPROPRIATE BLANKS.

   BLOCKS LONG 35 ____ 36 ____
   BLOCKS WIDE 37 ____ 38 ____

   FOR QUESTIONS 4 AND 5, RECORD NUMBER OF YEARS AND MONTHS.

4. How long have you lived in (CITY)?

   YEARS 39 ____ 40 ____
   MONTHS 41 ____ 42 ____

5. How long have you lived in (NAMED NEIGHBORHOOD)?

   YEARS 43 ____ 44 ____
   MONTHS 45 ____ 46 ____

6. How many times have you moved within the last ten years:

   0 1 2 3 4 5 6 7 8 9 47 ____

Don't Know=X
No Response=Y
Not Applicable=Z

7a. Now at the present time, what are some of the things you like and don't like about living in this neighborhood--things that you feel are advantages and make this a good place to live, and disadvantages--things that you feel are unpleasant?

What are the advantages?

RECORD 1st 4 ITEMS R. MENTIONS. PROBE TO GET AT LEAST 4. WHEN EDITING, RECORD NUMBER FROM CARD 1 INTO COLUMN A.

A	B WRITE IN ADVANTAGES
5	9
6	10
7	11
8	12

5 ____
6 ____
7 ____
8 ____

9 ____
10 ____
11 ____
12 ____
OFFICE CODING

Now, what are the disadvantages?

RECORD 1st 4 ITEMS MENTIONED. PROBE TO GET 4 ITEMS. WHEN EDITING, RECORD NUMBER FROM CARD 1 INTO COLUMN A.

A	B WRITE IN DISADVANTAGES
13	17
14	18
15	19
16	20

13 ____
14 ____
15 ____
16 ____

17 ____
18 ____
19 ____
20 ____
OFFICE CODING

CARD 1

LIST OF NEIGHBORHOOD ATTRIBUTES

01. Economic advantages--inexpensive housing
02. Convenience of location
03. Good quality of community facilities--schools, shopping
04. Quiet area
05. Little traffic
06. Safe for children
07. Spacious yards; privacy
08. Good neighbors
09. Well-kept homes and yards; nice appearance
10. Safe to walk in neighborhood at night
11. Near schools
12. Near parks and playgrounds
13. Near public transportation
14. Near expressway or foot traffic routes
15. Preference for certain house--"I like my house"
16. Good zoning for residential area
17. Good local government

Don't Know=X
No Response=Y
Not Applicable=Z

INTRODUCE CARD 1. LET R. HOLD CARD 1.

Now here is a list of things that some people consider important in a residential area. Please look over the items on this card.

8a. Which of these items were factors which influenced your selection of (NAMED NEIGHBORHOOD) as a place to live when you moved here?

CODE FOR EACH ITEM MENTIONED OR NOT MENTIONED. CODE 1 IF MENTIONED; 0 IF NOT MENTIONED.

(1) 48 ____
(2) 49 ____
(3) 50 ____
(4) 51 ____
(5) 52 ____
(6) 53 ____
(7) 54 ____
(8) 55 ____
(9) 56 ____
(10) 57 ____
(11) 58 ____
(12) 59 ____
(13) 60 ____
(14) 61 ____
(15) 62 ____
(16) 63 ____
(17) 64 ____
BLANK 65 ____

Total number mentioned:

Total # 66 ____ 67 ____

8.b ASK RESPONDENT TO RANK 3 QUALITIES IN ORDER OF IMPORTANCE WITH MOST IMPORTANT RANKED 1st. CODE ITEM NUMBER FROM QUALITY LIST.

1st 68 ____ 69 ____

2nd 70 ____ 71 ____

3rd 72 ____ 73 ____

Don't Know=X
No Response=Y
Not Applicable=Z

9. Now, looking at Card 1 again, I'd like you to tell me how you would rate this neighborhood on each quality. Use this Opinion Thermometer for your rating scale.

HAND R. OPINION THERMOMETER.

On this scale "zero" is the worst or lowest possible rating you could give the neighborhood; and "four" is the best or highest rating. Use the quality or "how good" scale from side II.

READ EACH QUALITY FROM CARD 1 AND WRITE IN THE RATING FOR EACH.

(1)	0 1 2 3 4	5 ____
(2)	0 1 2 3 4	6 ____
(3)	0 1 2 3 4	7 ____
(4)	0 1 2 3 4	8 ____
(5)	0 1 2 3 4	9 ____
(6)	0 1 2 3 4	10 ____
(7)	0 1 2 3 4	11 ____
(8)	0 1 2 3 4	12 ____
(9)	0 1 2 3 4	13 ____
(10)	0 1 2 3 4	14 ____
(11)	0 1 2 3 4	15 ____
(12)	0 1 2 3 4	16 ____
(13)	0 1 2 3 4	17 ____
(14)	0 1 2 3 4	18 ____
(15)	0 1 2 3 4	19 ____
(16)	0 1 2 3 4	20 ____
(17)	0 1 2 3 4	21 ____
BLANK	0 1 2 3 4	22 ____

10. If you were to start looking tomorrow for another neighborhood to live in, which of these qualities would influence you most in your choice of neighborhood?

WRITE IN EITHER 1 (YES--WOULD INFLUENCE) OR 0 (NO--WOULD NOT INFLUENCE).

(1)	23 ____
(2)	24 ____
(3)	25 ____
(4)	26 ____
(5)	27 ____
(6)	28 ____
(7)	29 ____
(8)	30 ____
(9)	31 ____
(10)	32 ____
(11)	33 ____
(12)	34 ____
(13)	35 ____
(14)	36 ____
(15)	37 ____
(16)	38 ____
(17)	39 ____
BLANK	40 ____

Don't Know=X
No Response=Y
Not Applicable=Z

11a. Consider each of the qualities listed on Card 1. Tell me if it has undergone a major change (either for better or for worse) since you have lived here, and about how long ago it underwent the change.

QUALITY CODE*
1.....Better
2.....Worse
3...No Change

YEARS AGO CODE**
1..up to 2 weeks
2..2-4 weeks
3..1-2 months
4..2-6 months
5..6 months-1 yr.
6..1-2 years
7..2-4 years
8..4-6 years
9..6 years or more

	QUALITY*		YEARS AGO**		
(1)	5 ____	6 ____	7 ____
(2)	8 ____	9 ____	10 ____
(3)	11 ____	12 ____	13 ____
(4)	14 ____	15 ____	16 ____
(5)	17 ____	18 ____	19 ____
(6)	20 ____	21 ____	22 ____
(7)	23 ____	24 ____	25 ____
(8)	26 ____	27 ____	28 ____
(9)	29 ____	30 ____	31 ____
(10)	32 ____	33 ____	34 ____
(11)	35 ____	36 ____	37 ____
(12)	38 ____	39 ____	40 ____
(13)	41 ____	42 ____	43 ____
(14)	44 ____	45 ____	46 ____
(15)	47 ____	48 ____	49 ____
(16)	50 ____	51 ____	52 ____
(17)	53 ____	54 ____	55 ____
BLANK	56 ____	57 ____	58 ____

b. Would you say that the value of land in this neighborhood has gone up or down in the last 5 or 10 years?

ASK FOR EACH TYPE OF LAND USE BELOW:

1.....Up
2.....Down
3.....No Change

Residential.....59 ____
Commercial.....60 ____
Industrial.....61 ____

CARD 2

1. ECONOMIC DISADVANTAGES--EXPENSIVE HOUSING
2. POOR LOCATION
3. INADEQUATE COMMUNITY FACILITIES--POOR SCHOOLS, SHOPPING
4. NOISE
5. DANGEROUS TRAFFIC CONDITIONS
6. DANGEROUS FOR CHILDREN
7. OVERCROWDED, NOT ENOUGH PRIVACY
8. POOR NEIGHBORS
9. RUN-DOWN NEIGHBORHOOD
10. UNSAFE TO WALK NEIGHBORHOOD AT NIGHT
11. INCONVENIENT TO SCHOOLS
12. INCONVENIENT TO PARKS AND PLAYGROUNDS
13. INCONVENIENT TO PUBLIC TRANSPORTATION
14. INCONVENIENT TO EXPRESSWAY AND/OR FOOT PATHS
15. DISLIKE PARTICULAR HOUSE
16. ZONING PROBLEMS, MIXED RESIDENCE-BUSINESS
17. POOR LOCAL GOVERNMENT
18. SONIC BOOMS

Don't Know = X
No Response = Y
Not Applicable = Z

Deck D (62-67)

12. HAND R. CARD 2. Here is a list of annoying neighborhood characteristics. Now of all the things you don't like -- things you may feel are nuisances, irritations, disturbances, or annoying conditions, which one thing do you dislike the most? Select one from this card.

CODE THE NUMBER FROM CARD 2 DIRECTLY INTO BLANK 62_____ 63_____

13. Using the Opinion Thermometer, tell me how often you discuss any or all of the conditions listed on Card 2 that might be considered problems at home with your own family?
Use the frequency or "how often" scale from side I.

CODE: 0 1 2 3 4 X Y DIRECTLY INTO BLANK 64_____

14. Again, using the same scale, tell me how often you hear the items listed on Card 2 discussed when you visit with friends, relatives or neighbors.

CODE: 0 1 2 3 4 X Y DIRECTLY INTO BLANK 65_____

15. How often do you hear these conditions listed on Card 2 discussed when you are out in the city -- shopping or at lunch, for example?

CODE: 0 1 2 3 4 X Y DIRECTLY INTO BLANK 66_____

16. Who are the most active and influential persons in this neighborhood who could be turned to for help in improving neighborhood conditions?

WRITE THE NAMES AND POSITIONS IN TABLE BELOW:

	NAME	POSITION/OCCUPATION
1.		
2.		
3.		
4.		
5.		

CODE TOTAL NUMBER OF NAMES GIVEN. DO NOT CODE OVER 5.

67_____

Don't Know = X
No Response = Y
Not Applicable = Z

Deck D (68-72)

17. Who are the most active and influential persons in your city who could be turned to for help in improving conditions in this city?

WRITE THE NAMES AND POSITIONS IN TABLE BELOW:

NAME	POSITION/OCCUPATION
1.	
2.	
3.	
4.	
5.	

CODE THE TOTAL NUMBER OF NAMES GIVEN. DO NOT CODE OVER 5. 68____

18. About how many families in this neighborhood do you know well enough to call on and visit within their homes?

CODE NUMBER OF FAMILIES: 0 1 2 3 4 5 6 7 8 ≥9 X Y 69____

USE OPINION THERMOMETER FOR QUESTIONS 19-24

19. Using the Opinion Thermometer again to rate how often, please tell me how often relatives or in-laws drop in to visit you. Use the frequency or "how often" scale on side 1.

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 70____

20. How often do you drop in on relatives or in-laws?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 71____

21. How often do neighbors or friends living in the neighborhood, other than relatives, drop in to visit you?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 72____

Don't Know = X
No Response = Y
Not Applicable = Z

Deck E (5-30)

22. How often do you drop in on your neighbors or friends living in the neighborhood for a visit?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 73_____

23. How often do you get visits from friends who live outside this neighborhood?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 74_____

24. How often do you drop in on friends who live outside this neighborhood?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 75_____

25. How many hours per week are you out of this neighborhood?

CODE NUMBER OF HOURS: 0 1 2 3 4 5 6 7 8 $\geq$9 X Y 76_____

Don't Know = X
No Response = Y
Not Applicable = Z

Deck D (73-76)

26. Now I will read a list of sounds and sources of sounds. For each one, please tell me whether it is a sound you hear in this neighborhood; and if so, how much the sound annoys you, and how often you find it annoying. Use the Opinion Thermometer to rate your feeling of annoyance and to rate how often you feel annoyed.

FOR EACH ITEM IN THE FOLLOWING LIST, ASK:

Do you hear _____?

IF NOT HEARD, CODE Z IN BOTH BLANKS (How much & How often)

IF HEARD, ASK "How much the sound annoys you" and "How often the sound annoys you".
CODE 0 1 2 3 4 X Y IN THE APPROPRIATE BLANK.

(1) Automobiles and/or trucks ----How much? 5_____ How often? 6_____

(2) Aircraft operations---How much? 7_____ How often? 8_____

(3) Neighborhood Children ----------How much? 9_____ How often? 10_____

(4) Dogs, other pets------How much? 11_____ How often? 12_____

(5) People----------How much? 13_____ How often? 14_____

(6) Motorcycles or Hot rods --------How much? 15_____ How often? 16_____

(7) Trains----------How much? 17_____ How often? 18_____

(8) Sirens----------How much? 19_____ How often? 20_____

(9) Construction----------How much? 21_____ How often? 22_____

(10) Lawn mowers; garbage collection ----------How much? 23_____ How often? 24_____

(11) Sonic Booms----------How much? 25_____ How often? 26_____

(12) Other, Specify_____ How much? 27_____ How often? 28_____

(13) Other, Specify_____ How much? 29_____ How often? 30_____

Don't Know=X
No Response=Y
Not Applicable=Z

27. Everything considered, which one of these sounds have you found most annoying in this neighborhood? 31 ____

CODE NUMBER FROM QUESTION 26. (1 - 13) 32 ____

28. Now we need to know to what extent and how often you are disturbed by (MOST ANNOYING NOISE FROM QUESTION 27) noise in your daily activities here in your neighborhood. As I mention each activity, please tell me how much and how often you are bothered, using the Opinion Thermometer to select the appropriate rates.

(1) Relaxing or resting inside.....How much? 33 ____
How often? 34 ____

(2) Relaxing outside.....How much? 35 ____
How often? 36 ____

(3) Sleeping.....How much? 37 ____
How often? 38 ____

(4) Conversation.....How much? 39 ____
How often? 40 ____

(5) Telephone.....How much? 41 ____
How often? 42 ____

(6) Listening to records or tapes.....How much? 43 ____
How often? 44 ____

(7) TV or radio reception.....How much? 45 ____
How often? 46 ____

(8) Reading or concentration.....How much? 47 ____
How often? 48 ____

(9) Eating.....How much? 49 ____
How often? 50 ____

29. Does this noise disturb any other activities inside or outside the house; and if so what activities?

Activity _____ How much? 51 ____
How often? 52 ____

Activity _____ How much? 53 ____
How often? 54 ____

Don't Know=X
No Response=Y
Not Applicable=Z

30a. What times of the day do you particularly notice this noise?

CODE 1 IF ANNOYED AND 0 IF NOT ANNOYED IN APPROPRIATE TIME SPACES.

Morning	(6-9)	5	____
	(9-12)	6	____
Afternoon	(12-3)	7	____
	(3-6)	8	____
Evening	(6-9)	9	____
	(9-12)	10	____
Night	(12-3)	11	____
	(3-6)	12	____

b. What days of the week do you particularly notice this noise?

CODE 1 FOR YES; 0 FOR NO IN APPROPRIATE DAYS OF THE WEEK SPACES.

Monday	13	____
Tuesday	14	____
Wednesday	15	____
Thursday	16	____
Friday	17	____
Saturday	18	____
Sunday	19	____

31. In your own opinion, how much are your neighbors bothered by noise (R. MENTIONED IN QUESTION 27)? Use Opinion Thermometer.

CODE RESPONSE FROM O. T.: 0 1 2 3 4 X Y 20 ____

32. Using the Opinion Thermometer, tell how often you discuss this noise situation at home with your family.

CODE FREQUENCY RATES: 0 1 2 3 4 X Y 21 ____

33. Use the Opinion Thermometer to measure how often you hear this noise situation discussed when you visit with friends, relatives or neighbors.

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 22 ____

34. How often do you hear this noise situation discussed when you are out in the city--shopping or at lunch, for example?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 23 ____

Don't Know=X
No Response=Y
Not Applicable=Z

35a. Have your neighbors ever felt like doing something to try to improve the noise situation?

CODE: 0.....NO
1.....YES 24 ____

b. IF YES, ASK:

What did they do?

RECORD FIRST THREE MENTIONS:

(1) NOTHING
(2) BROUGHT ISSUE UP FOR GROUP DISCUSSION
(3) TELEPHONED SOMEONE IN AUTHORITY 25 ____
(4) WROTE TO SOMEONE IN AUTHORITY 26 ____
(5) DREW UP AND SIGNED PETITION 27 ____
(6) ORGANIZED ACTION GROUP
(7) FILED SUIT
(8) OTHER, SPECIFY BELOW

_____

c. IF TOOK ANY ACTION, ASK:

When did they do (ACTION MENTIONED)?

(1) up to 2 weeks
(2) 2-4 weeks
(3) 1-2 months
(4) 2-6 months
(5) 6 months - 1 year 28 ____
(6) 1-2 years
(7) 2-4 years
(8) 4-6 years
(9) 6 years or more

TO TO 35f. ON THE NEXT PAGE

CONTINUE WITH 35 ON THE NEXT PAGE

Don't Know=X
No Response=Y
Not Applicable=Z

d. To whom was (ACTION MENTIONED) directed?

WRITE IN ANSWER BELOW AND EITHER 1 (RESPONSE), X, Y, OR Z IN APPROPRIATE SPACE. 29 ____

_____

_____

DECK B
21 ____
Office Coding

e. What happened? 30 ____

_____

_____

WRITE IN ANSWER ABOVE AND EITHER 1 (RESPONSE), X, Y, OR Z IN APPROPRIATE SPACE.

DECK B
22 ____
Office Coding

f. IF NEIGHBORS TOOK NO ACTION, ASK:

Why is that? That is, how is it that they have felt like doing something but have not? 31 ____

WRITE IN ANSWER BELOW AND CODE EITHER 1 (RESPONSE), X, Y, OR Z.

_____

_____

DECK B
23 ____
Office Coding

SOCIAL ORGANIZATIONS

(FOR PROBING AND CODING ONLY)

CATEGORY NUMBER

0.....No organizations
1.....Lodges and Men's Clubs (Elks, Moose, Masons, Knights of Columbus, etc.)
2.....Church groups other than church itself (WSCS, clubs, etc.)
3.....Sports and athletic clubs
4.....Social groups (hold regular dances, card parties, etc.)

ISSUE INTEREST ORGANIZATIONS

5.....Parent-Teacher Association
6.....Political groups
7.....Farm organizations
11.....Labor unions
12.....General business or professional associations (groups which speak for businessmen and professional men of many kinds, such as the Chamber of Commerce)
13......"Special" business or professional associations (groups which involve specific retail and occupational groups, as Retail Hardware Dealers Association, American Medical Association, etc.)

EITHER SOCIAL OR ISSUE INTEREST ORGANIZATIONS

14.....Neighborhood groups
15.....Any others (nationality groups, hobby and interest organizations, etc.)

OTHER ORGANIZATIONS

16.....Veterans organizations (VFW, American Legions, Amvets)
17.....Church
20.....Local Government

NUMBER OF SOCIAL ORGANIZATIONS

Include Neighborhood Groups and "Other Organizations" which are seen by their names to be primarily interested in social, fraternal, or recreational activities, or which respondent specifically mentions as a place to meet friends, or which have an ulterior social motive.

NUMBER OF ISSUE INTEREST ORGANIZATIONS

Include Neighborhood Groups and "Other Organizations" which seem from their names to be primarily interested in the achievement of some political. economic, or social betterment goal.

Don't Know = X
No Response = Y
Not Applicable = Z

36. Now would you please tell me what kinds of clubs or organizations you work with or participate in -- such things as educational, recreational, political, social, business, or church.

(USE FACING PAGE TO CODE CATEGORY NUMBERS AND TO USE AS A PROBE GUIDE.)

a) What are the names of these organizations?

WRITE NAMES IN COLUMN A BELOW

b) How often do you attend meetings?

1....Almost always
2....Sometimes
3....Seldom
4....Almost Never

} RECORD IN COLUMN C

c) Do you have a great deal of interest, some interest, or only a little interest in this organization?

1....Great deal
2....Some
3....Little

} RECORD IN COLUMN D

d) Were you ever an officer or on a committee in this organization?

1....Officer
2....On Committee
3....No

} RECORD IN COLUMN E

e) Which of these organizations are or have been interested in a noise issue in this city?

1....If has been interested
0....If not interested

} RECORD IN COLUMN F

	A NAME	B CATEGORY NUMBER	C ATTENDANCE	D INTEREST	E OFF-ICES	F NOISE
1.		5 6	7	8	9	10
2.		11 12	13	14	15	16
3.		17 18	19	20	21	22
4.		23 24	25	26	27	28
5.		29 30	31	32	33	34

Deck B

For office Coding only

THE FOLLOWING IS TO BE FILLED IN AFTER THE INTERVIEW HAS BEEN COMPLETED:

TOTAL NUMBER OF ORGANIZATIONS MENTIONED---------- 24 ____

NUMBER OF SOCIAL ORGANIZATIONS (Categories 1 through 4)-- 25 ____

NUMBER OF ISSUE INTEREST ORGANIZATIONS
(Categories 5 through 13)---------- 26 ____

INVOLVEMENT SCORES: To figure involvement scores, add absolute numbers recorded in columns C, D, and E

INVOLVEMENT SCORE FOR SOCIAL ORGANIZATIONS
(Categories 1 through 4)---------- 27 ____

INVOLVEMENT SCORE FOR ISSUE-INTEREST ORGANIZATIONS
(Categories 5 through 13)---------- 28 ____

INVOLVEMENT SCORE FOR ALL ORGANIZATIONS
(Sum of the above 2 involvement scores)---------- 29 ____

30 ____

SOCIAL PARTICIPATION INDEX SCORE
(Sum of total involvement score for all organizations plus the sum of frequency scores from questions 22,23, 24 -- Columns 73,74,75 on Deck D. Add only if the number recorded is 0, 1, 2, 3, or 4.)---------- 31 ____

32 ____

Don't Know = X
No Response = Y
Not Applicable = Z

Deck G (35-41)

37. Are there any other groups or organizations around here that have taken an interest in a noise issue?

0.....No
1.....Yes
X
Y

35_____

IF YES, ASK:

What are the names of these organizations?

#	CATEGORY (ADD LATER)	NAME
6		
7		
8		

36_____
37_____
38_____
39_____
40_____
41_____

Don't Know=X
No Response=Y
Not Applicable=Z

38a. Which of these have tried to do something to solve the problem?

# 1-8	A CATEGORY (LATER)	B ACTION	C WHEN	D TO WHOM DIRECTED	E RESULT
	42 43	44	45	46	47
	48 49	50	51	52	53
	54 55	56	57	58	59
	60 61	62	63	64	65
	66 67	68	69	70	71

b. IF ANY ARE MENTIONED, ASK:

What did they do?

CODE NUMBER FROM BELOW COLUMN B, RECORD NO MORE THAN THREE NUMBERS.

(1) NOTHING
(2) DISCUSSION IN MEETINGS
(3) TELEPHONED AUTHORITY
(4) WROTE OR WIRED AUTHORITY
(5) DREW UP PETITION
(6) ORGANIZED ACTION GROUP
(7) OTHER, SPECIFY BELOW

_____

72 ____
73 ____
74 ____

c. IF TOOK ANY ACTION, ASK:

When did they do (ACTION MENTIONED)? (WRITE IN ANSWER IN COLUMN C.)

DECK B
33 ____
Office Coding

d. To whom was the action directed?

WRITE IN COLUMN D.

e. What happened; what were the results?

WRITE IN COLUMN E.

Don't Know = X
No Response = Y
Not Applicable = Z

Deck H (5-10)

39. To what extent do you think aircraft operations are a source of annoyance in your city? Rate the extent of this annoyance from the Opinion Thermometer.

CODE DEGREE OF ANNOYANCE: 0 1 2 3 4 X Y 5 ____

40. How often do you see or hear planes fly by here?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 6 ____

IF RESPONDENT SEES OR HEARS PLANES, ASK:

When you see or hear planes overhead, how often do you feel that they are flying too low for the safety of the residents of the area?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y Z 7 ____

IF RESPONDENT SEES OR HEARS PLANES, ASK:

When you see or hear planes overhead, how often do you feel there is some danger that they might crash nearby?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y Z 8 ____

41a. If this area received twice as much noise from jet aircraft operations, do you think you could learn to live with it?

