

A STUDY OF PUBLIC PERCEPTION OF AIRCRAFT
NOISE IN TEMPE, ARIZONA

conducted by:

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December 14, 1999

PURPOSE OF THE RESEARCH.

This research was commissioned with four objectives.

- (1) Is there a problem with aircraft flying over people's homes in Tempe? If there is a problem, how extensive is it?
- (2) What is it about aircraft flying over people's homes that bothers them?
- (3) Is aircraft noise more of a problem in some areas of the City than others?
- (4) To establish a baseline measurement for aircraft noise in Tempe.

METHODOLOGY:

The information in this report is based on telephone interviews with 1050 adult heads of household living in Tempe, Arizona. The City was divided into three geographical areas by the Tempe Aviation Committee. The areas were determined by examining landing and take-off patterns associated with Sky Harbor International Airport. Three-hundred and fifty (n=350) interviews were taken in each geographic area. A map of the three areas is presented in the report as Appendix A. A brief description of the three areas is given below.

Area One:	North of Apache Boulevard
Area Two:	North of the Superstition Freeway and south of Apache; east of Mill Ave.
Area Three:	Tempe south of the Superstition Freeway

The sampling error for each area when the proportion giving a dichotomous response is 50% and assuming the 95% level of significance is plus or minus 5.2%. Percentages above or below 50% have smaller sampling errors. Sampling errors for a few representative percentages follow:

<u>percentage</u>	<u>error</u>
50	5.2
40	4.2
30	3.1
20	2.1
10	1.0

This study generalizes to adult heads of household living in the city limits of Tempe who are not full-time students of Arizona State University. The initial sampling frame was a list of all registered voters living in Tempe. However, when telephone numbers were changed, non-registered voters living at that telephone number were included in the sample. Eleven percent (11%) of the sample was with non-registered voters. Based on other surveys, eleven to fifteen percent of the adult population in Tempe is non-registered so the sample appears to be a valid microcosm of all adult heads of household living in the city limits of Tempe, Arizona.

The questions were developed by the Tempe Aviation Committee with the help of Dr. Bruce D. Merrill the study director. The questions were pre-tested before interviewing. Interviewing was conducted by professional interviewers using a CATI (Computer Assisted Telephone) system. The interview schedule is included as Appendix B. Interviewing was conducted the last week of November and the first week of December, 1999. The data were compiled using SPSS (Statistical Package Social Sciences). A disc with both the data and program files is available.

It is important to point out one aspect of the interview schedule. In order to insure that respondents would not know why the survey was being conducted, people were first asked what they liked most about living in their neighborhood. The responses to this question were not recorded. By asking people both what they liked and disliked about the area where they lived protected the neutrality of the study.

Dr. Bruce D. Merrill designed and conducted the research. Dr. Merrill holds a Ph.D. in Political Behavior from the Institute for Social Research at the University of Michigan where he trained at the Survey Research Center. Dr. Merrill has conducted literally hundreds of behavioral research studies throughout the United States and several foreign countries. Currently Dr. Merrill is Professor of Mass Communications and Director of the Media Research Program in the Walter Cronkite School at Arizona State University. This research was conducted by Dr. Merrill as a private consultant and is not a product of Arizona State University.

OVERVIEW OF FINDINGS:

- (1) Aircraft noise is primarily a problem in survey area one which is the area north of Apache Boulevard (see Appendix A). In this area, 16% of the residents, in an open-ended question, mentioned aircraft noise as a problem. In addition, when asked later in the interview how much aircraft flying over the area bothered them, 48% said aircraft noise was frequently (31%) or occasionally (17%) a problem. Only 3% of the people living in area two and 2% of those living in area three said, in response to the open-ended question, that airplane noise was a problem.
- (2) Noise was overwhelmingly the problem most associated with aircraft flying overhead. Smaller numbers of people mentioned low flying aircraft, aircraft flying outside of prescribed patterns, and safety considerations as problems.
- (3) Aircraft noise appears to be more of a problem during morning and evening hours when there are more takeoffs and landings and when people tend to be at home.
- (4) Aircraft noise was perceived as more of a problem during takeoffs rather than landings.