0.....No
1.....Yes
X
Y 9 ____

b. If this area received four times as much noise from jet aircraft operations, do you think you could learn to live with it?

0.....No
1.....Yes
X
Y 10 ____

Don't Know=X
No Response=Y
Not Applicable=Z

42. Who would you say controls the flight operations at the (NAME OF AIRPORT)?

CODE UP TO 2 MENTIONS

1.....City Agency
2.....State Agency
3.....Federal Agency
4.....Airlines
5.....Independent or private authority
6.....Other, Specify below

11 ____

_____ 12 ____

43. How much would you say that aircraft operations have increased in this neighborhood in the last five years? Select a rate from the "how much" scale on the Opinion Thermometer.

CODE DEGREE OF INCREASE: 0 1 2 3 4 X Y 13 ____

ASK THE FOLLOWING OF ALL RESPONDENTS

44a. How often would you say planes startle you when they fly over?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 14 ____

b. IF PLANES STARTLE, ASK:

When planes startle, please tell me how much you feel annoyed, using the scale on the Opinion Thermometer.

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 15 ____

45. How often do planes make the house (building) vibrate or make the windows rattle?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 16 ____

Don't Know=X
No Response=Y
Not Applicable=Z

46a. How often do you notice smoke, fumes, oil dropout, or landing lights from overflying planes?

CODE FREQUENCY RATE FOR:

(1)	Smoke	0 1 2 3 4 X Y	17 ____
(2)	Fumes	0 1 2 3 4 X Y	18 ____
(3)	Oil	0 1 2 3 4 X Y	19 ____
(4)	Lights	0 1 2 3 4 X Y	20 ____

b. IF NOTICES ANY ITEMS ABOVE, ASK:

How much does (EACH ITEM) annoy you?

CODE DEGREE OF ANNOYANCE FOR:

(1)	Smoke	0 1 2 3 4 X Y	21 ____
(2)	Fumes	0 1 2 3 4 X Y	22 ____
(3)	Oil	0 1 2 3 4 X Y	23 ____
(4)	Lights	0 1 2 3 4 X Y	24 ____

47. Were you aware of the effects of aircraft operations in this neighborhood before coming here?

CODE EITHER: 0.....NO
1.....YES

25 ____

48. How often do you hear loud explosive sounds around here?

CODE FREQUENCY RATE: 0 1 2 3 4 X Y 26 ____

IF SOUNDS ARE HEARD, ASK:

What kinds of sounds are these?

CODE:
1.....Traffic
2.....Sonic Booms
3.....Explosions
4.....Thunder
5.....Other, Specify below

_____

X
Y

27 ____

Don't Know=X
No Response=Y
Not Applicable=Z

49. Have you heard or read anything about sonic booms?

CODE: 0.....No
1.....Yes
X
Y

28 ____

IF YES, ASK WHAT? _____

_____

WRITE RESPONSE VERBATIM BUT DO NOT CODE

50. What causes sonic booms?

_____

_____

1.....Correct
2.....Partially Correct ..... 29 ____
3.....Incorrect

51. What does the term "SST" mean?

_____

_____

1.....Correct
2.....Partially Correct ..... 30 ____
3.....Incorrect

52. What does the term "mach one" mean?

_____

_____

1.....Correct
2.....Partially Correct ..... 31 ____
3.....Incorrect

Don't Know=X
No Response=Y
Not Applicable=Z

53. How do you think you might feel if there were sonic booms around here?

_____

_____

_____

WRITE IN RESPONSE VERBATIM BUT DO NOT CODE

DECK B
34 ____
35 ____
Office Coding

54. Have you heard or read anything about Supersonic Transports?

CODE: 1.....Yes
2.....No
X
Y

32 ____

IF YES, ASK:

What have you read or heard?

_____

_____

_____

WRITE IN RESPONSE BUT DO NOT CODE

DECK B
36 ____
37 ____
Office Coding

55. As you (probably know) (already told me) the recent booms around here are part of a government development program of a new supersonic airplane that will fly about 2,000 miles an hour. Do you feel it is absolutely necessary for our country to have such a civilian plane, do you feel it is probably necessary, or do you feel it is not necessary?

(1) Absolutely necessary
*(2) Probably necessary
*(3) Not necessary
* X
Y

33 ____

CONTINUE WITH 55A. ON NEXT PAGE

Don't Know=X
No Response=Y
Not Applicable=Z

*IF PROBABLY, NOT, OR DON'T KNOW, ASK A:

a. As you may know, the French, British and Russians are already building a commercial supersonic airplane. If these countries have such a plane, would you feel it absolutely necessary for Americans to have one too, would it probably be necessary, or would it not be necessary?

(1) Absolutely necessary
**(2) Probably necessary
**(3) Not necessary
** X
Y

34 ____

**IF PROBABLY, NO, OR DON'T KNOW ON "A", ASK B:

b. If the sonic boom could be reduced, would you feel it desirable for us to have a commercial plane that travels 2,000 miles an hour, or don't you feel we need such a plane?

(1) Desirable
(2) Not necessary
X
Y

35 ____

Don't Know = X
No Response = Y
Not Applicable = Z

Deck H (36-44)

FOR QUESTIONS 56 THROUGH 62 USE THE FOLLOWING CODE:

1.....True
2.....False

56. Supersonic aircraft are not as safe as slower airplanes. 36_____

57. Sonic booms are inevitable whenever planes fly faster than the speed of sound. 37_____

58. A plane flying at three times the speed of sound will create three times the sonic boom as a plane flying at exactly the speed of sound. 38_____

59. The only time a plane makes a "boom" is at the exact mo moment it breaks the sound barrier. 39_____

60. If a jet engine could be made quiet, no boom would be heard, even when the plane flew at supersonic speeds. 40_____

61. A plane diving at supersonic speed will create more of a sonic boom than a plane flying level at the same speed. 41_____

62. To hear a sonic boom, a person must be directly under the flight path of a supersonic aircraft. 42_____

63. Is the head of the household employed?

1.....Full Time
2.....Part Time
3.....Not employed 43_____

IF EMPLOYED: What does head of household (or you) do on the job?_____

Deck B
38_____
For office coding

IF NOT EMPLOYED: Is head of household (or you)

1.....Retired
2.....Seeking work
3.....Unable to work 44_____

IF NOT EMPLOYED: What did head of household do when working?_____

Deck B
39_____
For office coding

Don't Know = X
No Response = Y
Not Applicable = Z

Deck H (45-47)

64. What did your father or the head of your household do to make a living when you were growing up?

_____

Deck B
40_____
For office coding

65. What is your relationship to the head of household?

0.....Wife/Husband
1.....Son/Daughter
2.....Father/Mother
3.....Any in-law relationship
4.....Other Related
5.....Not Related

45_____

66. Do you own your home here, or are you renting?

1.....Own
2.....Renting
3.....Living with Relatives

46_____

IF RENTING, ASK: Approximately how much do you pay for rent, not including furnishings and utilities?

_____

Deck B
41_____
For office coding

IF HOME IS OWNED, ASK: How much would homes like this rent for in this neighborhood, not including furniture and utilities?

_____

42_____

67. How many rooms does your family occupy in the house here, not including bathrooms?

CODE: 0 1 2 3 4 5 6 7 8 _ 9

47_____

Don't Know=X
No Response=Y
Not Applicable=Z

68. How many of the following appliances are present and in working order?

WRITE IN CORRECT NUMBER, READ LIST TO R.

(1) AUTOMOBILES AND TRUCKS..... 48____
(2) WASHING MACHINE..... 49____
(3) REFRIGERATOR, FREEZER..... 50____
(4) HI FI, STEREO..... 51____
(5) TELEPHONE..... 52____
(6) RADIO..... 53____
(7) TELEVISION..... 54____
(8) SEWING MACHINE..... 55____
(9) DISHWASHER..... 56____
(10) DISPOSAL..... 57____

69. In how many rooms do you have large rugs or wall-to-wall carpeting?

CODE: 0 1 2 3 4 5 6 7 8 9 X Y 58____

70. Do you have central or space heating?

(1) CENTRAL..... 59____
(2) FLOOR OR WALL FURNACE..... 60____
(3) SPACE HEATERS..... 61____
(4) NONE..... 62____

71. Do you have central air-conditioning, window air-conditioners, evaporative coolers, or fans?

	NUMBER	
(1) FANS.....	0 1 2 3 4	63____
(2) EVAPORATIVE COOLERS.....	0 1 2 3 4	64____
(3) WINDOW AIR-CONDITIONERS.....	0 1 2 3 4	65____
(4) CENTRAL AIR-CONDITIONERS.....	0 1 2 3 4	66____

72. About when was the building constructed?

RECORD APPROXIMATE YEAR 67____
68____

Don't Know=X
No Response=Y
Not Applicable=Z

73a. Does the building have insulation in the walls or between the ceiling and the roof?

0.....NO
1.....WALLS
2.....ROOF
3.....BOTH

5 ____

b. IF HAS INSULATION, ASK:

When was the insulation installed?

1.....AT TIME BUILDING BUILT
2.....AFTER CONSTRUCTION

6 ____

c. IF INSULATION INSTALLED AFTER CONSTRUCTION, ASK:

Why was insulation added?

1.....WEATHER PROOFING
2.....SOUND PROOFING--EXTERIOR NOISES
3.....SOUND PROOFING--INTERIOR NOISES
4.....BOTH 2 & 3
5.....COMBINATION 1 & 2 OR 3
6.....OTHER, SPECIFY BELOW

_____

7 ____

74a. How are the windows glazed-- that is, installed and sealed? As:

1.....SINGLE PANES
2.....DOUBLE PANES
3.....INSULATING GLASS (THERMOPANE)
4.....SPECIAL TYPE, SPECIFY BELOW

_____

8 ____

b. Does the building have storm windows?

0.....NO
1.....YES

9 ____

75. Does the building have an attic--or a space between the ceiling and the roof?

0.....NO
1.....YES

10____

Don't Know=X
No Response=Y
Not Applicable=Z

76. Is the room in which most family activities occur:

READ RESPONSE CATEGORIES BELOW.

1.....A CORNER ROOM
2.....AN INTERIOR ROOM
3.....BETWEEN OTHER ROOMS
4.....BENEATH A HIGHER FLOOR 11____

77. How many of the main sleeping rooms are:

READ RESPONSE CATEGORIES BELOW.

1.....CORNER ROOMS
2.....INTERIOR ROOMS
3.....BETWEEN OTHER ROOMS
4.....BENEATH A HIGHER FLOOR 12____

78. Please look at this card and choose the letter that most nearly represents your total family income from all sources.

HAND R. INCOME CARD.

1 2 3 4 5 6 7 8 13____

79. Please tell me the highest level of education you have completed.

0.....NONE
1.....LESS THAN PRIMARY
2.....COMPLETED PRIMARY
3.....LESS THAN HIGH SCHOOL
4.....COMPLETED HIGH SCHOOL
5.....SOME COLLEGE
6.....4-YEAR COLLEGE GRADUATE
7.....SOME GRADUATE SCHOOL
8.....PROFESSIONAL DEGREE (MASTER'S, DOCTORATE, LAW DEGREE) 14____

80. How many persons of the following age categories live here in this household?

UNDER 18....0 1 2 3 4 5 6 7 8 9 15____
18-60.....0 1 2 3 4 5 6 7 8 9 16____
OVER 60.....0 1 2 3 4 5 6 7 8 9 17____
TOTAL..... 18____
19____

Don't Know=X
No Response=Y
Not Applicable=Z

81. Of the following categories, please tell me your age group.

1.....UNDER 20
2.....20 - 30
3.....30 - 40
4.....40 - 50
5.....50 - 60
6.....60 - 70
7.....OVER 70

20____

82. In case I've forgotten anything and the research team officials need to call, what would be the best time and day?

RECORD: _____ 21____

CODE 1 OR 0 IN APPROPRIATE SPACE.

83. What is the phone number here?

RECORD: _____ 22____

23____
24____
25____
26____
27____
28____

HAND R. THE THREE-PAGE YELLOW INSERT AND ASK:

Now, would you please mark your choice to these questions on general attitudes, while I go over our interview to be sure that I have everything complete? (I will now take a sound reading while you look over these pages.)

Don't Know=X
No Response=Y
Not Applicable=Z

INTERVIEWER OBSERVATION OF HOME:

1. Condition of plaster:
   Excellent - no cracks.....4
   Good - small cracks.....3
   Fair - noticeable large or small cracks.....2
   Poor - large cracks.....1
   Not applicable - paneling, etc.....0 29 ____

2. Glass:
   Excellent - no windows cracked.....4
   Good - few small cracks.....3
   Fair - many cracks.....2
   Poor - panes missing.....1 30 ____

3. Amount of glass ware and other bric-a-brac in home:
   Very large amount.....3
   Noticeable amount.....2
   Few pieces.....1
   None.....0 31 ____

Don't Know=X
No Response=Y
Not Applicable=Z

FOR INTERVIEWERS USING SOUND METERS:

NOTE: EXCLUDE ABRUPT NOISES

HIGH READING { 32 ____ / 33 ____ }

LOW READING { 34 ____ / 35 ____ }

RECORD ROOM IN WHICH READING IS TAKEN:

1.....LIVING
2.....DINING
3.....KITCHEN
4.....DEN-FAMILY
5.....BEDROOM
6.....PORCH (ENCLOSED)
7.....PORCH (OPEN)
8.....OTHER (SPECIFY)

_____ 36 ____

1st BAT.
2nd As
3rd READING (30 secs.)
4th OFF

NOTE: BE SURE TO:

(1) PICK UP CARDS (3)
(2) IDENTIFY YELLOW INSERT

NAME ADDRESS

(3) OBTAIN R.'S NAME (WRITE ON PAGE 1)
(4) RECORD TIME INTERVIEW COMPLETED (PAGE 1)
(5) FILL IN INTERVIEW OBSERVATIONS
(6) THANK RESPONDENT

PROGRAM
IN
COMMUNITY STUDIES

attitudinal & opinion series

FORM C

FORM C

i. City _____ ii. Introduction Code _____

iii. Date of Interview: _____ / _____ / 6____
(MONTH) (DAY) (YEAR)

iv. Time Interview: Began ____; Ended ____; Total Minutes _____

v. Census Tract _____ vi. Census Block _____

vii. Interviewer Name _____ Number _____

---

1. How long have you lived in (CITY)? _____ _____
(YEARS) (MONTHS)

2. How long have you lived in this neighborhood? _____ _____
(YEARS) (MONTHS)

3. About how many families in this neighborhood do you know well enough to call on and visit within their homes? _____

4. How many times per month do you drop in on relatives or in-laws? _____

5. How many times per month do you drop in for a visit with your neighbors or friends living in this neighborhood? _____

6. How many times per month do you drop in on friends who live outside this neighborhood? _____

7. How many days per week are you out of this neighborhood for eight (8) hours or more? _____

8. At the present time, what are some of the things you like and don't like about living in this neighborhood -- things that you feel are advantages and makes this a good place to live, and disadvantages -- things that you feel are unpleasant? RECORD COMMENTS VERBATIM, INDICATE IF ADVANTAGE OR DISADVANTAGE.

ITEM #	COMMENTS	CHECK ADV	CHECK DIS
A.		___	___
B.		___	___
C.		___	___
D.		___	___
E.		___	___
F.		___	___

9. Who are the most active and influential persons who live in this neighborhood and could be turned to for help in improving neighborhood conditions?

NAME	OCCUPATION/POSITION

10. Who are the most active and influential persons in this city who could be turned to for help in improving conditions in this city?

NAME	OCCUPATION/POSITION

11. Now here is a list of things (CARD 1) that some people consider important in a residential area. Are there additional items which you feel are important in a residential area? (LIST BELOW IF ANY ARE GIVEN.)

12. Please look over the items on this card and tell me which one you consider most important, second most important, etc. Also include any which you just named. INDICATE RANK IN THE RIGHT HAND COLUMN.

		RANK
A.	_____	____
B.	_____	____
C.	_____	____

CARD 1:

D. Well-kept homes and yards; nice appearance of neighborhood..... ____

E. Convenience of location for facilities such as schools, shopping, playgrounds, etc..... ____

F. Good quality of community facilities; schools, shopping, etc..... ____

G. Safe place to live: good law enforcement..... ____

H. Economic advantages: reasonable housing, fair taxes, etc..... ____

I. Convenience of transportation facilities: near bus, rail, or expressway..... ____

J. Good zoning..... ____

K. Good neighbors..... ____

L. Quiet area..... ____

M. Preference for certain house, "I like the house."..... ____

N. Little traffic..... ____

13. Consider each of the characteristics listed on the card (CARD 2) and tell me if it has undergone a major change, either for better or worse since you have lived here, and what the change was. (WRITE COMMENT AFTER "Change".)

ITEMS LISTED IN QUESTION 12.

A. _____

Change _____

B. _____

Change _____

C. _____

Change _____

CARD 2:

D. Condition of homes and yards.

Change _____

E. Convenience of location for facilities such as schools, playgrounds, shopping, etc.

Change _____

F. Quality of community facilities such as schools, shopping, etc.

Change _____

G. Law enforcement.

Change _____

H. Economic conditions, cost of housing, taxes, etc.

Change _____

I. Availability of transportation facilities.

Change _____

J. Zoning.

Change _____

K. Quality of neighbors.

Change _____

L. Noise in area.

Change _____

M. Preference for your house.

Change _____

N. Traffic.

Change _____

14. Would you please tell me what kind of sounds you notice around here? Also, please indicate if they are heard outside or inside your home. RECORD SOUNDS MENTIONED AND IF THE SOUND MENTIONED IS FROM THE PROMPT LIST, RECORD IN THE PROMPT LIST. OTHERWISE INDICATE THE SOUND IN THE BLANKS BELOW.

		IN	OUT	BOTH
A.	_____	___	___	___
B.	_____	___	___	___
C.	_____	___	___	___
D.	_____	___	___	___

15. Do you hear any of the following sounds in this area? DO NOT REPEAT FROM THE LIST IF MENTIONED ABOVE.

PROMPT LIST:

E.	Automobiles and/or trucks.....	___	___	___
F.	Aircraft operations.....	___	___	___
G.	Neighbors.....	___	___	___
H.	Dogs, other pets.....	___	___	___
I.	Radio and/or television.....	___	___	___
J.	Motorcycles or hot rods.....	___	___	___
K.	Trains.....	___	___	___
L.	Sirens.....	___	___	___
M.	Telephone.....	___	___	___
N.	Lawn mowers; garbage collection.....	___	___	___
O.	Sonic booms.....	___	___	___

16. Of all the sounds you hear around here, are there any that you feel are unnecessary and should be eliminated?

Yes ____; No ____

→ IF YES: Which one do you most want to have eliminated? (WRITE IN LETTER)

What is the first? ____ What is the fourth? ____

What is the second? ____ What is the fifth? ____

What is the third? ____ What is the sixth? ____

FOR QUESTIONS 17 TO 34, ASK CONCERNING THE FIRST MENTIONED SOUND TO BE ELIMINATED.

17. Which of these words best describes the effect that (MOST UNWANTED SOUND) has on you? Please indicate the first, second, and third in order (CARD 3).

A	Reassuring	F	Bothersome	K	Startling	P	_____
B	Thrilling	G	Painful	L	Boring		
C	Depressing	H	Irritating	M	Exasperating	Q	_____
D	Annoying	I	Offensive	N	Disturbing		
E	Aggravating	J	Troublesome	O	No effect at all	R	_____

Rank: 1st _____; 2nd _____; 3rd _____

18. Rate the (ABOVE ADJECTIVE SELECTED FIRST) effect of (SOUND MOST WANT TO ELIMINATE) on a scale of from one to 100. The higher the number, the stronger you feel:

_____

IF SONIC BOOM MENTIONED FIRST, ASK QUESTION 19. IF SOUND OTHER THAN SONIC BOOM MENTIONED FIRST, GO TO QUESTION 20.

19. Rate the (ABOVE ADJECTIVE SELECTED FIRST) effect of the sounds of hot rods and motorcycles on a scale of from one to 100. The higher the number, the stronger you feel:

_____

20. Why would you like to eliminate (MENTIONED SOUND)? PROBE--INDICATE AS MANY REASONS AS CAN BE DETERMINED.

_____

_____

_____

_____

_____

_____

_____

_____

21. Does the sound interfere with any of the following activities? READ PROMPT LIST; CHECK "YES" OR "NO" COLUMN.

	YES	NO
Relaxing or resting inside	___	___
Relaxing outside	___	___
Sleeping	___	___
Conversation	___	___
Talking on telephone	___	___
Listening to records or tapes	___	___
Radio or TV reception	___	___
Reading or concentrating	___	___
Eating	___	___

22. What other activities does this sound normally interfere with?

_____

_____

_____

23. At what times during the day or at night do you hear this sound, CHECK "YES" OR "NO" FOR EACH TIME PERIOD. IF "YES", ASK HOW OFTEN.

	YES	NO	VERY FREQUENTLY	SOMETIMES	VERY SELDOM
6-9 am	___	___	___	___	___
9-12 noon	___	___	___	___	___
12-3 pm	___	___	___	___	___
3-6 pm	___	___	___	___	___
6-9 pm	___	___	___	___	___
9-12 midnight	___	___	___	___	___
12-3 am	___	___	___	___	___
3-6 am	___	___	___	___	___

24. On which days of the week do you hear this sound? CHECK IF HEARD FOR EACH DAY.

Monday _____; Tuesday _____; Wednesday _____; Thursday _____;
Friday _____; Saturday _____; Sunday _____

25. Do you usually discuss this sound every time it is heard?

Yes ____; No ____

26. How frequently would you say that you discuss this sound with your family, friends, or neighbors? READ LIST; CHECK ONE ONLY.

Very frequently?.....____
Often?.....____
Occasionally?.....____
Seldom?.....____
Never?.....____

27. How often do you hear this sound discussed when you visit with friends, neighbors, or relatives? READ LIST; CHECK ONE ONLY.

Very frequently?.....____
Often?.....____
Occasionally?.....____
Seldom?.....____
Never?.....____

28. Would you say that you notice this sound: READ LIST; CHECK ONE ONLY.

Far less than your neighbors?.....____
A little less than your neighbors?.....____
About the same as your neighbors?.....____
A little more than your neighbors?.....____
Far more than your neighbors?.....____

29. How frequently do you hear this sound discussed when you are out in the city -- shopping or at lunch for example? READ LIST; CHECK ONE ONLY.

Very frequently?.....____
Often?.....____
Occasionally?.....____
Seldom?.....____
Never?.....____

30. Has anyone contacted you about taking action to eliminate or reduce the sound?

Yes ____; No ____

→ IF CONTACTED ABOUT SOUND: Who contacted you? If the person represented an organization, what was its name?

_____

31. Have you ever contacted anyone about eliminating or reducing the sound?

Yes ____; No ____

IF DID SOMETHING ABOUT THE SOUND: Whom did you first contact?

_____

IF DID SOMETHING ABOUT THE SOUND: Was action taken?

Yes ____; No ____

How many times was each action taken?

	ACTION TAKEN	TIMES ACTION TAKEN
1st	_____	_____
2nd	_____	_____
3rd	_____	_____

IF ACTION WAS TAKEN: Are you satisfied with the results of the action?

Yes ____; No ____; Undecided ____

Are you considering further action?

Yes ____; No ____; Undecided ____

IF CONSIDERING FURTHER ACTION: What are you planning to do?

_____

_____

_____

IF NO ACTION WAS TAKEN: What do you expect to be done about your complaint?

_____

_____

_____

_____

32. Do you know of any other persons who have taken some action about this situation?

Yes ____; No ____

→ IF KNOW OTHER PERSONS: Who were they? GET NAME AND OCCUPATION OR POSITION.

_____

_____

→ IF KNOW OTHER PERSONS: Whom did they contact?

_____

_____

→ IF KNOW OTHER PERSONS: What action did they take?