Table One: Is there anything that you dislike or that annoys you about where you live?

<u>Dislike</u>	Area One	percent <u>households</u>
Traffic in area, speeding, cutting through, noise		18
Aircraft noise, low flying aircraft		16
Property not being kept up, too many renters		4
Crime, need more police, gangs		3
Loud neighbors		3
Too much growth, congestion		2

	Area Two	
Traffic in area, speeding, cutting through, noise		20
Property not kept up, too many renters		6
Air pollution		3
Aircraft noise, low flying aircraft		3
Too much growth, congestion		2
Noise from train		1

	Area Three	
Traffic in area, speeding, cutting through, noise		28
Air pollution		5
Property not kept up, too many renters		3
City government not responsive, overbearing		2
Crime, need more police, gangs		1
Aircraft noise, low flying aircraft		1

- Numbers are percent of all households in each district. There were 181 comments in District One, 188 in District Two, and 184 in District Three. The number of mentions about issues that annoyed people were divided by the total sample size, 350, in each district. About 50% of the people living in each area mentioned something that annoyed them.

Table Two: Is there anything else that bothers or annoys you?

	<u>Area One</u>	<u>Area Two</u>	<u>Area Three</u>
First mention	16%	3%	1%
Second mention	5	*	1
Total airplane noise	21%	3%	2%

- This table was constructed by adding the number of people who mentioned aircraft related problems in the first open-ended question to the number of comments recorded when the follow-up question was asked – Is there anything else that bothers or annoys you? The total number of first and follow-up mentions in each district was then divided by 350. In the above table, the total percentage of all households mentioning aircraft related problems in District One was 16% in response to the first question plus 5% in the follow-up question for a total of 21%.

Table Three: Thinking about the area where you live, do any of the following bother you:

Cars Driving Through Your Neighborhood

	<u>Area One</u>	<u>Area Two</u>	<u>Area Three</u>
Frequently	24%	21%	18%
Occasionally	19	26	17
Rarely	20	18	27
Never	<u>37</u>	<u>35</u>	<u>38</u>
	100%	100%	100%

Aircraft Flying Over the Area Where You Live

Frequently	31%	9%	6%
Occasionally	17	13	13
Rarely	14	19	17
Never	<u>38</u>	<u>59</u>	<u>64</u>
	100%	100%	100%

Table Four: What is it about aircraft flying over your area that bothers you the most? Anything else? Asked open-ended to people who indicated airplanes flying over their homes was a problem.

	<u>Area One</u>	<u>Area Two</u>	<u>Area Three</u>
Noise, noise vibration	79%	73%	74%
Pattern violations	9	13	1
Flying too low	6	7	8
Pollution, fumes, soot	3	*	3
Afraid of crash, safety	1	1	6
Police, medical helicopters	*	5	6
Interferes with electronics	*	0	*
	<u>100%</u>	<u>100%</u>	<u>100%</u>
Number of comments	(233)	(147)	(123)

- Asterisks represent less than one percent

Table Five: When aircraft flying over your home bothers you, does it happen most often during a particular time of the day? Asked open-ended to people who indicated airplanes flying over their homes was a problem.

	<u>Aea One</u>	<u>Area Two</u>	<u>Area Three</u>
Morning hours	18%	17%	12%
Around midday	2	3	6
Afternoons	7	9	9
Evenings	13	16	23
During the night	7	8	8
All times/no difference	<u>53</u>	<u>47</u>	<u>42</u>
	100%	100%	100%

Table Six: Does the noise from airplanes bother you more when airplanes are landing or taking off? Asked to people who indicated airplanes flying over their homes was a problem.