_____

_____

IF KNOW OTHER PERSONS, ASK QUESTION 33, OTHERWISE GO TO QUESTION 34.

33. Have you cooperated with these people in taking any action?

Yes ____; No ____

→ IF YES: What did you do? _____

34. Do you know of any organization that has taken some action about this situation?

Yes ____; No ____

→ IF KNOW OTHER ORGANIZATION: What is the name of the organization? How may it be contacted?

Name _____

Address _____

→ Are you affiliated with it in any way?

Yes ____; No ____

→ IF YES: How are you affiliated?

_____

→ What action did the organization take?

_____

_____

35. Have you read or heard anything concerning (SOUND) in the newspapers, radio, television, or other sources of information during the week?

Yes ____; No ____

→ IF HEARD OR READ SOMETHING: From what source did you hear or read about it and what did you hear/read?

SOURCE	WHAT HEARD/READ

36. What newspapers do you read regularly? INDICATE FULL NAME, INCLUDING CITY, OF EACH NEWSPAPER.

_____

_____

→ IF NEWSPAPERS ARE READ, ASK: What parts of the paper do you read?

_____

_____

37. Do you regularly read any news magazines?

Yes ____; No ____

→ IF YES: What news magazines do you read regularly?

_____

_____

38. About how much time did you spend reading news magazines in the past seven (7) days? (INDICATE HOURS)

_____

39. What are your first and second most important sources of daily news?

First: _____

Second: _____

40. Did you watch television news at all yesterday?

Yes ____; No ____

41. Are there any radio or television news programs which you hear or watch regularly?

Yes ____; No ____

→ IF YES: What program, time, and channel? Name the ones which you watched yesterday.

NAME	TIME	CHANNEL	WATCH YESTERDAY

42. I am going to read you a list of several groups now active in the United States. Please indicate if you have heard of each, and if you would join if asked:

	FAMILIAR	JOIN
A. Committee for Clean Air.....		
B. Ban the Bomb Committee.....		
C. Anti-Flouridation League.....		
D. Highway Beautification Committee.....		
E. Open Housing Committee.....		
F. Anti-Noise League.....		
G. American Civil Liberties Union (ACLU)		
H. Ban the Boom Committee.....		

INDICATE RESPONSES IN APPROPRIATE BLANK CORRESPONDING TO EACH GROUP. REDUCE TO ONE OR TWO WORD RESPONSE WHEN POSSIBLE (i.e., "YES", "NO", "POSSIBLY", "NOT SURE", etc.)

43. Do you belong to any of these organizations?

Yes ____; No ____

→ IF YES: Which ones? (WRITE ALPHABETIC SYMBOL FOR EACH ORGANIZATION MENTIONED.)

_ _ _ _ _ _ _ _

FOR QUESTION 44 INDICATE THE CORRECT ANSWER BY CHECKING THE APPROPRIATE COLUMN FOR EACH ORGANIZATION GIVEN.

44. Now would you please tell me what kinds of clubs or organizations you work with or participate in -- for example, educational, recreational, political, social, business or church.

A. What are the names of these organizations? WRITE NAMES IN COLUMN A.

B. How often do you attend meetings -- almost always, sometimes, seldom, or almost never? RECORD IN COLUMN B.

C. Do you have a great deal of interest, some interest, or only a little interest in this organization? RECORD IN COLUMN C.

D. Were you ever an officer or on a committee in this organization? RECORD IN COLUMN D.

A	B				C			D		
NAME	ATTENDANCE				INTEREST			OFFICES		
	Almost Always	Sometimes	Seldom	Never	Great Deal	Some	Little	Officer	Committee	

45. Which of the following issues do you feel to be important problems? READ LIST AND CHECK FOR EACH ISSUE, "YES" OR "NO" IN COLUMN 1 BELOW.

46. How much would you say your family is directly affected by any of these issues? -- A great deal (GD); Some (S); Very little (VL); or None (N). CHECK FOR EACH ISSUE MENTIONED IN COLUMN 2 BELOW.

ISSUE	(1) PROBLEM		(2) FAMILY AFFECTED				(3) OPINION	
	YES	NO	GD	S	VL	N	YES	NO
A. Air pollution, (smoke, smog, etc.)								
B. General noise (traffic, industry, aircraft noise, etc.)								
C. Inflation								
D. Water pollution								
E. Sonic booms								
F. Vietnam								
G. Juvenile delinquency and crime								
H. Riots								

47. Have you formed an opinion about how these problems should be solved? CHECK FOR EACH ISSUE MENTIONED IN COLUMN 3 ABOVE.

→ IF FORMED AN OPINION ABOUT SONIC BOOM, ASK: What should be done about sonic booms and how might this be done?

_____

_____

48. Thinking back, which of these issues would you say worries you the most? Please name three with the most worrisome first, second next. WRITE ISSUE USING WORDS OF RESPONDENT. IF NECESSARY REPEAT LIST OF ISSUES TO RESPONDENT.

1st _____

2nd _____

3rd _____

49. Have you ever protested to public officials regarding any of these issues or any others that have been of interest to you?

Yes ____; No ____

→ IF YES, ASK: What was the issue, and what did you do about it?

Issue (A) _____

Action _____

Issue (B) _____

Action _____

Issue (C) _____

Action _____

Was anything done?

→ Yes ____; No ____

→ IF SOMETHING DONE, ASK: What was done?

Issue (A) _____

Issue (B) _____

Issue (C) _____

IF SONIC BOOM WAS NOT MENTIONED AS THE FIRST NOISE TO ELIMINATE, ASK:

50. Have you ever heard a sonic boom?

Yes ____; No ____

IF NO, GO TO QUESTION 72. IF YES, ASK:

→ When did you first hear a sonic boom? (INDICATE YEAR.)

_____

→ What did it sound like? _____

51. Are sonic booms occurring in your neighborhood:

Once a day....._____
More than once a day....._____
Once a week....._____
More than once a week....._____
Once a month....._____
More than once a month....._____
Haven't heard in month or more...._____

IF SONIC BOOM WAS MENTIONED AS THE FIRST NOISE TO ELIMINATE IN QUESTION 16, SKIP TO QUESTION 72, PAGE 21. IF SONIC BOOM WAS NOT MENTIONED AS THE FIRST NOISE TO ELIMINATE, ASK THE FOLLOWING QUESTIONS.

52. Which of these words best describe the effect that sonic booms have on you? Please indicate the first, second, and third in order (CARD 3).

1 Reassuring	6 Bothersome	11 Startling	16 _____
2 Thrilling	7 Painful	12 Boring	
3 Depressing	8 Irritating	13 Exasperating	17 _____
4 Annoying	9 Offensive	14 Disturbing	
5 Aggravating	10 Troublesome	15 No effect at all	18 _____

Rank: 1st _____; 2nd _____; 3rd _____

53. Rate the (ABOVE ADJECTIVE SELECTED FIRST) effect of sonic boom on a scale from one to 100. The higher the number, the stronger you feel:

_____

54. Rate the (ABOVE ADJECTIVE SELECTED FIRST) effect of the sounds of hot rods and motorcycles on a scale of from one to 100. The higher the number, the stronger you feel:

_____

55. Are you in favor of the continuing development of military aircraft which cause sonic boom?

Yes ____; No ____

56. Are you in favor of the continuing development of commercial aircraft which cause sonic boom?

Yes ____; No ____

→ IF YES: Why? _____

_____

_____

_____

57. Does the sound interfere with any of the following activities? READ PROMPT LIST; CHECK "YES" OR "NO" COLUMN.

	YES	NO
Relaxing or resting inside	___	___
Relaxing outside	___	___
Sleeping	___	___
Talking on telephone	___	___
Listening to records or tapes	___	___
Radio or TV reception	___	___
Reading or concentrating	___	___
Eating	___	___

58. Does sonic boom normally interfere with any other inside or outside activities?

Yes ____; No ____

→ IF YES, ASK: What other activities does this sound normally interfere with?

_____

59. At what times during the day or at night do (did) you hear sonic booms? CHECK "YES" OR "NO" FOR EACH TIME PERIOD. IF "YES", CHECK HOW FREQUENTLY.

	YES	NO	VERY FREQUENTLY	SOMETIMES	VERY SELDOM
6-9 am	___	___	___	___	___
9-12 noon	___	___	___	___	___
12-3 pm	___	___	___	___	___
3-6 pm	___	___	___	___	___
6-9 pm	___	___	___	___	___
9-12 midnight	___	___	___	___	___
12-3 am	___	___	___	___	___
3-6 am	___	___	___	___	___

60. On which days of the week do you hear this sound? CHECK IF HEARD FOR EACH DAY.

Monday _____; Tuesday _____; Wednesday _____; Thursday _____;
Friday _____; Saturday _____; Sunday _____

61. Do you usually discuss sonic booms every time one is heard?

Yes ____; No ____

62. How frequently would you say that you discuss this sound when at home with your family, friends, or neighbors? READ LIST; CHECK ONE ONLY.

Very frequently?.....____
Often?.....____
Occasionally?.....____
Seldom?.....____
Never?.....____

63. How often do you hear sonic booms discussed when you visit with friends, relatives, or neighbors? READ LIST; CHECK ONE ONLY.

Very frequently?.....____
Often?.....____
Occasionally?.....____
Seldom?.....____
Never?.....____

64. Would you say that you notice this sound: READ LIST; CHECK ONE ONLY.

Far less than your neighbors?.....____
A little less than your neighbors?.....____
About the same as your neighbors?.....____
A little more than your neighbors?.....____
Far more than your neighbors?.....____

65. How frequently do you hear this sound discussed when you are out in the city -- shopping or at lunch for example? READ LIST; CHECK ONE ONLY.

Very frequently?.....____
Often?.....____
Occasionally?.....____
Seldom?.....____
Never?.....____

66. Has any individual contacted you about taking action to eliminate or reduce sonic booms?

Yes ____; No ____

→ IF CONTACTED ABOUT SOUND: Who contacted you? If the person represented an organization, what was it's name?

_____

67. Have you ever done anything to eliminate or reduce them?

Yes ____; No ____

→ IF DID SOMETHING ABOUT THE SOUND: Whom did you first contact?

_____

→ IF DID SOMETHING ABOUT THE SOUND: What action was taken? How many times was each action taken?

	ACTION TAKEN	TIMES ACTION TAKEN
1st	_____	
2nd	_____	
3rd	_____	

→ IF ACTION TAKEN: Are you satisfied with the results of the action taken?

Yes ____; No ____; Undecided ____

→ Are you considering further action?

Yes ____; No ____; Undecided ____

→ IF CONSIDERING FURTHER ACTION: What are you planning to do?

_____

_____

→ IF NO ACTION TAKEN: What do you expect to be done about your complaint?

_____

_____

_____

68. Do you know of any other persons who have taken some action about sonic booms?

Yes ____; No ____

→ IF KNOW OTHER PERSONS: Who were they? GET NAME AND OCCUPATION OR POSITION.

_____

_____

→ IF KNOW OTHER PERSONS: Whom did they contact?

_____

_____

→ IF KNOW OTHER PERSONS: What action did they take?

_____

_____

→ Are you or were you affiliated with them in any way?

Yes ____; No ____

69. Do you know of any organization that has taken some action about this situation?

Yes ____; No ____

→ IF KNOW OTHER ORGANIZATION: What is the name of the organization? How may it be contacted?

Name: _____

Address or Identification: _____

→ Are you affiliated with it in any way?

Yes ____; No ____

→ IF YES: How are you affiliated?

_____

_____

→ What action did the organization take?

_____

_____

70. Have you ever made a claim for damages due to sonic booms?

Yes ____; No ____

→ IF YES: How many? _____

Whom did you file the claim against? _____

_____

Was the claim settled to your satisfaction?

Yes ____; No ____

→ IF CLAIM WAS NOT SETTLED TO RESPONDENT'S SATISFACTION: Have you taken any further action regarding this claim?

Yes ____; No ____

→ IF FURTHER ACTION TAKEN: What action have you taken?

_____

71. Have you read or heard anything concerning sonic booms in the newspapers, radio, television, or other sources of information during the past week?

Yes ____; No ____

→ IF HEARD OR READ SOMETHING: From what source did you hear or read about it and what did you hear/read?

SOURCE	WHAT HEARD/READ

INFORM RESPONDENT THAT HE/SHE MAY ANSWER THE NEXT SERIES OF QUESTIONS: "YES, NO, OR UNDECIDED."

72. Have you formed any definite opinions about sonic booms?

Yes ____; No ____; Undecided ____

IF YES, ASK QUESTION 73, IF NO, GO TO QUESTION 84.

73. Do you object to sonic booms?

Yes ____; No ____; Undecided ____

IF YES OR UNDECIDED, ASK QUESTIONS 74-83; IF NO, GO TO QUESTION 84.

74. Would you object to sonic booms if they occurred only once or twice daily?

Yes ____; No ____; Undecided ____

75. Would you object to sonic booms if they occurred more than five times each day?

Yes ____; No ____; Undecided ____

76. Would you object to sonic booms if they occurred only during the day and not at night?

Yes ____; No ____; Undecided ____

77. Would you object to sonic booms if they occurred only over rural areas of the country?

Yes ____; No ____; Undecided ____

78. Do you feel that sonic booms should be allowed over land and water, or just over water? (READ ALTERNATIVES.)

Land and Water ____; Water ____; Neither ____; Undecided ____

79. Do you feel that sonic booms are an inevitable result of progress?

Yes ____; No ____; Undecided ____

80. Do you feel that sonic booms are a violation of your rights?

Yes ____; No ____; Undecided ____

81. Do you think that a private citizen can do anything about sonic booms?

Yes ____; No ____; Undecided ____

82. Do you object more, less, or about the same to sonic booms now as compared with when they were started during the summer?

More ____; Less ____; About the same ____; Undecided ____

83. Do you believe that sonic booms can be harmful to your health?

Yes ____; No ____; Undecided ____

84. Do you think that supersonic overflights are necessary for the defense of the United States?

Yes ____; No ____; Undecided ____

85. Do you feel that development of supersonic aircraft is a necessary step in the advancement of aircraft?

Yes ____; No ____; Undecided ____

86. Do you think that the development of new airplanes flying faster than sound will allow more passengers to fly at a greater speed and thereby do away with some present aircraft problems?

Yes ____; No ____; Undecided ____

87. Approximately how many times have you flown as a passenger on a jet plane in the past year? _____

88. Are any members of your family employed by either an airline company or a company doing regular business with an airline company or the Air Force?

Yes ____; No ____

→ IF YES:

NAME OR RELATIONSHIP	EMPLOYED BY

89. Are you the head of this household?

Yes ____; No ____

→ IF NOT THE HEAD: What is your relationship to the head?

_____

90. Do you own your home, or are you renting?

→ IF RENTING: Approximately what is your monthly rent, excluding furnishings and utilities?

_____

→ IF HOME IS OWNED: Approximately how much would a home like this rent for in this neighborhood, excluding furnishings and utilities?

_____

91. How many rooms, excluding bathrooms, does your family occupy in this house?

_____

92. Please look at this card and choose the letter which most nearly represents your family income. HAND RESPONDENT CARD 5. CHECK ONE CATEGORY NUMBER.

A ___; B ___; C ___; D ___; E ___; F ___; G ___; H ___

93. What is the highest level of education which you have completed?

Highest grade(1-12) ____; Some college ____;
College graduate ____; Graduate degree ____

IF RESPONDENT IS NOT HEAD OF HOUSEHOLD, ASK: What is the highest level of education completed by the head of the household?

---

94. Would you please give me your approximate age? That is, are you 20 to 29, 30 to 39, etc.? CHECK CORRECT CATEGORY.

18-19 __; 20-29 __; 30-39 __; 40-49 __; 50-59 __; 60-69 __; 70 + __

IF RESPONDENT IS NOT HEAD OF HOUSEHOLD, ASK: What is the age group of the head of household? CHECK CORRECT CATEGORY.

18-19 __; 20-29 __; 30-39 __; 40-49 __; 50-59 __; 60-69 __; 70 + __

95. How many persons live in this household? _____

96. How many persons fall into the following age categories?
Under 18 ____; 18-35 ____; 35-60 ____; over 60 ____

97. Is the head of household employed?

Yes ____; No ____

→ IF YES: Full or part time? _____

→ IF YES: What is his/her occupation? _____

→ IF NOT EMPLOYED: What is head of household doing at present (retired, seeking work, etc.)?

_____

98. In case I've forgotten anything and the research team officials need to call, what would be the best time and day?

_____

99. What is the phone number here? _____

100. May I please have your social security number?

___ - ___ - ____

101. May I please have your name? _____

INTERVIEWER OBSERVATIONS: DO NOT ASK RESPONDENT!

Ethnic group to which respondent belongs (Anglo, Latin, Negro, Other)

_____

Sex of respondent (CHECK ONE): Male _____; Female _____

Time finished interview (24 hour clock) _____
(ALSO RECORD TIME ON PAGE 1)

SAMPLING PROCEDURE

A basic assumption for the selection of the sample was that the effects of sonic booms follow a geographic pattern. Areas directly under the flight path receive a boom of higher intensity than areas ten or twenty miles away. The sample was thus geographically dispersed so as to provide information on all levels of boom effects.

In all but two of the cities (Atlanta and Los Angeles) there were multiple flight paths producing a rather generalized effect over a large area. Areas of the city ten miles apart may have received the same intensity of boom. In this case the sample should reflect reactions to frequency of boom rather than intensity. A sample of this type was achieved by selecting areas along a line roughly perpendicular to the flight paths.

In Atlanta and Los Angeles the plan was to study both frequency and intensity of booms. Frequency was controlled for by selecting part of the sample directly under and following the flight path. Another part of the sample was selected along a line roughly perpendicular to the flight path. Where there was only one flight path, the sample drawn on a perpendicular line designating booms of lesser intensity as distance along the perpendicular line increased.

The census tract was employed as the basic unit for selecting the sample. In order to collect responses from people at different socioeconomic levels, a measure of socioeconomic status (SES) was incorporated into the criteria of sample selection. The decision was made to include those areas of the city which showed wide variation in SES. Data on socioeconomic variables were readily available from 1960 census publications. Information was also available from block statistics.

The number of blocks in the census tract was used as a rough measure of area. Although the large outlying tracts tend to have larger blocks, they also received diffused effects from booms. This type of design is an effort at approximating a uniform sample throughout all levels of boom effect.

Selection of Census Tracts

Three variables--median level of income, median level of education, and residential stability--gave a close approximation to socioeconomic status for study purposes. All that was needed was sufficient heterogeneity.

Data for these three variables may be found in the U.S. Census Bureau publications of census tracts for each city. Specifically, income is the median income for all families, education is the median number of years of school completed by persons 25 years of age and over, and stability is the percent of those persons 5 years old and over who lived in the same house in 1955 and 1960.

An index was devised which combined the three variables into one value. Education was made numerically equivalent to income by multiplying by 100, and the index value was obtained by summing the three numbers and taking the average. The resultant value is thus dependent equally upon income and education, and, to a lesser extent, on residential stability.

Next, census tract maps of the cities were obtained and flight paths drawn onto them. Data on SES were collected on all census tracts in each city within 20 miles of the flight paths and within the city limits. The tracts in each city were assigned an index value and grouped into high, medium, and low SES.

In cities with multiple flight paths (Chicago, Dallas/Fort Worth, Denver, and Minneapolis/St. Paul) census tracts were selected from each of the three SES groups in an attempt to form a line perpendicular to the flight paths. Rarely were all of the tracts found along a single line. The distribution of SES by census tracts in a city does not often conform to this pattern. The more usual pattern is for census tracts with a similar SES rating to be contiguous. Given this situation, the only alternative was to select census tracts out of these three SES groups at varying distances from the flight paths. The usual procedure was to locate an area with low SES tracts and to select those which ran along a line perpendicular to the flight paths, maintaining as much spread as possible. The medium and high SES areas were located and the same procedure followed.

In the single-flight path cities (Atlanta and Los Angeles) the same procedure was followed except that additional census tracts following under the flight path were necessary. In Atlanta it was not feasible to draw varying SES levels under the flight path since it crossed over the northern part of the city. In Los Angeles, however, enough variation existed under and parallel to the flight path to allow selection of high, medium and low SES census tracts. However, the validity of the sampling procedure in Los Angeles may be questioned due to the variety of flight tracks in that city due to supersonic flights other than those of the SR-71.

Selection of Blocks

After the census tracts were selected, a random procedure was used to locate blocks. The number of interviews per block was set at four. This seemed reasonable and would assure consistency throughout the interview-gathering phase of the study.

The actual procedure for selection of blocks was as follows. The total number of interviews desired in a particular city was divided by four (the number of interviews per block). The result was the number of blocks needed in that city. Next, the grand total of all blocks in all selected census tracts was found. This sum was divided by the number of blocks needed, yielding a sampling ratio. This sampling ratio was then multiplied by the number of blocks for each selected census tract. The result gave the number of blocks in each particular census tract.

For example, in Dallas 450 interviews were needed. This number divided by four is approximately equal to 115, the number of blocks in Dallas required for the sample. The total number of blocks in all of the selected tracts in Dallas is equal to 1327. This number divided by 115 is equal to .0866, the sampling ratio. One of the selected tracts in Dallas is census tract 4A2, which contained a total of 40 blocks. When .0866 is multiplied by 40, the result is equal to 4, when rounded to a whole number. Thus, we would now look for four blocks in census tract 4A2 in which to sample.

The selection of the blocks in each census tract was accomplished with the use of a table of random numbers, thus assuring randomness of selection. In the example of tract 4A2, blocks 20, 24, 27 and 32 were randomly chosen. Blocks in other census tracts were chosen similarly. Once the blocks were located, interviewers were instructed to begin at the northeast corner of the block (or the northernmost part if the block was not square or rectangular), to start at the fourth dwelling unit until four interviews had been collected. If, for some reason, interviews could not be collected on a particular block, an alternate was provided by following the same procedures.

Form C Sample

Time I was concerned with collecting a sample of persons geographically dispersed and potentially subject to varying frequency and intensity of sonic boom. Time II is concerned with collecting data related to reactions to frequency and intensity of boom. Interest is, therefore, primarily focused on those who complain about the booms and/or those who file a claim as a result of the boom.

Since the probability of an individual being interviewed in Time I of the study and also complaining or filing a claim was extremely low, a strategy of group comparisons was employed. The process of sampling follows this strategy. Individuals who lived in areas where there were complaints were sampled along with those who complained. In addition, those who were sampled in Time I were sampled again after they had been exposed to booms, even though they did not complain.

Structure of the Sample

In Time II the total sample was divided into a number of subsamples, complainants, non-complainants, and pre-tested individuals.

Complainants were divided into groups of those who filed a claim (claimants) and those who did not file a claim (complainants). Complainants were further broken down into "quota" complainants (those who complained but did not file a claim and who were also located in census tracts where interviews were gathered in Time II; "random" complainants (those who complained but did not file a claim and who were not located in census tracts where interviews

were collected in Time I); and "outlying" complainants (those who complained but did not file a claim and who were located outside the boundaries of the sampling plan of Time I--typically in the outlying areas of the six cities). An example of the distribution of the various complainants in relation to the SR-71 flight path can be seen in the following map of Los Angeles County.

Non-complainants are those individuals who have not complained and who had not been interviewed in Time I. This sample was drawn from residents in close proximity to complainants and/or claimants. The non-complainant subsample was not instituted until after the interviewing had been completed in Dallas and Denver.

Pretested individuals are those who were interviewed in Time I of the study and who were also interviewed in Time II. This group was divided into "quota" pretested (those who were interviewed in both time periods and who lived in census tracts where complaints or claims were registered) and "random" pretested (those who were interviewed in both time periods and who did not live in census tracts where complaints or claims were registered).

In summary, there are seven achieved sub-samples:

1) Claimants
2) Quota complainants
3) Random complainants
4) Outlying complainants
5) Quota pretested
6) Random pretested
7) Non-complainants.

Sources of the Sample

Claimants were derived from U.S. Air Force claim lists. These lists gave such information as the name of the claimant, the command in which he was registered, the type of claim, the amount of claim, and the amount of award.

Complainants were derived from logs kept at the sonic boom complaint centers near the six cities. These complaint centers are Carswell AFB (Dallas/Fort Worth), Lowry AFB (Denver), Warner Robins AFB (Atlanta), International Airport (Minneapolis/St. Paul), Chanute AFB (Chicago), and the Air Force Judge Advocate or Space Systems Division in Los Angeles.

Sample Selection

Compilation of the sample began with a careful examination of the claim and complaint lists. Since addresses were not listed for claims, names on this list had to be compared with names on the complaint lists. After a thorough examination, lists were compiled of claimants and complainants for each city.

The locations of all available claimants and complainants were then plotted on street maps of the various cities. After this, census tract boundaries were marked on the same maps. The result provided a visual representation of claims and complaints by geographical distribution. A record was then made of which census tracts contained one or more claims or complaints.

The next step was to locate pretested individuals. This was not difficult since names, addresses, and census tract locations were gathered on these individuals during Phase I of the study. A

record was then made of which census tracts contained one or more pretested individuals.

Comparisons were made between response rates in those census tracts which contained one or more claimant or complainant and one or more Time I interviewees, between those which contained one or more claimant or complainant but no Time I interviewees, and those which contained only Time I interviewees. The first comparison located quota complainants (or claimants) and quota pretested. The second located random complainants, while the third shows random pretested. In this category, complaints were scattered beyond the boundaries of the city. These complaints constituted outlying complainants.

By planning for 737 interviews of complainants it was felt that approximately 600 would be valid and complete. The number in each sample of complainants for each city proved to be a reasonable estimate of the number obtainable from the total number of complainants and was based upon a knowledge of the conditions affecting interview completions.

The number of pretested individuals in the sample for each city depended upon the number of complainants. In each city an attempt was made to interview an equal number of complainants and pretested alike. How close these numbers equal each other depends, of course, on the difficulty of obtaining interviews in a particular city and the number of complaints recorded by the USAF.

The number of non-complainants in each city also depended on the number of complainants. When interviewers were assigned either a claimant or a complainant, they were also instructed to obtain an additional interview in the same block but not closer than two housing units.

Because of the focus on complaint, emphasis in sampling was placed on obtaining the claimants, forced complainants, and forced pretested samples. If these sources were exhausted, sampling continued with the random complainants and random pretested.

An illustration of a distribution of the sample in relation to an SR-71 flight path is presented in Figure A.1, showing the county of Los Angeles. The census tracts in which interviews with complainants were obtained following the SR-71 overflight program represent about one-sixth of the tracts from which complaints were registered. Additional interviews were obtained with neighbors of complainants, i.e., the "control" interviews in these complainant areas as well as in other areas designated "sample tracts" in the legend.

The distribution of the sample in Los Angeles is typical of the distribution in Atlanta, Denver and Dallas/Fort Worth.

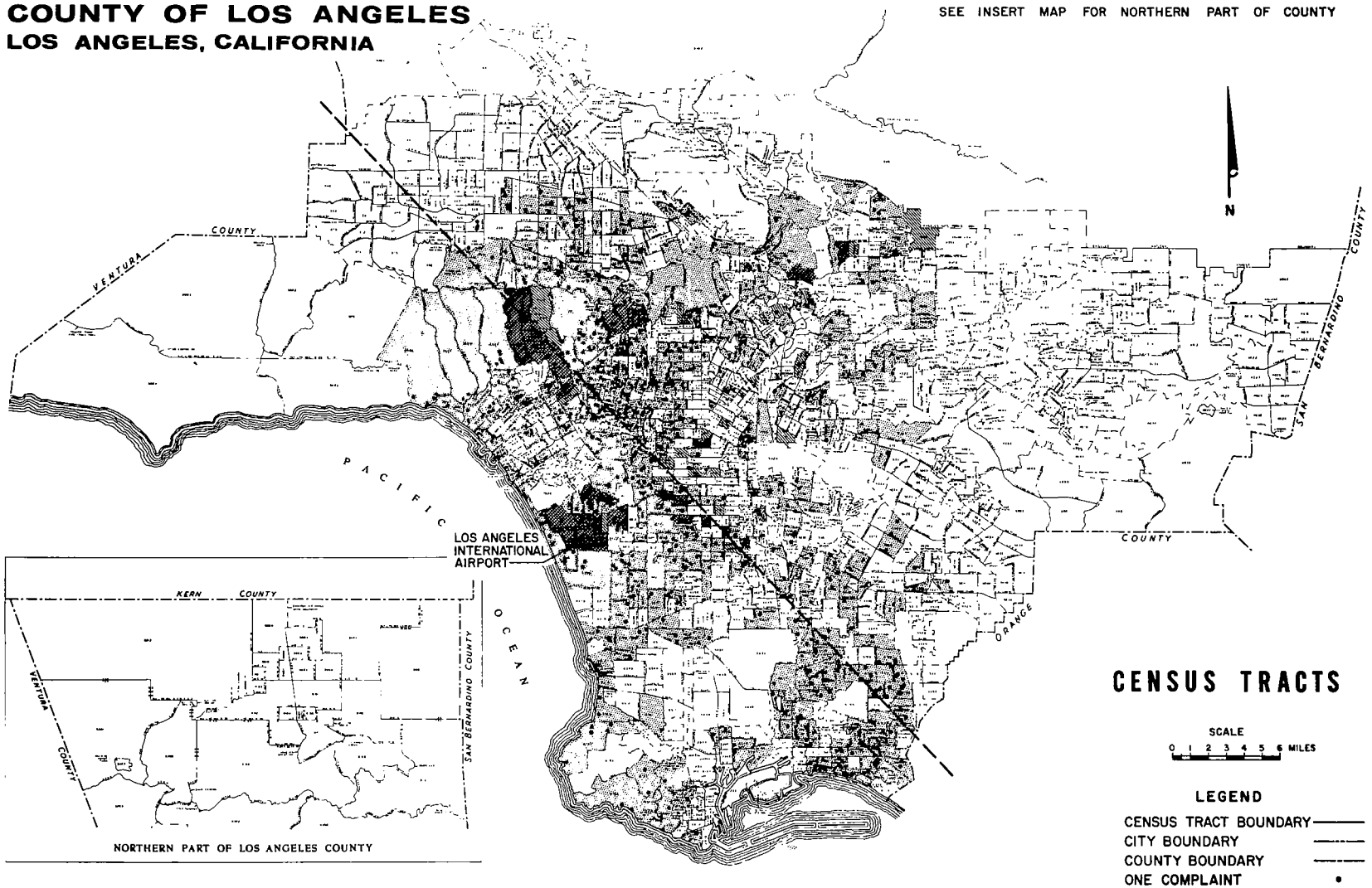

FIG. A.1 - **SR-71 BOOM PATHS AND SAMPLING TRACTS**

Table A.1

DEGREE OF ANNOYANCE BY CERTAIN SOUNDS:

MERGED SAMPLE

(In Percent)

Time I

Sound	Not At All				Very Often
	0	1	2	3	4
Automobiles and/or trucks	42	16	15	14	13
Aircraft operations	47	19	14	10	10
Neighborhood Children	61	16	11	7	5
Dogs and other pets	59	16	11	8	7
People	72	13	7	5	3
Motorcycles or hot rods	44	19	12	13	13
Trains	86	7	3	2	2
Sirens	61	17	10	8	4
Construction	88	7	3	2	1
Lawn mowers/garbage collection	73	14	8	4	2
Sonic Booms	60	17	9	6	8

N = 3,391

Time I: June-July 1967

Table A.2

ATTITUDINAL POSITION BY BOOM

(In Percent)

Time II

	Least Negative			Most Negative
	0	1	2	3
Merged	16	24	33	27
Atlanta	47	19	19	14
Dallas	16	27	34	23
Denver	11	22	35	32
Los Angeles	14	24	33	28

N = 967

Time II: February-April 1968

Table A.3

ANTICIPATED RESPONSES TO SONIC BOOMS
Time I

	Percent Non-Negative	Percent Indifferent	Percent Negative	Percent Residual	Percent No Comment	N
Merged Sample	9	19	62	.4	10	3391
Atlanta	8	13	64	.5	15	1018
Dallas	5	28	52	.8	14	860
Denver	15	21	58	.2	6	908
Los Angeles	7	15	77	.2	2	605

Time I: June-July 1967

Question: 53 (Form B)

Table A.4

DETAILED ANTICIPATED RESPONSES TO SONIC BOOM: MERGED SAMPLE

(In Percent)

Time I

Non-negative		9
Indifference		19
Simple	15	
Indifference with Rationalization	4	
Negative		62
General	39	
Structural Consequences	2	
Social Consequences	.3	
Psychological Consequences	16	
Combinations	.7	
Has or Would Move Because of Boom	4	
Residual		.5
No Comment		10

N = 3,391

Time I: June-July 1967

Table A.5

DETAILED ANTICIPATED RESPONSES TO SONIC BOOM: ATLANTA
Time I

Non-negative		7.86%
Indifference		12.86%
Simple	9.23%	
Indifference with Rationalization	3.63%	
Negative		64.04%
General	39.98%	
Structural Consequences	1.57%	
Social Consequences	.39%	
Psychological Consequences	17.98%	
Combinations	.29%	
Has or Would Move Because of Boom	3.83%	
Residual		.49%
No Comment		14.73%

N = 1,018

Time I: June-July 1967

Table A.6

DETAILED ANTICIPATED RESPONSES TO SONIC BOOM: DALLAS
Time I

Non-negative		5.23%
Indifference		28.49%
Simple	21.86%	
Indifference with Rationalization	6.63%	
Negative		51.52%
General	31.98%	
Structural Consequences	1.28%	
Social Consequences	.12%	
Psychological Consequences	15.35%	
Combinations	.12%	
Has or Would Move Because of Boom	2.67%	
Residual		.82%
No comment		13.95%

N = 860

Time I: June-July 1967

Table A.7

DETAILED ANTICIPATED RESPONSES TO SONIC BOOM: DENVER
Time I

Non-negative		14.76%
Indifference		20.70%
Simple	17.51%	
Indifference with Rationalization	3.19%	
Negative		58.25%
General	41.30%	
Structural Consequences	2.42%	
Social Consequences	.11%	
Psychological Consequences	10.79%	
Combinations	.66%	
Has or Would Move Because of Boom	2.97%	
Residual		.22%
No Comment		6.06%

N = 908

Time I: June-July 1967

Table A.8

DETAILED ANTICIPATED RESPONSES TO SONIC BOOM: LOS ANGELES
Time I

Non-negative		6.61%
Indifference		14.88%
Simple	11.57%	
Indifference with Rationalization	3.31%	
Negative		76.52%
General	43.80%	
Structural Consequences	1.98%	
Social Consequences	.66%	
Psychological Consequences	22.48%	
Combinations	2.15%	
Has or Would Move Because of Boom	5.45%	
Residual		.17%
No Comment		1.82%

N = 605

Time I: June-July 1967

Table A.9

RANK ORDER OF CITIES BY PERCENTAGE OF NEGATIVE ANTICIPATED RESPONSES TO SONIC BOOM

Time I

City	Percent Negative
Los Angeles	77
Atlanta	64
Denver	58
Dallas	52

Time I: June-July 1967

Table A.10

ANTICIPATED REACTIONS TO THE SONIC BOOM
BY OCCUPATION: MERGED SAMPLE

(In Percent)

Time I

	Occupational Level		
	Low	Medium	High
Non-negative	6	9	10
Indifferent	19	21	19
Negative	57	60	66
Residual	1	1	1
No comment	17	10	4
	100	100	100
N =	421	770	1,252

Time I: June-July 1967

Table A.11

ANTICIPATED REACTIONS TO THE SONIC BOOM BY HOUSING COST: MERGED SAMPLE

(In Percent)

Time I

	Rent or House Cost		
	Low	Medium	High
Non-negative	8	10	9
Indifferent	21	19	14
Negative	54	66	74
Residual	1	1	0
No comment	16	4	4
	100	100	100
N =	1,171	1,155	513

Time I: June-July 1967

Table A.12

ANTICIPATED REACTIONS TO THE SONIC BOOM BY OWNERSHIP OF HOUSE: MERGED SAMPLE

(In Percent)

Time I

	Own or Rent	
	Own	Rent
Non-negative	9	9
Indifferent	19	21
Negative	63	57
Residual	1	1
No comment	7	13
	100	100
N =	2,393	939

Time I: June-July 1967

Table A.13

ANTICIPATED REACTIONS TO THE SONIC BOOM BY INCOME:
MERGED SAMPLE

(In Percent)

Time I

	Income		
	Low	Medium	High
Non-negative	8	11	9
Indifferent	20	20	17
Negative	57	63	70
Residual	1	1	1
No comment	15	5	3
	100	100	100
N =	1,245	1,106	548

Time I: June-July 1967

Table A.14

ANTICIPATED REACTIONS TO THE SONIC BOOM BY EDUCATION: MERGED SAMPLE

(In Percent)

Time I

	Education			
	Less Than High Sch.	High School	Some College or Col. Grad.	Graduate Training
Non-negative	7	9	9	13
Indifferent	19	20	21	12
Negative	55	64	65	71
Residual	1	1	1	0
No comment	18	6	4	4
	100	100	100	100
N =	1,159	1,009	972	211

Time I: June-July 1967

Table A.15

HAVING DEFINITE OPINION ABOUT THE SONIC BOOM BY OCCUPATION: MERGED SAMPLE

(In Percent)

Time II

	Occupation		
	Low	Medium	High
Yes	22	35	50
Undecided	16	13	12
No	62	52	38
Residual	0	0	1
	100	100	100
N =	63	173	499

Time II: February-April 1968

Table A.16

HAVING DEFINITE OPINION ABOUT THE SONIC BOOM BY INCOME: MERGED SAMPLE

(In Percent)

Time II

	Education			
	Less Than High Sch.	High School	Some College or Col. Grad.	Graduate Training
Yes	23	36	46	61
Undecided	14	12	15	11
No	63	51	39	28
Residual	0	1	0	0
	100	100	100	100
N =	164	342	395	99

Time II: February April 1968

Table A.17

HAVING DEFINITE OPINION ABOUT THE SONIC BOOM BY EDUCATION: MERGED SAMPLE

(In Percent)

Time II

	Income		
	Low	Medium	High
Yes	26	44	53
Undecided	13	14	14
No	61	43	33
Residual	0	1	0
	100	100	100
N =	190	422	236

Time II: February-April 1968

Table A.18

DEGREE OF ANNOYANCE BY OCCUPATION:
MERGED SAMPLE

(In Percent)

Time I

	Occupation		
Annoyance	Low	Medium	High
0	66	60	54
1	15	16	19
2	7	10	11
3	6	6	6
4	6	8	9
	100	100	100
N =	421	770	1,252

Time I: June-July 1967

Table A.19

DEGREE OF ANNOYANCE BY HOUSING COST:
MERGED SAMPLE

(In Percent)

Time I

	Rents or House Cost		
Annoyance	Low	Medium	High
0	64	60	43
1	16	16	24
2	9	9	12
3	5	6	10
4	6	8	11
	100	100	100
N =	1,171	1,155	513

Time I: June-July 1967

Table A.20

DEGREE OF ANNOYANCE BY HOME OWNERSHIP:
MERGED SAMPLE

(In Percent)

Time I

	Owner or Renter	
Annoyance	Own	Rent
0	56	68
1	18	15
2	10	8
3	7	5
4	9	5
	100	100
N =	2,393	939

Time I: June-July 1967

Table A.21

DEGREE OF ANNOYANCE BY INCOME:
MERGED SAMPLE

(In Percent)

Time I

	Income		
Annoyance	Low	Medium	High
0	65	58	54
1	15	20	18
2	8	10	9
3	6	6	8
4	7	6	11
	100	100	100
N =	1,245	1,106	548

Time I: June-July 1967

Table A.22

DEGREE OF ANNOYANCE BY EDUCATION:
MERGED SAMPLE

(In Percent)

Time I

Annoyance	Education: Less Than High Sch.	High School	Some College or Col. Grad.	Graduate Training
0	64	56	56	53
1	15	19	17	22
2	8	11	10	10
3	6	6	8	9
4	7	8	9	5
	100	100	100	100
N =	1,159	1,009	972	211

Time I: June-July 1967

Table A.23

FREQUENCY OF ANNOYANCE BY OCCUPATION:
MERGED SAMPLE

(In Percent)

Time I

How Often	Occupation		
	Low	Medium	High
0	65	58	52
1	20	23	27
2	7	10	11
3	4	4	6
4	3	4	4
	100	99	100
N =	421	770	1,252

Time I: June-July 1967

Table A.24

FREQUENCY OF ANNOYANCE BY HOUSING COST:
MERGED SAMPLE

(In Percent)

Time I

	Rent or House Cost		
How Often	Low	Medium	High
0	63	58	42
1	22	23	29
2	8	10	13
3	5	5	9
4	3	4	7
	100	100	100
N =	1,171	1,155	513

Time I: June-July 1967

Table A.25

FREQUENCY OF ANNOYANCE BY HOME OWNERSHIP:
MERGED SAMPLE

(In Percent)

Time I

How Often	Own or Rent: Own	Rent
0	56	68
1	18	15
2	10	8
3	7	5
4	9	5
	100	100
N =	2,393	939

Time I: June-July 1967

Table A.26

FREQUENCY OF ANNOYANCE BY INCOME:
MERGED SAMPLE,

(In Percent)

Time I

	Income		
How Often	Low	Medium	High
0	63	57	53
1	22	26	22
2	7	10	10
3	4	4	9
4	3	3	5
	100	100	100
N =	1,245	1,106	548

Time I: June-July 1967

Table A.27

FREQUENCY OF ANNOYANCE BY EDUCATION:
MERGED SAMPLE

(In Percent)

Time I

How Often	Less Than High Sch.	High School	Some College or Col. Grad.	Graduate Training
0	63	56	54	59
1	22	25	24	25
2	8	10	10	9
3	4	5	7	4
4	3	4	4	3
	100	100	99	100
N =	1,159	1,009	972	211

Time I: June-July 1967

Table A.28

MOST ANNOYING SOUND BY OCCUPATION:
MERGED SAMPLE

(In Percent)

Time I

	Occupation		
	Low	Medium	High
No sound	18	16	13
Boom	8	6	9
Other	74	78	78
	100	100	100
N =	421	770	1,252

Time I: June-July 1967

Table A.29

MOST ANNOYING SOUND BY HOUSING COST:
MERGED SAMPLE

(In Percent)

Time I

	Rent or House Cost		
	Low	Medium	High
No sound	15	15	14
Boom	5	9	11
Other sound	79	76	75
	100	100	100
N =	1,171	1,155	513

Time I: June-July 1967

Table A.30

MOST ANNOYING SOUND BY HOME OWNERSHIP:
MERGED SAMPLE

(In Percent)

Time I

	Owner or Renter	
	Own	Rent
No sound	17	15
Boom	9	4
Other sound	74	81
	100	100
N =	2,393	939

Time I: June-July 1967

Table A.31

MOST ANNOYING SOUND BY INCOME:
MERGED SAMPLE

(In Percent)

Time I

	Low	Medium	High
No sound	18	14	14
Boom	7	7	11
Other sound	75	79	76
	100	100	100
N =	1,245	1,106	548

Time I: June-July 1967

Table A.32

MOST ANNOYING SOUND BY EDUCATION:
MERGED SAMPLE

(In Percent)

Time I

	Education			
	Less Than High School	High School	Some College	Graduate Training
No sound	18	16	16	12
Boom	7	8	9	7
Other sounds	76	76	75	81
	100	100	100	100
N =	1,159	1,009	972	211

Time I: June-July 1967

Table A.33

PERCENT IN UPPER TWO CATEGORIES OF BOOM DISTURBANCE OF ACTIVITIES BY OCCUPATION: MERGED SAMPLE

Time I

	Occupation		
	Low	Medium	High
Relaxing inside	27	36	32
Relaxing outside	12	18	19
Sleeping	12	10	15
Conversation	9	18	15
Telephone	6	28	17
Record listening	0	12	12
Radio and TV	15	30	18
Reading	9	12	21
Eating	3	14	9
N =	33	50	117

Time I: June-July 1967

Table A.34

PERCENT IN UPPER TWO CATEGORIES OF BOOM DISTURBANCE OF ACTIVITIES BY HOUSING COST: MERGED SAMPLE

Time I

	Rent or House Cost		
	Low	Medium	High
Relaxing inside	38	31	39
Relaxing outside	17	17	21
Sleeping	14	6	19
Conversation	14	13	19
Telephone	17	17	18
Record listening	9	6	16
Radio and TV	17	19	19
Reading	13	15	23
Eating	12	8	12
N =	64	103	57

Time I: June-July 1967

Table A.35

PERCENT IN UPPER TWO CATEGORIES OF BOOM DISTURBANCE OF ACTIVITIES BY HOME OWNERSHIP: MERGED SAMPLE

Time I

	Own or Rent	
	Own	Rent
Relaxing inside	31	48
Relaxing outside	17	21
Sleeping	11	17
Conversation	14	17
Telephone	15	24
Record listening	8	12
Radio and TV	17	24
Reading	15	17
Eating	10	10
N =	213	42

Time I: June-July 1967

Table A.36

PERCENT IN UPPER TWO CATEGORIES OF BOOM DISTURBANCE OF ACTIVITIES BY INCOME: MERGED SAMPLE

Time I

	Income		
	Low	Medium	High
Relaxing inside	39	25	41
Relaxing outside	22	11	20
Sleeping	8	11	17
Conversation	16	14	17
Telephone	19	16	17
Record listening	8	5	14
Radio and TV	22	18	20
Reading	12	18	22
Eating	10	10	14
N =	83	79	59

Time I: June-July 1967

Table A.37

PERCENT IN UPPER TWO CATEGORIES OF BOOM DISTURBANCE OF ACTIVITIES BY EDUCATION: MERGED SAMPLE
Time I

	Education			
	Less Than High School	High School	Some College	Graduate Training
Relaxing inside	43	16	25	53
Relaxing outside	21	13	15	40
Sleeping	7	9	15	33
Conversation	13	11	17	20
Telephone	16	19	15	20
Radio and TV	22	15	19	13
Reading	11	15	17	27
Eating	12	10	7	13
N =	76	79	88	15

Time I: June-July 1967

Table A.38

FIRST SOUND TO ELIMINATE BY OCCUPATION:
MERGED SAMPLE

(In Percent)

Time II

First sound to Eliminate	Occupation		
	Low	Medium	High
Sonic boom	12	20	24
Other sound	88	80	76
	100	100	100
N =	57	163	485

Table A.39

FIRST SOUND TO ELIMINATE BY INCOME:
MERGED SAMPLE

(In Percent)

Time II

First sound to Eliminate	Income		
	Low	Medium	High
Sonic boom	11	20	27
Other sound	89	80	73
	100	100	100
N =	75	406	234

Time II: February-April 1968

Table A.40

FIRST SOUND TO ELIMINATE BY EDUCATION:
MERGED SAMPLE

(In Percent)

Time II

First Sound To Eliminate	Education: Less Than High School	High School	Some College	Graduate Training
Sonic boom	12	24	20	26
Other sound	88	76	80	74
	100	100	100	100
N =	139	330	383	98

Table A.41

ADJECTIVE INDEX SCORE BY OCCUPATION:
MERGED SAMPLE

(In Percent)

Time II

Adjective Index	Occupation: Low	Medium	High
0	28	21	12
1	19	19	25
2	33	37	32
3	19	23	31
	100	100	100
N =	57	163	485

Time II: February-April 1968

Table A.42

ADJECTIVE INDEX SCORE BY INCOME:
MERGED SAMPLE
(In Percent)

Time II

Adjective Index	Income Low	Medium	High
0	22	13	13
1	18	25	25
2	22	29	26
3	38	34	35
	100	100	100
N =	175	406	234