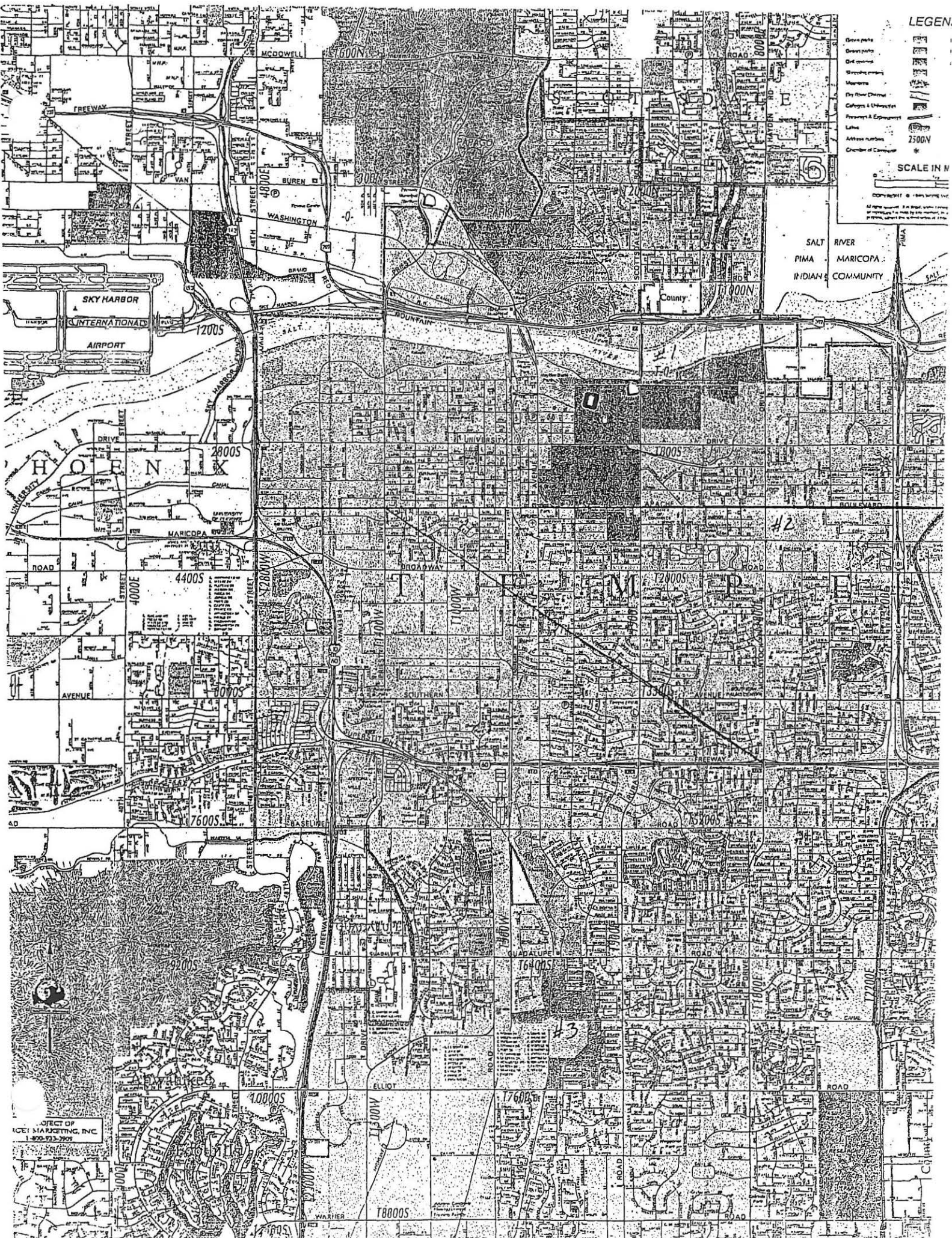
	<u>Area One</u>	<u>Area Two</u>	<u>Area Three</u>
During landing	18%	16%	12%
Takeoffs	35	29	9
No difference	42	43	65
Not aware	<u>5</u>	<u>12</u>	<u>19</u>
	100%	100%	100%

Table Seven: Does it seem to you that the problem of aircraft flying over your area has been getting better, getting worse, or hasn't changed much the past few years? Asked to everyone.