Time II: February-April 1968

Table A.43

ADJECTIVE INDEX SCORE BY EDUCATION:
MERGED SAMPLE
(In Percent)

Time II

Adjective Index	Education: Less Than High School	High School	Some College	Graduate Training	Total Sample
0	23	14	14	18	15
1	22	26	23	27	24
2	33	33	36	23	34
3	22	28	26	32	27
	100	100	100	100	100
N =	139	330	383	98	481

Time II: February-April 1968

Table A.44

PERCENT REPORTING INTERFERENCE IN ACTIVITIES BY OCCUPATION: MERGED SAMPLE

Time II

	Occupation		
	Low	Medium	High
Relaxing inside	35	34	43
Relaxing outside	18	28	38
Sleeping	12	23	25
Talking on telephone	18	23	28
Record listening	16	23	26
Radio and TV	23	23	26
Reading or concentrating	25	30	42
Eating	16	19	19
N =	57	163	485

Time II: February-April 1968

Table A.45

PERCENT REPORTING INTERFERENCE OF ACTIVITIES BY INCOME: MERGED SAMPLE

Time II

	Income		
	Low	Medium	High
Relaxing inside	35	43	43
Relaxing outside	29	34	39
Sleeping	25	23	23
Talking on telephone	21	25	27
Record listening	18	25	27
Radio and TV	29	29	23
Reading or Concentrating	27	38	44
Eating	14	19	19
N =	175	406	234

Time II: February-April 1968

Table A.46

PERCENT REPORTING INTERFERENCE OF ACTIVITIES BY EDUCATION: MERGED SAMPLE

Time II

	Education			
	Less Than High School	High School	Some College	Graduate Training
Relaxing inside	29	42	41	38
Relaxing outside	22	35	35	32
Sleeping	19	23	27	20
Talking on telephone	13	26	30	15
Record listening	10	24	28	20
Radio or TV	22	29	27	19
Reading or concentrating	20	38	40	36
Eating	12	19	19	13
N =	139	330	383	98

Time II: February-April 1968

Table A.47

PERCENT HAVING CORRECT INFORMATION BY OCCUPATION: MERGED SAMPLE

Time I

	Occupation		
	Low	Medium	High
What causes sonic booms	12	19	27
What does "SST" mean	3	8	20
What does "mach one" mean	4	8	21
Heard or read about booms	46	63	74
N =	421	770	1,252

Time T: June-July 1967

Table A.48

PERCENT HAVING CORRECT INFORMATION BY HOUSING COST: MERGED SAMPLE

Time I

	Rent or House Cost		
	Low	Medium	High
What causes sonic booms	15	24	28
What does "SST" mean	4	13	26
What does "mach one" mean	5	13	24
Heard or read about booms	48	69	78
N =	1,171	1,155	513

Time I: June-July 1967

Table A.49

PERCENT HAVING CORRECT INFORMATION BY HOME OWNERSHIP: MERGED SAMPLE

Time I

	Owner or Renter	
	Own	Rent
What causes sonic booms	22	17
What does "SST" mean	12	10
What does "mach one" mean	12	10
Heard or read about booms	64	57
N =	2,393	939

Time I: June-July 1967

Table A.50

PERCENT HAVING CORRECT INFORMATION BY INCOME:
MERGED SAMPLE

Time I

	Income		
	Low	Medium	High
What causes sonic booms	15	23	31
What does "SST" mean	4	14	27
What does "mach one" mean	5	15	25
Heard or read about booms	49	71	79
N =	1,245	1,106	548

Time I: June-July 1967

Table A.51

PERCENT HAVING CORRECT INFORMATION BY EDUCATION: MERGED SAMPLE

Time I

	Education			
	Less Than High School	High School	Some College	Graduate Training
What causes sonic booms	11	21	30	29
What does "SST" mean	2	8	22	29
What does "mach one" mean	2	9	22	29
Heard or read about booms	43	66	77	82
N =	1,159	1,009	972	211

Time I: June-July 1967

Table A.52

PERCENT HAVING CORRECT INFORMATION:
MERGED SAMPLE

Time I

	Sample
What causes sonic booms	20
What does "SST" mean	11
What does "mach one" mean	12
Heard or read about booms	62
N =	3,391

Time I: June-July, 1967

Table A.53

DENSITY OF COMPLAINTS OR CLAIMS BY CITY

City	Number of Complainants	Number of Claimants	Total Complaining or Claiming	Population in SMSA, 1967	Number Complaining or Claiming per 100,000 persons
Atlanta	6	1	7	1,118,907	.6
Dallas	247	51	298	1,822,498	16.3
Denver	135	43	178	1,022,321	17.4
Los Angeles	968	322	1290	7,416,966	17.4
Total Sample	1356	417	1773	11,380,692	15.6

Table A.54

DENSITY OF ACHIEVED COMPLAINANT SAMPLE, BY CITY

City	Time II Sample Size	Number in Complainant Sample	Estimated Number Sampled Complainants per 100,000 of sample (I)	Estimated Number Human Complainants Per 100,000 Population (II)
Atlanta	87	3	3448	.6
Dallas	194	69	35567	16.4
Denver	146	51	34931	17.4
Los Angeles	592	243	41047	17.4
Total Sample	1019	366	35917	15.6

Table A.55

NUMBER OF OVERFLIGHTS AND COMPLAINANTS OR CLAIMANTS, BY CITY

City	Number of Overflights	Number Complainants or Claimants Per 100,000 Persons
Atlanta	5	.6
Dallas	60	16.4
Denver	32	17.4
Los Angeles	20*	17.4

Correlation of (number of overflights) and (number complainants or claimants per 100,000 persons) : r=.65

*These are all that were reported by USAF. The experience of TRACOR personnel involved in the interview work leads us to believe that the actual number of booms experienced in LA is probably in excess of four times this figure.

Table A.56

NUMBER OF OVERFLIGHTS AND ADJECTIVE INDEX SCORE, BY CITY
(Time II)

City	Number of Overflights	Mean City Score on "Adjective Index"	Mean City Score on "Adjective Index" Adjusted for House Rent Cost*
Atlanta	5	1.00	.57
Dallas	60	1.65	1.66
Denver	32	1.87	1.84
Los Angeles	80 (Est.)	1.75	1.82

Correlation of (number of overflights) and (mean city score on "Adjective Index") : r=.69

Correlation of (number of overflights) and (mean city score on "Adjective Index" adjusted for Socioeconomic level) r=.78

Time II: February-April 1968

*The measure of Socioeconomic Level used here is House/Rent Cost per month. See Chapter VII for a discussion of the importance of this variable.

Table A.57

MEAN ADJECTIVE INDEX SCORE FOR PRETEST AND CONTROL GROUPS
LOS ANGELES AND ATLANTA

(Time II)

	Pretested Groups	Control Groups
Los Angeles	1.724	1.520
Atlanta	.576	.640

P (Atlanta) = .7872*

P (Los Angeles) = .0990*

Time II: February-April 1968

*These tests of significance assume normality in the distribution of the sample, and should thus be viewed as indicative rather than definitive.

Table A.58

RENT/HOUSE COST FOR CONTROL AND PRETEST SAMPLES*
(In percent)

(Time II)

Rent/House Cost	Control	Pre-test
$1 - 99 mo.	26	29
$100 - 174 mo.	29	37
$175 +	45	34
N	344	418

$x^2 = 4.63$ $p < .10$**

Time II: February-April 1968

*No inference is made here about the comparability of house/rent costs in the four cities under study. The table refers to characteristics of the merged control and pre-test samples.

**A test of significance assumes normality of the distribution, which has not been demonstrated in this instance. The significance level should thus be taken as indicative rather than definitive.

Table A.59

NUMBER OF OVERFLIGHTS AND MEAN ADJECTIVE INDEX SCORE FOR COMPLAINANTS, BY CITY

City	Number of Overflights	Mean City Score on "Adjective Index"-- Complainant Subsample
Atlanta	5	2.33
Dallas	60	1.87
Denver	32	2.08
Los Angeles	80 (Est.)	1.90

Correlation of number of overflights and mean city score on "Adjective Index" - Complainant subsample (Including Atlanta)
$r = -.94$

Correlation of number of overflights and mean city score on "Adjective Index" - Complainant subsample (Excluding Atlanta)
$r = -.78$

Table A.60

NUMBER OF OVERFLIGHTS BY MEAN ADJECTIVE INDEX SCORE FOR NON-COMPLAINANTS, BY CITY

City	Number of Overflights	Mean City Score on "Adjective Index"-- Non-Complainant Subsample
Atlanta	5	.93
Dallas	60	1.52
Denver	32	1.76
Los Angeles	80 (Est.)	1.65

Correlation of number of overflights and mean city score on "Adjective Index" - Non-complainant subsample: r = .68

Table A.61

NUMBER OF COMPLAINANTS OR COMPLAINTS AND MEAN ADJECTIVE INDEX SCORE, BY CITY
(Time II)

City	Number Complainants or Claimants Per 100,000 Persons	Mean City Score on "Adjective Index"
Atlanta	.6	1.00
Dallas	16.4	1.65
Denver	17.4	1.87
Los Angeles	17.4	1.75

Correlation of number complainants or claimants per 100,000 persons and mean city score on "Adjective Index": r = .98

Time II: February-April 1968

Table A.62

OCCUPATION BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

Occupation	Complainant	Non-Complainant
Low	3	12
Medium	19	26
High	78	62
N=	263	469

$x^2 = 27.31$ 2df $P < .001$

Time II: February-April 1968

Table A.63

RENT OR HOUSE COST BY COMPLAINANT BEHAVIOR

(In percent)

(Time II)

Rent or House Cost	Complainant	Non-Complainant
Low	42	45
Medium	23	26
High	34	29
N=	281	407

$x^2 = 1.7295$ 2df $.50 > P > .30$

Time II: February-April 1968

Table A.64

HOME OWNERSHIP BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

Home Ownership	Complainant	Non-Complainant
Owner	93	76
Renter	7	24
N=	350	611

$x^2 = 47.84$ 1df $P < .001$

Time II: February-April 1968

Table A.65

INCOME BY COMPLAINANT BEHAVIOR

(In percent)
(Time II)

Income	Complainant	Non-Complainant
Low	17	21
Medium	50	42
High	33	37
N=	310	638

$x^2 = 5.69$ 2df $.10 > P > .05$

Time II: February-April 1968

Table A.66

EDUCATION BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

Education	Complainant	Non-Complainant
Less than High School	9	21
High School	37	33
Some College	43	38
Graduate Training	11	9
N=	356	639

$x^2 = 23.43$ 3df $P<.001$

Time II: February-April 1968

Table A.67

ADJECTIVE INDEX SCORE BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

Adjective Index Score	Complainant	Non-Complainant
0	9	25
1	23	24
2	36	30
3	33	22
N=	366	653

$x^2 = 47.24$ 3df $P < .001$

Time II: February-April 1968

Table A.68

PERCENTAGE OF COMPLAINANTS AND NON-COMPLAINANTS REPORTING DISTURBANCE OF ACTIVITIES

(In percent)

(Time II)

Activity	Complainant	Non-Complainant
Relaxing Inside	58	27
Relaxing Outside	46	23
Sleeping	33	17
Talking on Telephone	35	17
Listening to Records or Tapes	33	17
Radio or TV Reception	37	19
Reading or Concentrating	52	25
Eating	58	27
N=	360	659

Time II: February-April 1968

Table A.69

NOTICE OF BOOM BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

How much boom is noticed in comparison to how much neighbors notice it	Complainant	Non-Complainant
Far Less	2	10
Little Less	6	11
About Same	81	74
Little More	7	3
Far More	4	2
N=	301	535

$x^2 = 30.00$ 4df $P < .001$

Time II: February-April 1968

Table A.70

NEIGHBORHOOD NOISE BY COMPLAINANT BEHAVIOR

(In percent)
(Time II)

Number of Neighborhood Noises Reported	Complainant	Non-Complainant
Low (0-3)	26	26
Medium (4-7)	52	54
High (8-11)	22	21
N=	366	653

$x^2 = 0.18$ 2df $.95 > P < .90$

Time II: February-April 1968

Table A.71

REASON TO ELIMINATE NOISE BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

Reason to Eliminate	Complainant	Non-Complainant
Makes too much noise	4	6
Are disturbing at night	1	0
Unnecessary	8	6
Aggravating, irritating worrisome, annoying	6	17
Costly, cause damage	52	26
Danger to life, frightening	8	13
Bad for nerves	6	6
Interferes with TV	1	2
Harmful to health	2	0
Startling	7	15
So house wouldn't shake	5	4
Make this more pleasant place to live	1	2
Would like to eliminate but realize is necessary	1	2
N=	144	47

Time II: February-April 1968

Table A.72

LEVEL OF DISCUSSION BY COMPLAINANT BEHAVIOR
(In percent)
(Time II)

Level of Discussion	Complainants	Non-Complainants
Have an opinion	56	32
Generally discuss	50	32
Discuss with family	89	68
Hear discussed	78	58
N=	366	653

Time II: February-April 1968

Table A.73

REASONS FOR SELECTING NEIGHBORHOOD - CHICAGO

	N	Percent
Convenient location	358	37.41
Liked the house	114	11.91
Inexpensive housing	113	11.81
Good community characteristics	104	10.87
Quiet area	68	7.11
Safe for children and walking at night	52	5.43
Other	148	15.46
Total	957	100.00

Table A.74

REASONS FOR SELECTING NEIGHBORHOOD - MINNEAPOLIS-ST. PAUL

	N	Percent
Convenient location	325	38.15
Inexpensive housing	126	14.79
Good community characteristics	115	13.50
Liked the house	108	12.68
Good neighbors	56	6.57
Nice appearance of neighborhood	43	5.05
Quiet area	30	3.52
Safe for children and walking at night	30	3.52
Spacious yards, privacy	19	2.23
Total	852	100.00

Table A.75

NEIGHBORHOOD ADVANTAGES - CHICAGO

	N	Percent
Convenient location	397	37.31
Good community characteristics	128	12.03
Quiet area	120	11.28
Good neighbors	124	11.65
Nice appearance of area	117	11.00
No advantages	61	5.73
Other	117	11.00
Total	1064	100.00

Table A.76

NEIGHBORHOOD ADVANTAGES - MINNEAPOLIS-ST. PAUL

	N	Percent
Convenient location	394	43.73
Good Neighborhood characteristics	103	11.43
Good neighbors	84	9.32
Quiet area	82	9.10
Nice appearance of area	56	6.22
No advantages	35	3.88
Other	147	16.32
Total	901	100.00

Table A.77

NEIGHBORHOOD DISADVANTAGES - CHICAGO

	N	Percent
Noisy area	272	25.56
Inconvenient location	136	12.78
Poor neighborhood characteristics	73	6.86
Unsafe area	31	2.91
Poor neighbors	40	3.76
Run-down area	52	4.89
Other	208	19.55
No disadvantages	252	23.68
Total	1064	99.99

Table A.78

NEIGHBORHOOD DISADVANTAGES - MINNEAPOLIS-ST. PAUL

	N	Percent
Noisy area	195	21.64
Inconvenient location	84	9.32
Poor neighbors	38	4.22
Run-down area	33	3.66
Overcrowded	28	3.11
Poor community characteristics	65	7.21
Expensive housing	35	3.88
Unsafe area	43	4.77
No disadvantages	244	27.08
Other	136	15.09
Total	901	100.00

Table A.79

MOST ANNOYING NEIGHBORHOOD CHARACTERISTIC - CHICAGO

	N	Percent
Noisiness	264	28.14
Dangerous traffic conditions	115	12.26
Poor location	102	10.87
Poor community conditions	66	7.04
Run-down neighborhood	93	9.91
Unsafe at night	84	8.96
Overcrowded	50	5.33
Dangerous for children	44	4.69
Poor neighbors	39	4.16
Expensive housing	38	4.05
Sonic boom	23	2.45
Dislike house	20	2.13
Total	938	99.99

Table A.80

MOST ANNOYING NEIGHBORHOOD CHARACTERISTIC - MINNEAPOLIS-ST. PAUL

	N	Percent
Noisiness	230	26.38
Dangerous traffic conditions	107	12.27
Poor location	50	5.73
Unsafe at night	86	9.86
Run-down neighborhood	69	7.91
Poor community characteristics	76	8.72
Sonic booms	42	4.82
Overcrowded	40	4.59
Poor neighbors	38	4.36
Dangerous for children	34	3.90
Expensive housing	30	3.44
Dislikes house	22	2.52
Not annoyed by anything	48	5.50
Total	872	100.00

Table A.81

CITY RESIDENCE

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Length of time lived in city	0	18	1.70	24	2.68
	1-5	66	6.23	92	10.27
	6-10	77	7.26	64	7.14
	11-15	80	7.55	62	6.92
	16-20	123	11.60	103	11.50
	21+	696	65.66	551	61.50
	Total	1060	100.00	896	100.00

Table A.82

MOBILITY

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Times moved in last 10 years	None	446	42.19	380	42.51
	1-2	374	35.39	286	31.99
	3-5	200	18.92	163	18.23
	6-9	37	3.50	65	7.27
	Total	1057	100.00	894	100.00

Table A.83

OWNER/RENTER OCCUPIED

	Chicago		Minneapolis-St. Paul	
	N	Percent	N	Percent
Owns	685	64.38	661	73.36
Rents	353	33.18	226	25.08
Other	26	2.44	14	1.56
Total	1064	100.00	901	100.00

Table A.84

RENT - HOUSE COST

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Rent or house cost in Dollars	1-99	174	23.39	192	24.81
	100-174	371	49.87	383	49.48
	175+	199	26.75	199	25.71
	Total	744	100.01	774	100.00

Table A.85

TOTAL FAMILY INCOME

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Total family income annually in Dollars	Under $4,000	139	17.96	157	19.80
	$4,000-$9,999	370	47.80	377	47.54
	$10,000+	265	34.24	259	32.65
	Total	774	100.00	793	99.99

Table A.86

HIGHEST EDUCATION COMPLETED

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Level of education completed	None	7	0.67	3	0.34
	Grade School	152	14.57	56	6.27
	High School	548	52.54	471	52.81
	College	270	25.89	305	34.20
	Advanced Degree	66	6.33	57	6.39
	Total	1043	100.00	892	100.00

Table A.87

OCCUPATION

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Occupational rating	1-30	101	9.91	62	6.88
	31-70	364	35.72	329	36.51
	71-99	497	48.77	483	53.61
	Not Given	57	5.59	27	3.00
	Total	1019	99.99	901	100.00

Table A.88

ORGANIZATIONAL MEMBERSHIP

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Number of organizations member of	0	481	45.38	259	28.75
	1	310	29.25	216	23.97
	2	167	15.75	179	19.87
	3	57	5.38	112	12.43
	4	29	2.74	73	8.10
	5	16	1.51	62	6.88
	Total	1060	100.01	901	100.00

Table A.89

AGE CATEGORY OF RESPONDENT

	Chicago		Minneapolis-St. Paul	
	N	Percent	N	Percent
30 or under	245	23.65	212	23.85
31 - 60	619	59.75	464	52.19
61 and above	172	16.60	213	23.96
Total	1036	100.00	889	100.00

Table A.90

HOW WOULD YOU FEEL IT SONIC BOOMS OCCURRED AROUND HERE?

	Chicago		Minneapolis-St. Paul	
	N	Percent	N	Percent
Non-negative	142	14.65	232	26.13
Negative	827	85.35	656	73.87
Total	969	100.00	888	100.00
Non-negative				
General	31	21.83	36	15.52
Indifference	59	41.55	137	59.05
Indifference with Reason	52	36.62	59	25.43
Total	142	100.00	232	100.00
Negative				
General	602	72.79	453	69.05
Structural Conseq.	43	5.20	31	4.73
Social Conseq.	1	0.12	10	1.52
Psychological Conseq.	155	18.74	142	21.65
Has or would move(d)	23	2.78	14	2.13
Other	3	0.36	6	0.91
Total	827	99.99	656	99.99

Table A.91

HOW OFTEN WOULD YOU SAY PLANES STARTLE YOU WHEN THEY FLY OVER?

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
	Not at all 0	679	64.24	590	65.77
	1	202	19.11	186	20.74
How often	2	122	11.54	76	8.47
	3	28	2.65	30	3.34
	Very often 4	26	2.46	15	1.67
	Total	1057	100.00	897	99.99
If startled, how much annoyed?					
	Not at all 0	48	11.59	50	15.97
	1	96	23.19	96	30.67
How much	2	105	25.36	63	20.13
	3	75	18.12	52	16.61
	Very much 4	90	21.74	52	16.61
	Total	414	100.00	313	99.99

Table A.92

HOW OFTEN DO YOU HEAR LOUD EXPLOSIVE SOUNDS AROUND HERE?

		Chicago		Minneapolis-St. Paul	
		N	Percent	N	Percent
Not at all	0	459	43.80	449	50.06
	1	368	35.11	305	34.00
How often	2	127	12.12	87	9.70
	3	55	5.25	36	4.01
Very often	4	39	3.72	20	2.23
Total		1048	100.00	897	100.00

What kinds of sounds are there?

Traffic	209	36.60	195	44.52
Sonic booms	66	11.56	56	12.79
Explosions	59	10.33	21	4.79
Thunder	30	5.25	31	7.08
Other	207	36.25	135	30.82
Total	571	99.99	438	100.00

Table A.93

PERCENT DISTRIBUTION OF MOST ANNOYING SOUND IN NEIGHBORHOOD

	Chicago		Minneapolis-St. Paul	
	Percent	Rank	Percent	Rank
Autos/Trucks	16.40	3	18.41	3
Aircraft Operations	31.82	1	26.99	1
Neighborhood Children	10.14	4	5.47	5
Dogs, Other Pets	5.61	5	7.96	4
People	3.24	7	3.61	9
Motorcycles, Hot rods	21.90	2	21.14	2
Trains	3.34	6	1.37	11
Sirens	1.83	9	4.73	6
Construction	0.86	11	1.99	10
Lawn mowers, Garbage Collection	3.02	8	3.73	8
Sonic Booms	1.83	9	4.60	7
Total	99.99		100.00	
	N=927		N=808	

Table A.94

PERCENT OF TOTAL SAMPLE WHO REPORT HEARING EACH SOUND

	Chicago		Minneapolis-St. Paul	
	Percent	Rank	Percent	Rank
Trucks/Autos	94.92	1	98.00	2
Aircraft Operations	90.98	4	98.67	1
Neighborhood Children	92.20	2	97.11	3
Dogs, Other Pets	86.47	5	96.45	7
People	85.90	7	93.23	8
Motorcycles, Hot rods	91.17	3	96.56	6
Trains	69.64	9	83.46	11
Sirens	86.37	6	97.00	4
Construction	63.91	11	86.79	10
Lawn mowers, Garbage Collection	83.83	8	96.89	5
Sonic Booms	68.42	10	88.01	9
	Total Sample = 1064		Total Sample = 901	

Table A.95

PERCENT IN UPPER TWO LEVELS OF ANNOYANCE (3-4) FOR EACH SOUND
CHICAGO AND MINNEAPOLIS-ST. PAUL

	Chicago		Minneapolis-St. Paul	
	Percent	Rank	Percent	Rank
Trucks/Autos	32.18	3	29.33	2
Aircraft Operations	37.30	1	33.07	1
Neighborhood Children	18.35	4	13.37	5
Dogs, Other Pets	10.11	7	12.77	6
People	10.28	6	9.16	8
Motorcycles, Hot rods	35.88	2	26.47	3
Trains	7.28	9	3.20	11
Sirens	7.72	8	14.76	4
Construction	3.08	11	6.01	10
Lawn mowers, Garbage Collection	4.71	10	8.02	9
Sonic Booms	12.37	5	12.61	7
	Total Sample = 1064		Total Sample = 901	

Table A.96

PERCENT IN UPPER TWO LEVELS OF ANNOYANCE (3-4) FOR EACH SOUND, ADJUSTED FOR SAMPLE SIZE - CHICAGO AND MINNEAPOLIS-ST. PAUL

	Chicago		Minneapolis-St. Paul	
	Percent	Rank	Percent	Rank
Trucks/Autos	30.55	3	28.75	3
Aircraft Operations	33.93	1	32.63	2
Neighborhood Children	16.92	4	12.99	5
Dogs, and other Pets	8.74	6	12.32	6
People	8.83	5	8.55	8
Motorcycles, Hot rods	32.71	2	35.18	1
Trains	5.08	9	2.66	11
Sirens	6.67	8	14.32	4
Construction	1.98	11	5.22	10
Lawn mowers, Garbage Collection	3.95	10	7.77	9
Sonic Booms	8.46	7	11.10	7
	Total Sample = 1064		Total Sample = 901	

THE NATURE OF PRINTED MEDIA COVERAGE OF THE SONIC BOOM

Purpose of this Study:

This study is designed to accomplish these immediate goals:

(1) To establish a pilot study of a special sample of newspapers to determine the attention given to news of sonic boom and the projected supersonic transport (SST).