	<u>Area One</u>	<u>Area Two</u>	<u>Area Three</u>
Getting better	9%	7%	7%
Getting worse	28	13	8
No Change	55	67	65
Don't know	<u>8</u>	<u>13</u>	<u>20</u>
	100%	100%	100%

APPENDIX A

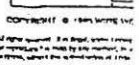
Map of sampling area



LEGEN.

- Green park
- Street park
- Driveway
- Stairway
- Manhole
- Fire Flow Channel
- College & University
- Firearm & Equipment
- Line
- Address number
- Circle of Commerce

SCALE IN M



SALT RIVER
PIMA MARICOPA
INDIAN COMMUNITY

SKY HARBOR
INTERNATIONAL
AIRPORT

HOENIX

4400S

7600S

9200S

10800S

1200S

1600N

4800E

WASHINGTON

BUREN

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APPENDIX B

Interview Schedule

Hello, my name is _____ and I am doing a survey for Dr. Bruce Merrill. He is doing a survey to look at how people feel about living in the City of Tempe. Have you lived in Tempe at least one year?

IF YES: Are you a student fulltime student at ASU? IF NO: CONTINUE

IF YES – THANK AND END

The survey is very short and your input could have an impact on future developments in the City. Will you answer a few questions for us please!

1. What do you like most about where you live? (don't code)
2. Is there anything you dislike or that annoys you about where you live? (be specific) (COMMENTS ABOUT AIRPLANES SHOULD BE VERY SPECIFIC –I.E. WHAT IS IT ABOUT AIRPLANES THAT ANNOYS YOU – NOISE, TOO LOW ETC)
3. Is there anything else that you dislike or that annoys you? (be specific) (CODE ONLY COMMENTS ABOUT AIRPLANES)

Again, thinking about the area where you live, do each of the following bother you: (1) frequently, (2)occasionally , (3) rarely or (4) never. Let's start with:

- | | 1. | 2. | 3. | 4. |
|---|-----|-----|-----|-----|
| 4. cars driving thru the area where you live | ___ | ___ | ___ | ___ |
| 5. aircraft flying over the area where you live | ___ | ___ | ___ | ___ |

IF 1,2,OR 3 ABOVE ASK QUESTIONS 6 - 8

6. What is it about aircraft flying over your area that bothers you the most? (BE SPECIFIC)
7. When you are bothered by aircraft flying over your home, does it happen most often during a particular time during the day? (ASK OPEN-ENDED)
 1. during the morning hours
 2. around midday
 3. during the afternoon
 4. during the evening hours
 5. during the night
 6. all the time/no difference by time of day
 7. Other: _____
8. Does aircraft flying over your area seem to bother you more when airplanes are
 1. landing or 2. taking off? 3. no difference 4. Don't know/no opinion
9. Does it seem to you the that the problem of aircraft flying over your area has been
 - 1.getting better, 2.getting worse, or 3.hasn't changed much the past couple of years?
 4. no opinion

Now, just a few questions about you for statistical purposes:

10. Is the your home constructed with 1.block, brick, or stone or 2.wood and stucco?
11. Are you registered to vote in Tempe? IF YES: Are you registered as a 1.Republican, a 2.Democrat or as something 3. other than a Republican or Democrat?
12. CODE ONLY: District: 1 2 3
13. CODE ONLY: Gender 1.male 2.female

LEAH OR PAUL:

I want 350 REGISTERED VOTERS in each of the three districts outlined on the map I gave to Mike. It is okay to get the numbers for the areas by using registered voters but notice I am not asking them at the beginning of the survey if they are registered. That comes later. This will probably allow a few unregistered voters to be surveyed which is what I want.

When you have the people draw the sample, please have them tell me how many total registered voters there are in each area. In other words, what was the total population in each of the three districts that they drew the sample from. I need that to weight the sample when I do the report.

Last, if you have someone around, do a pre-test of 10 or 12 interviews tonight to see if there are any problems with the questionnaire. Call me in the morning and I can probably get them to sign off on the questions tomorrow which means you can begin this study as soon as you get the samples. Thanks Bruce