(2) To determine from experience with the pilot study the adaption of methods of content analysis of other media.

(3) To establish an indexing system and a repository of content data from a larger sample of media of information which will give a more meaningful measurement of the ways in which all media report relevant information.

Nature of Content Analysis:

Content analysis basically is a research tool which provides methods by which major variables of symbols relevant to a given issue, person or event can be measured and explicated.

Content analysis is based on a simple paradigm: "Who says what." Content analysis provides only a statement about what appears in a medium and makes no conclusions about the purposes of the medium carrying the relevant message or of any

source (actor) mentioned in the content. Nor does content analysis make any inference of the effects or impact of any news item on the audience of the medium. In short, content only can indicate to what an audience possibly has been exposed.

The System of Theme Analysis:

This section of the study is concerned first with the reactions among publics toward environmental noise and sonic boom. Secondly, there is interest in the ways the mass media handled stories of sonic boom and, further, the SST, using a special sort of content analysis called "theme analysis," which is particularly suited for such a study.

Thus, content analysis of editorial and news articles dealing with the sonic boom is developed around a system of "theme analysis," in which content is classified according to the recurrent and significant ideas or propositions that can be found by experienced content analysts who study the material over an extended period of time. Such classifications or "themes" may be analyzed in terms of the community from which they originated, the slant for or against supersonic aircraft which they represent, and the context in which they occur.

Although it was originally planned to restrict the analyses to coverage of the sonic boom, it was found to be an almost impossible task to separate the topic of the sonic boom from supersonic aircraft. The two terms are often used synonymously in the coverage. Therefore, it was decided that in order to treat the sonic boom coverage adequately in this study, it

should be studied in the framework in which it so often appears, i.e., supersonic aircraft.[1]

The coding scheme allowed for from one to fourteen different themes to be recorded from a single article. For the majority of the articles, this was more than an adequate allowance. However, for some of the longer feature or magazine articles, all of the themes appearing in the article could not be included. In such cases, the most representative themes in the article were chosen, using the criteria of order of appearance and amount of text devoted to the particular theme. Themes buried within the article would not receive the same priority as themes appearing in the first part of the article. Likewise, a sentence merely mentioning a theme would not receive the same priority as a paragraph discussing a particular theme.

The coverage by the media will be described from newspaper data collected in five test cities (Atlanta, Chicago, Dallas/Fort Worth, Denver and Los Angeles) and from twelve national magazines and newspapers. The time period covered for the study is June 1, 1967 to December 1, 1967.[2]

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[1]The term "supersonic aircraft" refers to the SST and the military supersonic transports involved in testing, such as the SR-71. It does not include coverage of military supersonic transports which are mentioned out of the context of testing and boom, e.g., does not include the new super fighters announced, etc. If Concorde is mentioned in its context of boom testing or problems, it is also included in the material analyzed.

[2]With the exception of data from Los Angeles which includes articles from as late as January 1968.

In the "theme analysis" it is necessary that ideas, propositions and attitudes be grouped and reduced to mutually exclusive categories, producing the "themes" with which the study deals. There are 47 major themes considered in this study. These themes are further reduced to four categories: themes favorable to the sonic boom, themes unfavorable to the sonic boom, themes favorable to the SST, themes unfavorable to the SST. The themes are studied for the favorable and unfavorable slant given them in the media; for their incidence and emphasis in and among the test cities; for their attribution; for their origin; and for their relation to the months prior to, during, and after the testing occurred.

In summary, the basic questions involved in this research are: Is there coverage in each test city and on the national level of the sonic boom and the SST within the period covered by the sample? If so, how much coverage and attention has the topic been allowed? Is the coverage favorable or unfavorable toward the sonic boom and the SST? Which themes are emphasized in the media? Which cities seem to be the most sensitive to the issue? What is the source of the coverage? How does extended exposure to the sonic boom affect the media coverage?

Methodology

The sampling for the content analysis study was selective. At least one major newspaper and one suburban newspaper[3] were chosen from each of five major cities in the study. In the case of Los Angeles the sampling was more thorough than in the other

[3]The exceptions in this case are Dallas/Fort Worth where there is no significant suburban newspaper, and Chicago where the sample was limited to whatever material was received from the FAA.

cities due to the high rate of aircraft interest and the extra emphasis given in field interviewing. In general, the number of publications chosen from a city is in proportion to the size of that city as compared to the other test cities. The publications chosen from the test cities are the following:

Atlanta

ATLANTA CONSTITUTION
MARIETTA JOURNAL

Chicago

CHICAGO AMERICAN
CHICAGO TRIBUNE
CHICAGO SUN TIMES
CHICAGO DAILY NEWS
MONT CLARE LEYDEN HERALD

Dallas-Ft. Worth

DALLAS MORNING NEWS
DALLAS TIMES HERALD

Denver

DENVER ROCKY MOUNTAIN NEWS
DENVER POST
AURORA STAR
AURORA ADVOCATE

Los Angeles

LOS ANGELES TIMES
LOS ANGELES HERALD EXAMINER
SAN FERNANDO VALLEY TIMES
SOUTH BAY DAILY BREEZE
LONG BEACH INDEPENDENT PRESS TELEGRAM

Magazine and national news coverage were also obtained. Popular and/or representative national magazines were chosen for this sample, plus three newspapers that are circulated nationally and one technical magazine that deals extensively with the SST project. They are as follows:

BUSINESS WEEK
HARPER'S
NATION
SATURDAY REVIEW
TIME
U. S. NEWS & WORLD REPORT
NEWSWEEK
NEW REPUBLIC
NEW YORK TIMES
WALL STREET JOURNAL
CHRISTIAN SCIENCE MONITOR
AVIATION WEEK & SPACE TECHNOLOGY

A total of 31 publications was included within the sample.

Each newspaper or magazine was carefully scanned for any relevant articles for the time period from June 1 (approximately one month before the testing began) to December 1 (approximately one month after the testing had ceased). As noted before, the period was extended for Los Angeles to January 1, 1968. The purpose in this choice of dates was to ascertain the level of coverage before the testing began and to trace the rise and fall of the coverage in relation to the time-exposure to sonic booms. The fairly obvious hypothesis is that the number of articles and themes will increase when the testing begins, and decrease when the testing ends. It would also seem likely that the articles would be increasingly unfavorable unless a large amount of counter-propaganda were published simultaneously.

Analysts read all of the articles collected and extracted 244 different themes. Ultimately, it was possible to reduce these themes to 47 mutually exclusive theme categories. They are as follows:

1. SST seen in positive terms--in terms of progress, innovations, feasibility, safety--technically speaking.

2. SST programs, supersonic age, coming, a "fact of life"--stated or implied.

3. SST (Boom) as outrage perpetrated in the name of progress.

4. Mention of SST or Boom in irrelevant context.

5. Problems involved with supersonic flight are being worked on, tested.

6. SST work on schedule; project will be completed within projected time period.

7. SST will not require changes in airport facilities or personnel training.

8. SST will play positive role in modern transportation problems--e.g., meeting increasing air travel demands and encouraging progress in related transportation areas (to and from airports, etc.) trunk airlines.

9. Signs (e.g., airlines signing up), predictions that SST will be an economic success. Cost doesn't overpower profit possibilities, will bring profits to many areas of interest, investors will retrieve investments.

10. Problems in Concorde or TU-144 develop.

11. Technical innovations completed/proposed for Concorde/TU-144.

12. SST program should be delayed, slowed.

13. Foreign cooperation in development of supersonic transport, noise studies (U.S., France, U.K., Russia in different combinations).

14. Concorde ahead of American SST in development.

15. Testing is a scientific process carried out carefully and judiciously, is explained and is within norms of human existence--not a hoax or a "conditioning period."

16. Testing acceptable to public, understood.

17. Testing has caused no excessive damage to property or people--no increase in damage claims.

18. Proper persons (e.g., legislators, general public) and places (over water) should be tested before SST allowed in service commercially.

19. Sonic boom being studied--work being done to reduce or eliminate boom in SST.

20. Sonic boom not an overdue annoyance, does not affect social-psychological health of humans.

21. Boom does not damage human health, not dangerous for general public.

22. Boom not harmful to physical property (cracked windows, plaster).

23. Boom does not frighten, startle citizens.

24. Boom will be normal part of physical environment; no worse than other modern aspects; people will learn to live with it.

25. Boom will not disrupt sea life unduly.

26. Boom will not cause disruptions in geological structures, won't cause earthquakes, etc.; won't disturb natural resources, archeological objects.

27. Boom will not harm, disturb animal life--physiologically or psychologically.

28. Boom will not cause severe, dangerous changes in the atmosphere; climate changes, radiation, humidity, etc.

29. Re sonic boom/noise complaints: rights of redress observed, complaints listened to and evaluated sympathetically--contracts and economic pressures will not receive priority over public rights.

30. Deprecatory remarks about cities of SST boom--allusion to fringe types, over-reaction, non-community minded.

31. Expression of need for and existence of an active organization to pretest public interest (from sonic boom

and effects); citizens speak out and appeal to authorities to protest public interest; congressional member calls for study, or parlimentary tactics to protect public interest.

32. Expressions of support for SST--approval and/or propaganda; statements pointing out convenience, comfort, speed, etc. Also political values--"public interest," "international understanding," democratic.

33. Report of laws passed to protect public from sonic boom; suggestion that laws should be passed and/or may be passed.

34. Government offices, county offices, agencies (FAA, NASA, "military") act in public interest in setting up air safety controls and air noise control (engine and boom).

35. Government agencies, President, Congress express support for SST; seek legislation and appropriations.

36. Political forces not controlling propaganda on SST; project not being forced on public by government continuance--ramifications adequately explained to public.

37. Positive view of military being under civil control; not just "doing as please."

38. Positive view of government--industry alliance and cooperation in SST development.

39. Economic reasons given for supporting SST; good it will do for economy, sectors of economy.

40. Appropriations for SST represent no conflict of interests in budget priorities; is a worthy project, of high enough priority to receive federal funds.

41. Boom will not adversely affect SST production, development, economic success.

42. Boeing will not make unreasonable profits from SST; will not monopolize supersonic production.

43. Private industry/airlines should and are assuming financial responsibilities for SST and risk--pro-private financing statements by FAA, airlines, etc.

44. SST seen as competition for international aircraft supremacy, USA must keep ahead.

45. True impact of SST cannot be assessed until is in service.

46. SST a democratic venture; good for all members of society, not just "jet set."

47. Supersonic flight/booms seen in terms of necessary military protection from "enemy"--support for SST and boom for defense purposes.

After the data were collected and sorted, a coding scheme was devised to record the information which was considered important to the study. The main variables which were considered to be potentially useful were:

Geographical location of the media
Circulation of the publication
Date of the article
Political leaning of the publication
Type of item
Page or section appearance of article
Headline width
Story width and length
Story spread
Story display
Photographic or pictorial information
Source of the article
Geographic origin of the story
Headline thematic symbol and direction
Item context for the article
Direction for the whole article
Theme
Theme direction
Theme attribution
Theme emphasis within the article.

Coding Schema

"Geographical location of the media" tells in what city the particular media was published. All of the material that was used for the study was either published in one of the five test cities or in Boston, New York, or Washington, D. C., the national magazine and newspaper publishing headquarters. Publications are divided into two categories in terms of relative circulation: major or minor.[4] For example, in the Denver area, the Aurora Star would be a minor publication as compared to the Denver Post. Using this criterion, the data were divided as follows:

[4]The circulation figures for each publication were taken from Editor and Publisher International Yearbook-1967, by Edited Publishing Co., Inc., New York. The publications were considered for their importance within a city or within the nation in terms of the relatively high or low circulation of each. Those of comparatively low circulation were classified as minor publications, and those of high circulation were classified as major publications.

Major Publications

ATLANTA CONSTITUTION
CHICAGO AMERICAN
CHICAGO TRIBUNE
CHICAGO SUN TIMES
CHICAGO DAILY NEWS
DALLAS MORNING NEWS
DALLAS TIMES HERALD
FORT WORTH STAR TELEGRAM
DENVER ROCKY MOUNTAIN NEWS
DENVER POST
LOS ANGELES TIMES
LOS ANGELES HERALD-EXAMINER
NEW YORK TIMES
WALL STREET JOURNAL
CHRISTIAN SCIENCE MONITOR
TIME
U. S. NEWS & WORLD REPORT
NEWSWEEK

Minor Publications

MARIETTA JOURNAL
MONT CLARE LEYDEN HERALD
AURORA STAR
AURORA ADVOCATE
SAN FERNANDO VALLEY TIMES
SOUTH BAY DAILY BREEZE
LONG BEACH INDEPENDENT PRESS TELEGRAM
AVIATION WEEK & SPACE TECHNOLOGY
BUSINESS WEEK
HARPER'S
NATION
SATURDAY REVIEW
NEW REPUBLIC

The date of the article records the day, month, and year in which the article appeared. For the analysis, the month of the article served as the mean measure of interest.

The political leaning of all newspapers and some magazines is published in Editor and Publisher International Yearbook. When not from this source, the leaning of magazines was estimated by

the research group. In neither instance is more than "face validity" claimed. The categories for political leaning are:

Independent
Republican, Independent-Republican
Democratic, Independent-Democratic
Moderate-liberal, unaffiliated
Moderate-liberal, affiliated
Conservative ("right"), unaffiliated
Conservatuve ("right"), affiliated
Radical ("left"), unaffiliated
Radical ("left"), affiliated

The type of item falls into two general categories, roughly distinguished by objective fact and subjective opinion. In practice there is quite a bit of overlap, but for the purposes of this study, all items falling within the categories of editorials, letters to the editor, opinion columns, cartoons or ads will be treated as subjective. All others, such as news items, feature stories, science-technology features, business, finance, or economic coverage, travel items, entertainment or education coverage will be treated as objective. The subjective matter may be expected to disclose a particular publication's leaning on the subject, and the amount of objective coverage of the topic will give an indication of the publication's awareness of and attention to the topic. This hypothesis is in line with Dr. Walter Gieber's "gatekeeper" theory, which is the selective process by which available news is included or excluded from a publication.[5] A high level of coverage on a particular topic, especially over an extended period of time, indicates a high sustained interest by the publisher in the topic. This interest is especially emphasized if most of the articles on the topic originate from the staff members of the publication.

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[5]Gieber, Walter, 1968, The Gatekeeper Theory of Walter Gieber. Personal communication.

The page and section appearance code gives a general idea of the location of the article within the publication. It is coded for (1) an inside page near the back of the newspaper, (2) an inside page near the front of the publication, (3) the editorial page, (4) the first page of a section, or (5) the front page of a newspaper or cover of a magazine. The headline width is measured in two-inch columns. The standard newspaper width is eight columns. In magazines the width may vary from two columns to six columns. The length of an article is measured in column inches, from the headline to the end of the article. The story spread code indicates whether the article is complete on one page or whether it is a jump story.

The story display code distinguishes between articles of standard display and those using special rims or boxes or those using larger, bolder type. The photographic information includes a code for distinguishing between those articles with photographic accompaniment and those without. If the article is accompanied by more than one photograph, that also is coded. The width and length of the photograph (if more than one photograph, the largest is measured) is recorded. In some cases, as in newspaper or magazine feature stories, a photographic display is a large part of the article. In such cases, the size of the entire photographic or pictorial display is coded. The type of photograph or pictorial is also specified. All of the categories explained in this paragraph are combined to form an "attention index" for the article. The index was constructed as follows:

$$D=\sum_{1-3}(\text{page} \cdot \underset{1-3}{\text{Headline}}) + (\underset{1-3}{\text{Length}} \cdot \underset{1-2}{\text{Photo}} \cdot \underset{1-2}{\text{Box}}) + \underset{1-2}{(\text{Jump})}$$

As may be observed, all of the components of this index are based on the visual aspects of the article. Those items rating

more emphasis than others are given larger weights. This index does not predict the readership of any given article, but it does attempt to describe the attractiveness of an article in terms of journalistic priorities and practices. For example, an article appearing in its entirety on the front page of a newspaper in italics with a sizable headline and text and an accompanying photograph is far more attractive than a blurb appearing next to the classified ads. It is assumed that since the former article is more attractive according to journalistic concepts, it would have a higher readership than the latter article. However, the relationship between attractiveness and readership can only be an educated guess. For the purposes of this study, the scores of the attention index were divided into four categories: Very Low, Low, Medium and High.

The geographic origin of each story is recorded in order to get an idea of where most of the news on the topic comes from. The headline of each article is coded for a thematic symbol and its direction. The five symbols found to be relevant to this study are: sonic boom, SST, airport-airplane noise, environmental noise, SR-71 and/or other military supersonic aircraft. These were the symbols which most often indicated coverage of the sonic boom. The headline direction code distinguishes between a positive, neutral or negative statement or feeling conveyed by the headline. This kind of distinction could serve as an indicator of the first impressions conveyed to the reader.

The Item Context code further refines the areas of interest in which the main topics of sonic boom and SST occur. This classification specifies the overall interest or topic of the article in which themes about the sonic boom or SST appeared.

From the particular area of interest involved, one might expect a tendency to treat the sonic boom or the SST in a manner consistent with the interests of or definition of the area. For example, articles in the context of progress and science and technology could perhaps be expected to laud the achievements of the SST program and express optimism for the solving of, or at least the amelioration of, the problem of the sonic boom. Likewise, the articles written in a military context might be expected to defend the military's position in the testing and to minimize the problems produced by the boom. The item context categories are as follows:

SST Program

Sonic Boom

Progress, science and technology (in general)

Scientific-technological phenomenon or developments in the aircraft world. This includes environmental phenomenon affecting aircraft transportation such as clear air turbulence, radiation, etc., and the effects of new aircraft developments on the passengers

Air transportation growth, development. This includes aircraft speed, safety, airport congestion, airport facilities, new aircraft control systems

Conservation, related social problems such as pollution, privacy, "ruination of the environment," etc.

Aviation industry, other private industries

Report of SST, Concorde, or Russian development of supersonic transports, such as the ordering of, the testing of parts, etc.

Announcement of, report of, theory of tests

Study of, report of, conjecture of sonic boom effects

Trouble over aircraft noise and sonic boom, such as damage, complaints, protest action

About SST asset or defects as a plane

Legal matters, new laws, litigation over SST, Boom--court decisions, edicts or suits

Noise, safety regulations

Political factors in SST development

Economic factors in SST development

Military factors in supersonic transports

Travel and recreation

Combination of political and economic factors in SST development

Government budget, fiscal affairs

Non-aircraft related

A code for the overall direction of each article was included to give an idea of the composite effect of the article. After each article was read, it was assessed for its general positive, neutral, or negative composition. For each theme coded, there is a series of codes: the direction of the theme, attribution source, and emphasis of the particular theme within the article. The direction of the theme differentiates between those themes which agree with the theme statement (positive), those which are neutral or balanced in terms of the theme statement (neutral), and those which disagree with the theme statement (negative). The attribution source reveals who is responsible for stating the theme in the article. The attribution sources are divided into 15 categories:

Reporter, other newspapers, magazines, TV

Business, manufacturers, producers, industrialists

National government agencies, members

FAA, NASA

Military

Local, county, state government

Private citizens, group of citizens

Citizens League for the Abolishment of Sonic Boom, other Ban-Boom type organizations

Foreign government, spokesmen

Scientists (includes engineers, physicists, mathematicians, doctors)

Professionals (lawyers, psychologists, psychiatrists, social scientists)

Studies

Critics

Supporters

Experts

The emphasis of a particular theme within an article is specified by one of four categories: vital, major, minor, incidental.

The method of analysis used in this study is known as the analysis of contingency tables. This method is chosen so as to conform with a fundamental rule of statistical analysis, which is stated by Hubert M. Blalock in these words, "The use of a particular mathematical model presupposes that a certain level of measurement has been attained."[6] For these data the level of measurement is "nominal." This means that the data exist in the form of classifications. For example, the data are classified into categories of city of publication, categories of type of article, and categories of types of headline thematic symbols. For categories such as these there exists neither a measurement of exact distances between categories on some continuum (the "interval" level of measurement) nor a rank order of categories (the "ordinal" level of measurement).

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[6]In Social Statistics, McGraw-Hill, 1960, p. 17.

The fact that the data for this study are at the nominal level of measurement dictates the kinds of assumptions to be made for statistical analysis; that is, the kind of mathematical model to be used. For the nominal level of measurement, the operation of addition is among those arithmetic operations which are undefined. This implies, for example, that no arithmetic mean may be computed, nor is the concept of "variance" defined for these data. Thus, this study uses only those analytical techniques appropriate to the nominal level of measurement; it uses these techniques in the most powerful and interpretable ways.

Coverage of the Boom

The first objective in the analysis is to answer the research questions: Is there coverage in the mass media for the cities under consideration concerning the sonic boom and the SST? If so, how much? Does the extent of coverage vary by test city? Over the period of time covered by the content analysis study, 444 relevant articles appeared in the newspapers of the test cities and in the national newspapers and magazines which were chosen as samples. Two hundred and sixty-four (59 percent) of these articles were found in the newspapers of the test cities, and the remaining 180 (41 percent) were taken from the national magazines and other newspapers. The distribution varies greatly among the test cities, as the following table illustrates:

City of Publication	Number of Articles
Atlanta	15
Chicago	35
Dallas	45
Denver	48
Los Angeles	121

As may be noted, the number of articles appearing in the Atlanta papers is very small, averaging as few as 2-1/2 percent articles per month for the given time period. In contrast, the coverage

in Los Angeles was much more extensive, averaging 15 articles per month over the eight month sample period. Chicago, Dallas and Denver constitute a middle range in terms of the number of articles published.[7]

An article attention index was devised to measure the relative emphasis given these articles in the newspapers and magazines. On the whole, articles received low attention scores. There were very few spectacular feature stories treating the subject matter during the sampling period. For the most part, the articles were fairly short with no special journalistic gimmicks to attract the reader's attention. The attention scores were ranked into four categories: Very Low, Low, Medium and High. Eighty-one percent of the articles fell into the category of a Very Low attention score, and 16 percent of the articles were rated with a Low attention score. Only two percent of the articles were rated Medium, and one percent was rated High. The table below illustrates this distribution

Table A.97

ATTENTION SCORE - ALL ARTICLES

Very Low		Low		Medium		High	
N	Percent	N	Percent	N	Percent	N	Percent
358	81	70	16	11	2	5	1

In comparing the attention scores among the test cities, there are no marked differences. It might be noted that Atlanta had a higher ratio of Low scores to Very Low scores than did the other test cities. However, this does not enhance the readership

[7] This figure may not be truly representative in the case of Chicago, as the sampling was not as thorough as in the other cities.

appeal of these articles to any significant degree. Los Angeles was the only test city having articles with an attention score of High, but those accounted for only two percent of the articles collected within that city. The distribution of the attention scores among the test cities is recorded in the table below.

Table A.98

ATTENTION SCORE - TEST CITIES
(In percentage)

	Very Low		Low		Medium		High	
	N	Percent	N	Percent	N	Percent	N	Percent
Atlanta	9	60	5	33	1	7	0	0
Chicago	30	86	4	11	1	3	0	0
Dallas	37	82	6	13	2	4	0	0
Denver	42	88	6	13	0	0	0	0
Los Angeles	97	80	16	13	5	4	3	1

The interest shown in the topic by the test cities is not measured solely by the attention score. It is assumed that if the topic were of particular interest to the community, many of the articles would originate in that city. That is, if the topic were of major concern within the community, it would be reflected in the number of local articles on the topic. The findings are interesting from this viewpoint. Denver shows the highest rate of interest using this criterion, with 62 percent of the articles being of local origin. Los Angeles and Chicago may be grouped together in second place, with 42-43 percent of the articles within the cities originating locally. Dallas and Atlanta are grouped together with

the least demonstration of local interest in the topic. These figures are shown in the following table:

Table A.99

ARTICLES ORIGINATING IN TEST CITIES
(In percentage)

	N	Percent	Number Articles in Test City Sample
Atlanta	3	20	15
Chicago	15	42	35
Dallas	12	26	45
Denver	30	62	48
Los Angeles	66	43	121

The overall direction of each article was recorded. The criteria for determining the direction were the character of the content and the manner in which it was presented. It was considered to be of value to assess the character of the articles in which themes concerning the sonic boom and supersonic transports appeared. There is no necessary correlation between the overall direction of the article and the direction of the themes, but the fact that the themes are embedded within articles of a negative or positive disposition might influence the impression of the reader. That is, a positive theme appearing within a predominantly negative article might tend to be forgotten in view of the overall impression, and vice versa. The distribution of positive, neutral, and negative articles is considered for all of the articles included in the study, then for the articles appearing in the test cities.

The difference between the total sample and the test cities is quite interesting. The overall negative direction is much

higher among test cities, with the exception of Los Angeles. Concurrently, the overall positive direction is somewhat higher among the total sample of newspaper and magazine articles analyzed, again with the exception of Los Angeles, which has an unusually high percentage of positive articles. Among the test cities, Chicago has 74 percent overall negative articles, the highest percentage of negative articles in terms of overall direction. Denver is second among the test cities for negative overall direction. Atlanta and Dallas may be grouped together with 53 percent of the articles being of negative overall direction. Los Angeles, as before mentioned, scored 45 percent overall negative articles, which is a lower percentage than the total sample. The percentage of overall positive articles in Los Angeles (40 percent) is also much higher than any of the other test cities or the total sample. The tables below illustrate these findings:

Table A.100

ARTICLE DIRECTION FOR TOTAL SAMPLE
(In percentage)

	N	Percent
POSITIVE	132	30
NEUTRAL	91	21
NEGATIVE	218	49

Table A.101

ARTICLE DIRECTION AMONG TEST CITIES
(In percentage)

	POSITIVE		NEUTRAL		NEGATIVE	
	N	Percent	N	Percent	N	Percent
Atlanta	4	27	3	20	8	53
Chicago	8	23	1	3	26	74
Dallas	11	24	10	22	24	54
Denver	7	15	11	23	30	62
Los Angeles	48	40	19	16	54	44

The symbol used in the headline and the favorable or unfavorable direction associated with it is important for the primary impression that it evokes. If the sonic boom "makes the headlines" in a negative framework, the association between the two is likely to be lasting, even if within the article there are positive comments. In analyzing the data, it was found that 43 percent of all of the articles had unfavorable headlines. The favorable and neutral categories were evenly divided with 28 percent of the articles falling within each of the two classifications. The symbols most frequently used were sonic boom and SST. Twenty-seven percent of the headline symbols were sonic boom and 23 percent were SST. The SR-71 and/or other military supersonic aircraft represent only six percent of the headline symbols. Airport and airplane noise appear in only four percent of the articles relevant to the study, and environmental noise composes only one percent of the headlines. Thirty-nine percent of the headlines used combinations of the above five categories. The distribution of headline symbols and direction differs greatly

among the test cities. For this part of the analysis, only the symbols SST and sonic boom will be used. Airport-airplane noise, environmental noise, SR-71 and combinations of these are excluded. The symbol used most frequently in the Atlanta media was the SST, accounting for 33 percent of all of the headline symbols from that city. The sonic boom rated only 16 percent of the headline symbols in that city. Dallas and Los Angeles showed an even distribution between the sonic boom and the SST for headline symbols. Denver and Chicago are the only test cities in which the sonic boom was the predominant headline symbol. In the Chicago media the sonic boom was the predominant symbol in 63 percent of the headlines. This high incidence of the sonic boom symbol might be due to the selection process of the FAA for articles to be used in the study. The criteria for data collection in the other four test cities were more extensive than the isolated topic of sonic boom. In Denver it was the predominant symbol in 58 percent of the headlines.

The direction of the headline in conjunction with the headline symbol might give a preliminary idea of the attitude of the media toward the sonic boom and/or the SST. This analysis is considered for each test city. In Atlanta the headlines were favorable toward the SST on a two to one ratio. Of the two headlines about the sonic boom, one was neutral and the other was negative. On an overall basis, the positive aspects of the SST were more emphasized than the negative aspects of the sonic boom. Atlanta is the only test city in which the incidence of the SST symbol is higher than the sonic boom symbol. Due to the extremely low $\underline{n}$ in this case, it would be difficult to make generalizations from these findings.

In Chicago 59 percent of the headlines using the sonic boom as the main symbol were unfavorable. Of the headlines using the SST as the main symbol (which represents only 11 percent of the headlines in this city), 50 percent were negative, and 25 percent were positive. In this case, the negative aspects of both the sonic boom and the SST were emphasized. The high incidence of the sonic boom symbol illustrates the main concern within Chicago.

Denver more or less follows the same pattern as Chicago in this aspect. The sonic boom is the main symbol in 58 percent of the headlines, and of those, 48 percent are negative. The neutral category accounts for 36 percent of the headline direction for this symbol. Concerning the SST symbol, which reached the headlines in only nine percent of the articles, the positive and negative distribution is balanced. Thus the sonic boom is emphasized for its negative import, and the SST is only a slight issue, receiving ambivalent treatment.

In Dallas, of the 24 percent of the headlines concerning the sonic boom, only 45 percent were negative, as opposed to 55 percent being neutral. Concerning the SST, 40 percent of the headlines were positive and 40 percent were neutral, with only 20 percent being negative. In this case, the incidence of the two symbols is balanced and the SST is more favorably treated than the sonic boom is unfavorably treated.

Los Angeles, with its equal emphasis of both the SST and the sonic boom in the headlines, shows a slightly higher negative rating for the sonic boom than it does for the SST (57 percent - 47 percent). Neither of the symbols is viewed positive in more than 27 percent of the headlines. Interestingly, the sonic boom headline symbol (27 percent) rated a slightly higher positive

coverage than did the SST symbol (23 percent). Thirty percent of the SST headlines were classified as neutral.

Item Context Analysis

All of the analysis to follow is based on a reduction of the 47 theme categories. The 47 categories are reduced to four categories: themes favorable to the SST, themes unfavorable to the SST, themes favorable toward the sonic boom, themes unfavorable toward the sonic boom.

The item context category defines the area of interest or the overall topic of the articles in which there is coverage of the sonic boom or the SST. Using this type of analysis, it is possible to examine under what circumstances the two topics of interest are favorable or unfavorably viewed. That is, the Item Context in some instances more or less defines the strong points and the weak points of the two issues. The Item Context of the themes is considered in conjunction with the incidence and the direction of the four theme categories.

Incidence of Themes

The Item Context categories are rated by the incidence of themes appearing within each category. The more themes which occur within a particular category, the higher the rating it receives. This rating will give an idea of the major areas of interest regarding the topics of the sonic boom and supersonic aircraft.

The following table ranks the categories and gives the number of themes appearing within each context and the percentage that this number represents from the total 2,030 themes.

Table A.102

INCIDENCE OF THEMES BY ITEM CONTEXT
(TOTAL SAMPLE)

Item Context Category	Frequency Theme	Percent
Trouble over Aircraft Noise & Sonic Booms (damage, complaints, protest action)	413	20
Study of, report of, conjecture of sonic boom, effects	279	14
Political and economic factors in SST development	249	12
Air transportation growth, development	159	8
Announcement of, report of, theory of testing	151	7
Report of SST, Concorde, TU-144 development (orders for, testing of)	116	6
Sonic Boom	89	4
Economic factors in SST development	79	4
Scientific-technological phenomenon or developments in aircraft world	79	4
Noise, safety regulations	60	3
SST Program	59	3
Progress, science-technology in general	51	3
Legal matters, new laws, litigation over SST/Boom	49	2
Aviation industry, other "private industries"	45	2
Military factors in SST development	39	2
About SST assets/defects as a plane	25	1

Item Context Category	Frequency Theme	Percent
Conservation, related social problems	21	1
Combination of trouble over aircraft noise and economic factors	21	1
Non-aircraft related	9	44
Political factors in SST development	6	30
Government budget, fiscal affairs	2	10
Travel and recreation	1	5

It is observed that the two categories of highest theme incidence are about the sonic boom and its effects. The main concern is obviously the adverse effects of the sonic boom. The third ranked category deals with the main items of controversy in the development of the SST--the political implications and the economic predictions of the project. The fourth item is of a general nature, including the whole area of modern air transportation growth, development, and problems. The role of the SST in this context would obviously be of concern. In fifth ranking is the context in which testing is announced, explained, or reported. Judging from this high ranking, the public was at least informed of the proceedings of the testing.

Nature of Coverage

The themes appearing in the Item Context categories were analyzed for the predominance of the sonic boom or the SST symbol and for the overall favorable or unfavorable disposition toward these symbols.

SST Symbol Predominance

Favorable Coverage (SST)

The contexts in which the SST was the main symbol and in which the disposition toward the SST was markedly favorable were few. As might be expected, the context of scientific and technological developments in the aircraft world treated the SST favorably, with 87 percent of the statements about the SST being of a positive nature. It would also be anticipated that the SST would be viewed favorably in the context of the aviation industry and other such related private industries, as it is a result of the studies and research of this interest group that the SST is even a feasible project. The SST would represent a point of pride as well as a possibility for profit. Eighty-one percent of the themes concerning the SST were favorable in this context. Interestingly, the context of economic factors in the development of the SST treated 73 percent of the themes about the SST in a positive manner. Since much of the controversy surrounding the SST is about the excessive cost of developing it and the federal government's role in this financing, these results are surprising. They are somewhat offset by the observation that the context which deals with both the economic and the political factors in the development of the SST is much more ambivalent in its treatment of the SST. In this case, the distribution of favorable and unfavorable treatment was almost balanced, resulting in 53 percent of the themes about the SST being positive and 41 percent of the themes being negative. The remaining themes were either neutral or balanced in their treatment.

Balanced Coverage (SST)

Although there were few contexts in which the SST was the major symbol and was viewed favorably, it is significant that there are no contexts in which the SST is the major symbol and is treated unfavorably. The remaining contexts in which the SST is the major symbol demonstrate a more or less balanced favorable and unfavorable position toward the symbols. The contexts in which this balanced coverage on the SST is predominant are:

SST program.
Air transportation growth and development.
Report of SST Concorde, TU-144 development.
Political and economic factors in SST development.

All of these categories except one have to do with the technological aspects of the SST and its actual or projected stages of development and place in the overall framework of the air transportation world.

Sonic Boom Symbol Predominance

Unfavorable Coverage

There are only four Item Context categories which have a predominance of themes about the sonic boom which are unfavorable in direction. Under the Item Context Category of sonic boom, themes about the sonic boom were 68 percent unfavorable. Within this category would fall themes about the actual effects of the sonic boom and themes about the studies being conducted to reduce the sonic boom. Eighty-one percent of the themes were unfavorable toward the sonic boom in the context of conservation and related social problems. This would

be expected since the sonic boom would only be mentioned in this context if it had disturbed or destroyed any landmarks or archeological remains. Under the context of legal matters and litigation over the SST or sonic boom, the sonic boom rated 94 percent unfavorable coverage. Within this context are the themes covering the Santa Barbara edict to fine any supersonic aircraft which caused a sonic boom over their city limits, and the plea by citizens and/or authorities to pass some kind of legislation to protect the public from the sonic boom. The negative coverage of the sonic boom would also be expected under the Item Context of trouble over aircraft noise and sonic booms. In this case, the themes about the sonic boom were 87 percent unfavorable toward that symbol.

Balanced Coverage

As would be expected, there are no instances in which the sonic boom is the major symbol and is treated favorably. There are, however, two contexts in which the sonic boom is the major symbol and the treatment is a balance of positive and negative themes. One of these contexts is the announcement of, report of, or theory of the tests to which the test cities were exposed. Many times, these announcements were made by the military bases near the cities and if any damage were reported, it was presented in the broader perspective of the unlikelihood that any extensive damage would be caused by the sonic boom. The military necessity for such tests was also emphasized in these articles. The other context in which the sonic boom received balanced favorable and unfavorable coverage was that of the study of, report of, conjecture of sonic boom and its effects. This Item Context

category would cover a wide range of themes, from actual experiences with the sonic boom to the predictions and studies of the effects of the sonic boom. Depending on who is presenting the theme, the damage could either be minimized (as in the case of the military announcements) or maximized (as in the case of alarmist citizens reacting fearfully to the boom).

Balanced SST and Sonic Boom Symbol Coverage

There are three Item Context categories in which there is an equal distribution of themes concerning both the SST and the sonic boom. The context of the assets and defects of the SST has 47 percent of its themes centering on the SST and 52 percent centering on the sonic boom. The themes treating the SST are 60 percent favorable, as might be expected. However, the number of favorable themes dealing with the sonic boom are surprising. A total of 45 percent of the themes about the sonic boom were positive, and 36 percent were negative. An explanation for this fact might be the presence of themes emphasizing the work being done on the sonic boom and the hope that the problem can be effectively dealt with in the future. The context of noise and safety regulations is split with 42 percent of the themes treating the SST and 57 percent treating the sonic boom. Of the themes dealing with the SST, 62 percent are positive, indicating confidence that a high standard of safety is being demanded in the development of the SST. Of the themes about the sonic boom occurring within this context, 50 percent were unfavorable and 31 percent were favorable. The implication of this distribution is that when editors and writers key their articles to the sonic

boom theme, the stories are likely to be negatively biased.

Within the context of military factors in the development of the SST, 58 percent of the themes were about the SST and 41 percent were about the sonic boom. Of the themes concerning the SST, 91 percent were favorable. This would be expected since the military could definitely use either the results of the research and development done by the private industries involved in the SST project, or could use the commercial aircraft itself for military transport purposes. The themes concerning the sonic boom rated 68 percent positive coverage of this symbol. This figure would be astonishing, were it not in this context. Since the military is in the position of conducting the sonic boom tests, it must also be in the position to defend the sonic boom, or at least to calm the fears and minimize the reaction of the public to the sonic boom. The military is obviously placed in a defensive position due to the role that it must fulfill.

Four of the Item Context categories were not included in this analysis of theme groupings because of the small number of themes within the category or because of the mixed and unclear nature of the category.

Type of Article Analysis

The type of article was used as another variable in the analysis. All of the themes were classified by their appearance in either editorial articles or news and fact articles. By the nature of the categories, one would expect more extreme dispositions toward the symbols in the editorial articles, and more moderate

dispositions in the news and fact coverage. When the data were divided into these two categories, 747 themes or 37 percent of the themes fell into the category of editorial articles. The news and fact category contained 1,275 themes, or 63 percent of the total number of themes.[8] By the nature of the issues, it would be expected that there would be more editorial comment on the sonic boom than on the SST. Since the sonic boom would more directly affect the daily living patterns of the population, it should be expected to be a topic of more subjective import. Also, since the sonic boom is a rather new and unfamiliar phenomenon, even to the scientists, much of the reaction to it would be conjecture and not based on sound empirical knowledge, particularly in regard to the predictions of the long-term effects of the sonic boom. On the other hand, the body of knowledge about the SST is taken largely from the objective data provided by the producers and developers. Also, since the advent of the space age, high speed in aircraft is viewed almost casually. The subject of SST development is mostly the great expense of the project and the controversy as to who should finance it. The analysis upholds the expectations expressed to a certain degree, but not as significantly as was anticipated. Of the editorial articles, 55 percent of the themes were about the sonic boom and 44 percent of the themes were about the SST. Both symbols received unfavorable treatment in the editorial articles. The sonic boom themes were 79 percent unfavorable, and the SST themes were 56 percent unfavorable as opposed to 41 percent favorable. Analysis of the news articles reveals that 51 percent of the themes concern the SST and 48 percent concern the sonic

[8]Eighteen themes are lacking, thus the themes do not total 2,030. This can be explained by the fact that several themes were coded from the covers of magazines which were not included in the classification of type of article.

boom. The SST is treated positively, with 57 percent of the themes being favorable and 35 percent being unfavorable. The sonic boom receives negative coverage, but the percentage of negative coverage is not as high as in the editorial articles. In the case of the news articles, 58 percent of the themes concerning the sonic boom were unfavorable toward that symbol, and 34 percent were positive. The table below illustrates these findings:

Table A.103

TYPE OF ITEM BY INCIDENCE AND DIRECTION OF THEMES

	SST		
Editorial Articles	Percent of Total	Positive	Negative
(N = 297)	44	41	56
News Articles			
(N = 571)	51	57	35
	BOOM		
Editorial Articles	Percent of Total		
(N = 374)	55	16	79
News Articles			
(N = 533)	48	34	58

Each test city was analyzed for its editorial content and direction. The results of this analysis within the test cities were highly disparate. Atlanta had an almost even distribution of editorial and news articles. Of the editorial articles, the sonic boom was only slightly emphasized over the SST. The sonic boom is represented favorably in 50 percent of the editorial themes, and unfavorably in only 40 percent of the themes. The same slant in coverage is present in the news articles, with 53 percent of the themes on sonic boom being favorable and only 38 percent unfavorable. A tentative explanation of this favorable disposition toward the sonic boom is provided later, in the discussion of the attribution variables--that is, who states these positive themes

in the Atlanta papers. The coverage on the SST in the editorial articles is more negative than positive, the percentages being 55 percent to 44 percent. In the news articles, the favorable and unfavorable themes balance exactly, with 45 percent favorable and 45 percent unfavorable toward the SST.

Chicago has an unusually high percentage of editorial articles as compared to the other test cities. Sixty-six percent of the articles examined in the study were editorial in character. This break from the pattern of predominant news coverage in the other test cities might be explained by the lack of a thorough sample from this city. Of the editorial articles in Chicago, the sonic boom was treated as highly unfavorable, (84 percent) and the SST was treated as mildly unfavorable (54 percent). Fifty-eight percent of the themes within the editorial articles treated the sonic boom. Of the news articles, 21 percent were about the SST and 78 percent were about the sonic boom. The themes within the news category were 68 percent favorable to the SST. The unfavorable disposition toward the sonic boom was much reduced in the news category as compared to the editorial category. In this case, the coverage was 56 percent unfavorable and 38 percent favorable.

The distribution of editorial articles and news articles in Dallas was uneven, in favor of news articles. Seventy-six percent of all of the themes in Dallas were presented in news articles. This news coverage favored the SST and disfavored the sonic boom. The editorial coverage was much more ambivalent. The SST was treated favorably and unfavorably in a balanced manner. The sonic boom received only 46 percent negative coverage and 26 percent positive coverage.

The articles in Los Angeles are divided similarly to those in Dallas, with 78 percent of the themes coming from news articles and only 21 percent coming from editorial articles. The news coverage in this city is also similar to that in Dallas. The sonic boom is treated negatively by 62 percent of the themes, and the SST is treated positively by 58 percent of the themes. The editorial coverage of the SST is also similar, with 50 percent favorable treatment and 50 percent negative treatment. However, the coverage of the sonic boom is much more negative in nature. This fact might be explained by the difference in exposure to the sonic boom in the two cities. Los Angeles is continually exposed to the sonic boom, whereas Dallas was subjected to only a limited exposure. The similarities between the two cities might possibly be explained by the cities' interest in the aircraft industry. Both economies profit by the presence of aircraft industries.

The editorial and news coverage in Denver is fairly balanced. Sixty-two percent of the themes in the editorial category are about the sonic boom. Of these themes, 88 percent are unfavorable toward the sonic boom. The SST is treated in a balanced manner in the editorial category. The news category, however, treats the SST in an unfavorable manner. Also, the sonic boom has more favorable coverage than unfavorable coverage, with 47 percent of the themes being favorable and 44 percent being negative. This characteristic in the news coverage is probably due to the large number of military announcements appearing in the media. This is more clearly explained in the attribution analysis.

Table A.104

EDITORIAL AND NEWS COVERAGE BY SST+, SST-, BOOM+, BOOM-, BY CITY

Distribution of Coverage

(In percentage)

CITY	SST			Boom		
	Percent of Total	Positive	Negative	Percent of Total	Positive	Negative
ATLANTA (N=43)						
Editorial (N = 19)	47	44	55	52	50	40
News (N=24)	45	45	45	54	53	38
CHICAGO (N=219)						
Editorial (N=146)	41	42	54	58	9	84
News (N=73)	21	68	31	78	38	56
DALLAS (N=213)						
Editorial (N=50)	48	50	50	52	26	46
News (N=163)	57	59	37	42	27	67
DENVER (N=182)						
Editorial (N=85)	37	50	50	62	11	88
News (N=97)	21	47	52	78	47	44
LOS ANGELES (N=487)						
Editorial (N=105)	49	50	50	50	24	73
News (N=382)	51	58	36	48	32	62

Attribution Analysis

The sources of themes found in this study would certainly influence the direction of the coverage, depending on the special interests of the spokesman. That is, one would expect the members of the aircraft industry involved in the SST project to have favorable comments about the program. Likewise, the military sources would be expected to defend their activities. The purpose of this section of the analysis is to determine who is speaking out on the issues of the SST and the sonic boom and their dispositions toward the topics. If a correlation between the attribution source and the disposition toward the SST or sonic boom can be established, one could begin to predict the kind of coverage to expect from particular interest groups.

The attribution sources were ranked for their incidence. When the source of the information was unknown, the statement was attributed to the reporter. The interests of reporters being so varied, this category cannot contribute significantly to the analysis. The categories of "professionals," "critics," "experts," and "supporters" and "studies" were included to get an idea of how often these elusive propaganda terms were used in place of specific attribution sources. The rating of the attribution sources is as follows:

Table A.105
ATTRIBUTION RATINGS

Source	Number references	Percent of all themes attributed to source
No source given	869	43
Private citizens, group for citizens	221	11

Source	Number references	Percent of all themes attributed to source
Government agencies, Congressmen	216	11
Professionals	18	9
Critics	16	8
Experts	12	6
Business, Industrialists	131	6
FAA, NASA	121	6
Military	118	6
Scientists	84	4
CLASB, Other Ban-the-boom types	74	4
Studies	55	3
Foreign government, citizens	47	2
City, state government	45	2
Supporters	3	2

It is interesting to note that there are apparently more attributions from private citizens and civil interest groups than from any other source. However, this figure should not be misleading. If all of the national government agencies and branches were to be combined (Congressmen, FAA and NASA and Military), they would be overwhelmingly in the lead. It should be pointed out that the FAA and NASA were put in a separate category from the other national government agencies because of their primary concern for the SST program, and the likelihood that their presence in the other category would overwhelm any of the controversy that might come out of the national government category.

Attribution sources differ in their disposition toward the SST and the sonic boom. As would be expected from the various sources, some sources express more interest in one topic than in the other. This analysis reports the disposition toward the SST of those sources who express more interest in the SST, and the disposition toward the boom of those sources who express more interest in the boom. When expressed interest is balanced, this is also reported. The category "no source given" is not considered.

The sources directing 60 percent or more of their attention to the SST are the following:

Business, manufacturers, industrialists
FAA, NASA
Foreign government sources
Critics

All of these sources would be expected to express primary interest in the SST. The businessmen and industrialists speaking out on the issue are those who are or would be directly involved with the SST project. The FAA is sponsoring the project. Foreign governments such as France and England are interested in exchanging news of the competitive development of the SST. "Critics" in the coverage normally means critics of the SST program.

The treatment of the SST by the business and industrialist sources is 54 percent positive and 40 percent negative. A higher percentage of positive coverage would have been expected, considering the business interest of the group and the possible opportunities for subcontracts and more job positions as a result of an SST program. A possible explanation for this lack of enthusiasm might be the reticence of some groups involved in the

SST program to take the financial risk to get the program underway. Many of the airlines and at least one of the sub-contractors for the project were found to be of this attitude.

The FAA and NASA made a high percentage of positive statements about the SST, as would be expected. Seventy-six percent of all of the themes attributed to the FAA or NASA were favorable toward the SST, and 19 percent were negative.

The two sources emphasizing the unfavorable aspects of the SST are the foreign government sources and the critics. Fifty-five percent of the attributions from foreign sources were negative. This might be explained in two ways. Some of the foreign sources would be expected to point out the lead of the Concorde over the SST. Also making the news on occasion was a Swedish scientist who was very strongly opposed to the development of supersonic aircraft.

The term "critics" implies an unfavorable stance toward the SST. Within this category, 88 percent of the coverage was unfavorable and there was no positive coverage. The remainder of the themes were either neutral or balanced in content.

There are also four sources of attribution which direct 60 percent or more of their attention to the sonic boom. They are:

Military
Private citizens
Citizens League for the Abolishment of Sonic Booms
Studies

These may also be partially explained by the interests or experiences of the sources falling into these categories. The military

is responsible for the sonic boom testing and is faced with the necessity of explaining the sonic boom when there are questions or complaints. Conversely, it is not directly involved in the SST production and would not be expected to speak out on that topic. The private citizens are more directly exposed to the sonic boom than they are to the SST project in terms of direct experience, and thus would be expected to speak out more often on this topic. CLASB (The Citizens League Against the Sonic Boom) defines its interests in its title. The term "studies" in the coverage refers 87 percent of the time to studies conducted on the sonic boom, such as the reports on the Edward's Air Force Base experiments.

The coverage in all of these categories is negative toward the sonic boom, except in the case of the military. The highest percentage of negative themes comes from CLASB, which was attributed as stating 95 percent unfavorable themes toward the sonic boom. The themes about the sonic boom attributed to private citizens are 86 percent unfavorable. In the case of the category of studies, the negative themes drop to 60 percent. The military disposition toward the sonic boom was 65 percent positive. This does not mean that the military sources claim that the sonic boom is good--they merely claim that it is not as bad as many sources would anticipate. In this sense, the attitude of the military toward the sonic boom is defensive.

The other five categories display a more or less balanced interest in both the SST and the sonic boom. These are:

National government-agencies and Congressional members
Local, state governments
Scientists

Professionals
Experts

The results in the analysis of the national government attributions are among the most interesting. The themes dealing with the SST by this attribution source are 75 percent unfavorable. It is within this category that the political and economic controversy surrounding the SST is focused. Although the SST is being financed in its first stages by the U. S. government, the media indicates that there is not consensus among those representing the national government. The themes dealing with the sonic boom which were attributed to national government sources are 60 percent unfavorable.

The local and state government attribution sources reveal a more or less balanced disposition toward the SST, and a highly negative disposition toward the sonic boom (91 percent unfavorable). This would be expected since the primary interests of the local and state governments are in protecting the welfare of the citizens within their jurisdiction.

The scientists display a more unfavorable disposition toward the SST than would be expected, considering the association of the SST with scientific progress. The results of the analysis show that 58 percent of the themes dealing with the SST which are attributed to the scientists are unfavorable. This result cannot be readily explained. The themes dealing with the sonic boom within this category are 65 percent negative. This might be explained by the fact that most of the scientific research on the sonic boom foresees no way to eliminate the sonic boom and can only present conjectures as to the possible ways to reduce the boom.

The category of professionals treats both the SST and the sonic boom in a negative manner. Of the themes about the SST, 100 percent were negative. Of the themes dealing with the sonic boom, 75 percent were negative. These results cannot presently be explained by the particular interests or experiences of this group.

The most interesting of the "propaganda" terms was that of "experts." The experts treat both the SST and the sonic boom favorably. Of the statements about the SST, 60 percent were positive in this category. Also, 60 percent of the sonic boom themes were favorable. Since the "experts" are not known or specifically referred to, this category must be assumed to be one of persuasion which is being used by other sources.

Each test city is analyzed for the incidence of particular attributions appearing within the media of that city. These sources of attribution might well give an indication of the interests of the city--or at least an indication of why the coverage among the test cities differed on occasion.

The three highest sources of attribution in Atlanta are the national government, FAA and NASA, and studies. Sixty-six percent of the national government source themes are about the SST, which were 100 percent unfavorable in Atlanta. These are offset by attributions by FAA and NASA, of which 87 percent are about the SST and 85 percent of these are favorable. Of the themes attributed to studies, 100 percent are about the sonic boom and 60 percent of these are favorable. Although the "n" for themes treating the sonic boom is small in the other two categories, both of them report favorably toward the sonic boom. It should be pointed out that "studies" is an ambiguous term. It does

not document the studies referred to and seems to be used as an elusive term for authority.

The source of attribution accounting for the largest number of themes in Chicago is private citizens. Thirty-two percent of the themes appearing in the media of this city were attributed to private citizens or groups of citizens. This is a characteristic shared only by Denver. It should be noted that there were no attributions by private citizens appearing in the Atlanta newspapers. The other two sources of relatively high attribution in Chicago are the national government and the military. The themes attributed to the citizens were unfavorable to both the SST and the sonic boom. Of the 64 percent dealing with the sonic boom, 82 percent were unfavorable. Those treating the SST were 64 percent negative. It would seem that the results in this category would be of interest to sources concerned with the public reaction to the sonic boom. Again in Chicago, the themes attributed to the national government are unfavorable both toward the SST and the sonic boom. The difference in this case is that the themes about the sonic boom are predominant. Ninety-two percent of the themes attributed to the military are about the sonic boom. The distribution of positive to negative coverage is less notable than might be expected, with 52 percent of the themes being favorable toward the sonic boom and 43 percent being unfavorable.

The three highest sources of attribution in Dallas are: the national government, business, and professionals. Fifteen percent of the themes appearing in the city are attributed to national government sources. Of these, 64 percent are about the SST and 35 percent about the sonic boom. Although the percentage is much lower than in the other test cities considered, the tendency is toward negative coverage of the SST. In this case,

the negative themes represent 54 percent of the SST coverage. The coverage of the sonic boom within this category is not readily explicable. Fifty-four percent of the sonic boom themes were favorable and 41 percent negative. This does not fit in the general pattern of national government attribution characteristics. The business attribution source in Dallas might well be expected because of the interest in developing a new airport in that area. The business sources concentrated on the SST for their topic of interest--with 83 percent of the themes being on this subject. Of these themes, 86 percent were favorable toward the SST. Often the argument was used in Dallas that the supersonic age was coming and that the community should prepare for the advent with an updated airport. The number of professional attribution sources in Dallas is presently inexplicable. The themes were evenly divided between those about the SST and those about the sonic boom. Of the themes about the SST, 100 percent were unfavorable. Sixty-six percent of the themes about the sonic boom were unfavorable.

As in Chicago, the highest source of attribution in Denver is that of private citizens or groups of citizens. This category accounts for 31 percent of all of the themes appearing within that city. The other two main sources of attribution are the national government and the military. The distribution of themes about the SST and the sonic boom within the category of private citizens is also comparable to Chicago. Sixty-four percent of the themes were about the sonic boom and 86 percent were negative. The disposition toward the SST by the private citizens is somewhat surprising. In Chicago the SST was viewed unfavorably by the citizen attribution sources. However, in Denver, it is 60 percent favorable. This result is not explicable at this point in the analysis. The themes attributed to the national government

in Denver are 80 percent about the sonic boom and 20 percent about the SST. The disposition in both cases is unfavorable. The themes about the SST are 66 percent negative, whereas the themes about the sonic boom are 50 percent negative and 33 percent positive. The themes attributed to the military are as would be expected--favorable to both the SST and the sonic boom. Ninety-one percent of the themes concern the sonic boom and 81 percent of these were favorable toward the boom. This might be explained as a response to the high negative reaction to the sonic boom by the citizens of Denver.

Los Angeles is the only city in which the military is the largest source of attribution. The other important sources of attribution in Los Angeles are: the national government, business, private citizens and the FAA. Sixty percent of the themes attributed to the military are about the sonic boom and 62 percent of these themes are favorable toward the boom. Of the 39 percent treating the SST, 100 percent are favorable. The national government sources focused evenly on both topics in the Los Angeles media. Those treating the sonic boom were 74 percent negative. However, the treatment of the SST was more balanced, with 53 percent of the themes being favorable to the SST and 46 percent being unfavorable.

The business sources focused mainly on the topic of the SST as would be expected. However, there were more negative themes than positive, which is not expected, considering the large aircraft interests in Los Angeles. Fifty-seven percent of the themes about the SST were unfavorable, and only 40 percent were favorable. Part of this might be accounted for by the fact that additional airport facilities required by the SST composed a negative factor for the SST in the division of themes by favorable

or unfavorable dispositions. This is not an absolutely negative feature for the SST, as the business interests of Dallas demonstrate. There is a similar situation in Los Angeles.

The attributions to private citizens in the Los Angeles media were 66 percent favorable toward the SST and 96 percent unfavorable toward the sonic boom. The frequency of themes was about even.

The themes attributed to the FAA were mainly about the SST. In line with the previous patterns, the themes were highly favorable toward the SST--75 percent in this case.

In comparing the results within and among the cities, it is noted that the national government is one of the main sources of attribution in all of the test cities. The FAA and NASA sources are high only in Atlanta and Los Angeles. The only cities with high business attribution sources are Los Angeles and Dallas. Three of the cities, Chicago, Denver and Los Angeles, have a high rate of public citizen attribution sources. Notably, the remaining two cities, Atlanta and Dallas, carry only a negligible number of references to the private citizens. Attributions from the military are highest in Los Angeles, Chicago, and Denver. Again, Atlanta and Dallas are dissimilar to the majority pattern in this respect.

Date of Article Analysis

The coverage of the sonic boom would be expected to increase when the boom testing began, and to decrease when it ceased. To test this, part of the analysis was to observe the number of themes appearing in the mass media over the period of time

covered by the sampling. The results were as expected. From June to the beginning of the testing in July, the number of themes increases almost by 50 percent. Similarly, from October, the last month of the testing, to November, the number of themes decreased by a little more than 50 percent. The month of peak coverage on the issue was August, with 24 percent of the themes being published during that month. The table following illustrates the number and percent of themes appearing in the media sampled for this study:

Table A.106

NUMBER OF THEMES BY MONTH

Month	Number of Themes	Percent
June	190	10
July	362	19
August	463	24
September	324	17
October	374	18
November	164	9
December	14	1
January[9]	33	2

One of the questions of interest in the research is to ascertain whether continued exposure to the sonic boom results in a higher rate of unfavorable coverage on the topic. It is also of interest to find out if the amount of subjective coverage of the topic increases with prolonged exposure. These two questions will be considered in the following part of the analysis.

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[9]Articles were collected for December and January, 1968, only in the Los Angeles papers. Thus, the percentages are not accurate for all of the test cities for these two months.

It would be expected that coverage of the sonic boom would increase in relation to the extended exposure. The analysis shows this to be partly true. The months in which the sonic boom is emphasized most heavily are August and November. August is the mid-point in the testing period and November is one month after the testing had ceased. This would indicate both a strong reaction to the boom during the testing period and a post-reaction to exposure. It is notable that of the articles dealing with the sonic boom, the amount of negative coverage increases steadily from the first month of the testing to the last month of testing, rising from 50 percent to 75 percent. This would seem to indicate that extended exposure to the boom does not result in more tolerance or acceptance of the phenomenon, as one might conjecture. However, it is also noteworthy that the percentage of negative coverage of the sonic boom during the testing period was never quite as high as that of the month previous to the testing (78 percent). This would initially seem to indicate that the reality of the sonic boom was at any rate not as bad as had been anticipated or feared. However, this result might also be explained by the fact that less defensive material (such as the military) was published during this month previous to the testing. The following table illustrates the findings of this analysis:

Table A.107

EXPOSURE PERIOD AND DIRECTION OF THEMES
(In percentage)

Month	N	Coverage About SST	Direction of SST Coverage		Coverage About Boom	Direction of Boom Coverage	
			Pos.	Neg.		Pos.	Neg.
June	159	62	50	37	37	18	78
July	326	58	69	26	41	39	50
August	413	32	42	53	67	31	62
September	294	49	46	49	50	20	74
October	332	59	46	44	40	16	75
November	139	36	52	45	63	20	76
December	7	100	57	42			
January	26	53	50	42	46	50	50

Theme Incidence and Source

Since the emphasis of this study is primarily on the themes appearing in the mass media and not solely on the gross number of articles and their overall direction, most of the analysis is based on themes. In the 444 articles in this study, 2,030 themes were recorded and classified into one of the 47 major theme categories. In the analysis it was found that 68 percent of these themes appeared in the test city newspapers. The other 32 percent were found in the national magazines or newspapers.

The themes were rated for their incidence. They fall into five categories: Low Incidence (representing under one percent of the total theme incidence), Fair Incidence (one - two percent), Medium Incidence (two - three percent), High Incidence (three - four percent), and Very High Incidence (four - eight percent). Each theme was classified for its direction in terms of the theme statement. If the theme statement appeared in the coverage in agreement with the theme category, it would be classified as positive.[10]

[10] If the article said "it has been proven that the sonic boom will not stunt the growth of vultures"--this statement would fall into the category of "the sonic boom will not harm or disturb animal life - physiologically or psychologically," and it sould be classified as positive in terms of the theme statement. That is, the theme statement is in agreement with the theme category. If it had been said that the growth of vultures would be stunted, the theme would have been classified as negative, that is in disagreement with the theme category. If the theme statement neither agrees nor disagrees with the theme category, or if the article alternately covers both sides of the issue, it would be classified as neutral.

The table below ranks the themes in order of their incidence and Table A.109 gives the percentage of positive and negative directions recorded for each theme.

Table A.108

INCIDENCE OF THEMES

Identifying Number	Theme Statement
LOW INCIDENCE (under 1 percent):	
2.	SST program, supersonic age coming, a "fact of life"--stated or implied
3.	SST an outrage perpetrated in the name of progress
4.	Mention of SST or Boom in irrelevant context
6.	SST work on schedule; project will be completed within projected time period
12.	SST program should be delayed, slowed
13.	Foreign cooperation in development of supersonic transport, noise studies
16.	Testing acceptable to public, understood
18.	Proper persons and places should be tested before SST allowed in service
25.	Boom will not disrupt sea life unduly
26.	Boom will not cause disruptions in geological structures, won't disturb natural resources, archeological objects
27.	Boom will not harm, disturb animal life, physiologically or psychologically
28.	Boom will not cause severe, dangerous changes in atmosphere: climate, radiation, humidity

Identifying Number	Theme Statement
30.	Deprecatory remarks about critics of SST/Boom--allusion to fringe types, over-reaction, non-community-minded interests
37.	Positive view of military being under civil control, not "doing as please"
42.	Boeing will not make unreasonable profits from SST; will not monopolize production
45.	True impact of SST cannot be assessed until is in service.

FAIR INCIDENCE (1.1-2.0 percent)

5.	Problems involved with supersonic flight are being worked on, tested
8.	SST will play positive role in modern transportation problems, demands
10.	Problems in Concorde or TU-144 development
11.	Technical innovations completed/proposed for Concorde/TU-144
14.	Concorde ahead of American SST in development
33.	Report of laws passed to protect public from sonic boom; should and may be
36.	Political forces not controlling news, propaganda on SST; program not being foisted on public by government contrivance; all explained to people
38.	Positive view of government-industry alliance and cooperation in SST development
44.	SST seen as competition for international aircraft supremacy; U.S. must keep ahead
46.	SST a democratic venture; good for all members of society, not just "jet set"

Identifying Number	Theme Statement
MEDIUM INCIDENCE (2.1-3.0 percent)	
21.	Boom does not damage human health, not dangerous for general public
23.	Boom does not frighten, startle citizens
39.	Economic reasons given for supporting SST; the good it will do for economy, sectors of the economy
40.	Appropriations for SST represent no conflict of interests in budget priorities; is worthy enough project to deserve federal funds
43.	Private industry/airlines should and are assuming financial responsibility and risk for SST--pro-private financing statements
47.	Supersonic flight/Boom seen in terms of necessary military protection from "enemy"--support for defense purposes
HIGH INCIDENCE (3.1-4.0 percent)	
7.	SST will not require changes in airport facilities or personnel training
19.	Sonic boom being studied--work being done to reduce or eliminate boom in SST
20.	Sonic boom not an overdue annoyance, does not affect social-psychological health of humans
22.	Boom not harmful to physical property (cracked windows, plaster)
29.	Re Boom complaints: rights of redress observed, complaints listened to
31.	Expression of need for and existence of an active organization to protect public interest. Citizens speak out and appeal to authorities, others speak, call for studies, etc.

Identifying Number	Theme Statement
32.	Expressions of support for SST--approval and/or propaganda--statements of convenience, comfort, speed, also "political values," "public interest"
34.	Government offices, agencies (FAA, NASA, military) act in public interest in setting up air safety control, and air noise control
35.	Government agencies, President, Congress express support for SST; seek legislation and appropriations for
41.	Boom will not adversely affect production, development, economic success of SST

VERY HIGH INCIDENCE (4.1-7.89 percent)

1.	SST seen in positive terms, e.g., progress, innovations, feasibility, safety--technically speaking
9.	Signs (airlines signing up), predictions that SST will be economic success, investors will retrieve investments, etc.
15.	Testing a scientific process carried out carefully and judiciously, is explained and is within norms of human existence, not a hoax
17.	Testing has caused no excessive damage to property or people, no increase in damage claims
24.	Boom will be normal part of physical environment; no worse than other modern aspects of living; people will learn to live with it

Table A.109

THEME DIRECTION

Theme Statement Number	Positive		Neutral		Negative	
	N	Percent	N	Percent	N	Percent
1	51	62	6	4	25	30
2	15	94	0	0	1	6
3	6	67	0	0	3	33
4	1	50	1	50	0	0
5	31	89	3	8	1	3
6	5	42	1	8	6	50
7	6	9	2	3	60	88
8	17	85	0	0	3	15
9	76	59	10	8	42	33
10	18	51	5	14	12	34
11	14	47	14	47	2	7
12	4	50	0	0	4	50
13	10	71	1	4	3	21
14	19	68	6	21	3	11
15	101	66	8	5	44	29
16	0	0	0	0	3	100
17	7	8	3	3	79	89
18	15	100	0	0	0	0
19	41	57	9	13	22	31

Theme Statement Number	Positive		Neutral		Negative	
	N	Percent	N	Percent	N	Percent
20	5	8	5	8	54	84
21	12	24	1	2	38	74
22	11	14	3	4	62	82
23	2	4	0	0	51	96
24	13	16	10	12	58	72
25	0	0	2	50	2	50
26	0	0	0	0	15	100
27	2	20	1	10	7	70
28	0	0	0	0	1	100
29	31	47	4	6	31	47
30	9	64	0	0	5	36
31	68	94	2	3	2	3
32	30	38	1	1	47	60
33	20	100	0	0	0	0
34	41	68	1	2	18	30
35	57	89	3	5	4	6
36	0	0	0	0	28	100
37	4	33	1	8	7	58
38	7	35	2	10	11	55
39	32	78	3	7	6	15
40	0	19	2	4	36	77

Theme Statement Number	Positive		Neutral		Negative	
	N	Percent	N	Percent	N	Percent
41	16	20	9	11	54	68
42	5	36	2	14	7	50
43	25	61	3	7	13	32
44	25	81	4	13	2	6
45	5	100	0	0	0	0
46	0	0	0	0	27	100
47	41	89	0	0	5	11

Table A.110

DOMINANT THEMES APPEARING IN TEST CITIES

Theme Statement Number	Appearance in Test Cities	Frequency	Percent
1	Dallas	15	7
	Los Angeles	23	4
2	Dallas	8	4
5	Los Angeles	15	3
7	Atlanta	4	8
	Dallas	9	4
	Denver	9	5
	Los Angeles	24	5
8	Atlanta	2	4
9	Chicago	10	4
	Dallas	18	8
	Los Angeles	42	8
10	Atlanta	2	4
	Los Angeles	15	3
13	Denver	4	2
14	Los Angeles	11	2

Theme Statement Number	Appearance in Test Cities	Frequency	Percent
15	Atlanta	4	8
	Chicago	26	12
	Dallas	18	8
	Denver	27	14
	Los Angeles	50	9
17	Atlanta	2	4
	Chicago	14	6
	Dallas	6	3
	Denver	17	9
	Los Angeles	21	4
19	Atlanta	3	6
	Chicago	7	3
	Dallas	6	3
	Denver	7	4
	Los Angeles	26	5
20	Atlanta	2	4
	Chicago	13	6
	Dallas	7	3
	Denver	6	3
	Los Angeles	13	2

Theme Statement Number	Appearance in Test Cities	Frequency	Percent
21	Atlanta	2	4
	Chicago	6	3
	Dallas	5	2
	Denver	6	3
	Los Angeles	16	3
22	Chicago	12	5
	Dallas	5	2
	Denver	11	6
	Los Angeles	22	4
23	Chicago	9	4
	Dallas	5	2
	Denver	10	5
	Los Angeles	11	2
24	Atlanta	3	6
	Chicago	19	8
	Dallas	13	6
	Denver	11	6
	Los Angeles	13	2
26	Denver	4	2
29	Chicago	13	6
	Dallas	9	4
	Denver	7	4
	Los Angeles	18	3

Theme Statement Number	Appearance in Test Cities	Frequency	Percent
31	Atlanta	3	6
	Chicago	9	4
	Dallas	8	4
	Denver	12	6
	Los Angeles	13	2
32	Chicago	5	2
	Dallas	12	5
	Denver	7	4
	Los Angeles	22	4
33	Los Angeles	12	2
34	Atlanta	2	4
	Dallas	7	3
	Denver	6	3
	Los Angeles	15	3
35	Atlanta	2	4
	Chicago	7	3
	Dallas	6	3
	Los Angeles	15	3
36	Los Angeles	11	2
37	Denver	6	3

Theme Statement Number	Appearance in Test Cities	Frequency	Percent
40	Atlanta	2	4
	Dallas	8	4
41	Atlanta	3	6
	Chicago	9	4
	Dallas	9	4
	Denver	6	3
	Los Angeles	18	3
44	Atlanta	2	4
	Chicago	5	2
	Dallas	6	3
46	Atlanta	3	6
	Chicago	6	3
47	Chicago	9	4
	Denver	12	6
	Los Angeles	19	4

Table A.111

NUMBER OF THEMES BY CITY

City	Number of Themes From City	Percent Total Themes
Washington	442	29
Los Angeles	316	21
New York	187	12
Denver	119	8
Chicago	114	8
Cambridge	73	5
Seattle	57	4
London	54	4
Dallas	53	3
Paris	33	2
Santa Barbara	21	1
Cleveland	19	1

The themes within each city are analysed by their favorable or unfavorable disposition toward the SST and the sonic boom, in order to try to find definite trends in the character of the articles originating from these particular cities.

Table A.112

THEMES ATTRIBUTED TO PRIVATE CITIZENS BY MONTH

June	0
July	12
August	50
September	79
October	31
November	4

Table A.113

THEMES ATTRIBUTED TO MILITARY BY MONTH

June	4
July	28
August	46
September	16
October	14
November	1

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