

BRISBANE COMMUNITY NOISE SURVEY 1998

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Abstract

The following is the full-length version of a summary paper presented at ICBEN 2003, the 8th International Congress on Noise as a Public Health Problem, in July 2003 [1]. Although the Brisbane Community Noise Survey was conducted in 1998, the details of the survey were not published until this time. This paper presents the background, methodology and results of the Survey and may assist others conducting community response to noise research. Huson and Associates were commissioned by Brisbane City Council to undertake a Community Noise Survey for Brisbane in 1998. The study was commissioned to address information gaps to assist Brisbane City Council develop a strategy to manage the impacts of environmental noise on the community. The survey was delivered under controlled conditions via telephone with 450 respondents being interviewed. The results of the survey indicate that the impact of community noise is a significant issue in Brisbane and is at the top of residents' pollution concerns in their local neighbourhood. Forty-seven percent (47%) of respondents indicated that they had been bothered or annoyed by noise in the 12 months preceding the survey. Road and air traffic were the dominant noise sources causing annoyance to respondents, while the greatest effect on lifestyle is sleep disturbance. Perhaps the most important effect of concern is that for those seriously annoyed by environmental noise, 9% of the responses describing its effect report that it results in aggressive behaviour. The majority of people reporting to be seriously affected by noise did not complain. The major reason for not complaining was that they considered there was nothing that could or would be done about the noise.

Introduction

Since the 1990's Brisbane has been at the centre of one of the fastest growing urban regions in Australia. In 1998 Brisbane's population was 850 000, with a projected population of 990 000 people by the year 2011.

The rapid development and urban consolidation of Brisbane means more people are becoming exposed in their living spaces to high noise generating sources such as transportation, industry and entertainment venues.

In addition, Brisbane's traditional subtropical house design also results in reduced sound insulation between the inside and outside of a typical dwelling.

To manage the impacts of increasing exposure to community noise, Brisbane City Council commenced the development of a Brisbane Noise Management Strategy to protect and enhance the livability of the city by managing the impacts of community noise upon the wellbeing of residents [2].

As part of the development of the Brisbane Noise Management Strategy, Huson & Associates was commissioned by the Brisbane City Council to complete a Community Noise Survey for Brisbane [3]. The objectives of the survey were to:

- Determine the perceived sources of noise in the Brisbane community;
- Assess community attitudes to noise;
- Determine the actual impacts of noise on the community; and
- Evaluate any trends in perceived noise impacts with respect to a previous 1986-1988 Brisbane Noise Survey [4].

Methodology

The Community Noise Survey was conducted in August 1998 and comprised a random sample of residents in Brisbane over the age of 18 years, based on telephone entries in an electronic database.

The sample frame was derived using a DTMS (Desktop Marketing Systems – Electronic Telephone Directory). This lists every residential listed number. DTMS is a National listing therefore all addresses were filtered by the boundary of Brisbane City. The DTMS software has a random selection function, within its computer program, which tags 6000 telephone numbers.

The sampling process involved the software Surveycraft used for CATI (computer assisted telephone interviewing). It has a function called SMS (sample maintenance system). The SMS registers each attempt and schedules the next attempt to maximise the opportunity to speak with a resident at that listed phone number. The reality of this approach is that some residents will not be contacted, or refuse to participate in the survey, but the impact of bias is minimised by calling back at varied times.

To visually assess the randomness of the sample the address of each person interviewed was geocoded using MapInfo onto a map of Brisbane. A good random sample across the whole of the populated areas of Brisbane was achieved.

NCS Australasia, a data collection services company providing Market and Social Research Services, was used to conduct the telephone interviews under controlled conditions using a questionnaire containing questions numbered from 1 to 32, many with sub-questions marked a, b or c. All responses to each question were recorded or

coded to enable later analysis by computer. Bias was further reduced within the questionnaire by rotation of options in lists. To enable a comparison with the 1988 Survey, the 1988 Survey questionnaire was used as a base with additional questions and modifications to address modern survey techniques. The 1998 Survey used the technique whereby the fact that the questionnaire was about noise is hidden.

The number of people interviewed was 450 and the average interview length was almost 25 minutes. To achieve 450 interviews, 4,210 telephone calls were made.

The respondent selected for interview in each household was also approached randomly. The interviewer asks to speak to the person in the household 18 years and over who is expecting the next birthday. All responses to each question were recorded or coded to enable later analysis by computer.

The questionnaire starts with basic filtering of the respondent to determine their eligibility for the full questionnaire, for example, do you live in the Brisbane City area?

A series of unprompted and prompted questions were then asked aimed at determining;

- Which general environmental problems are of most concern;
- Which single environmental problem was of most concern from those categories;
- How the respondent rates their neighbourhood;
- What specific environmental problems directly affect the respondent in their neighbourhood;
- Which single environmental problem in their neighbourhood was of greatest concern;
- The degree of annoyance caused by different noise sources;
- Preferred noise reduction measures;
- Willingness to pay for noise control in the home;
- Noise sensitivity of respondents; and
- Demographic data.

Results

General versus Specific Environmental Problems of Concern

The first two questions of the survey related to determining which general environmental problems are of most concern to the respondent, without indicating noise as the main subject of the survey. When asked, “what general environmental problems are you concerned about?” 15% reported noise pollution compared with 34% for air pollution and 32% for water pollution.

When asked “and which single problem most concerns you (in general)?” 8% reported noise pollution compared with 24% for air pollution and 14% for water pollution.

In the following questions the respondents were focussed on their immediate neighbourhood, still without indicating noise as the main subject of the survey. When asked “What specific environmental problems, that may

directly affect you in your neighbourhood, are you concerned about?” the highest percentage identified noise (20%) compared to air pollution (19%) and water pollution (10%).

When asked, “what single problem are you most concerned about (in your immediate neighbourhood)?” 17% reported noise compared to 14% for air and 6% for water.

The response to specific environmental problems in 1988 for noise yielded a significantly higher result at 67% compared to only 20% in the 1998 survey. It is likely that the practice of revealing that the subject of the study was noise in the 1988 survey produced a bias that is not evident in the 1998 study.

The above responses illustrate that when asked about environmental problems in general the respondents tended to focus on global rather than local issues, but when asked specifically what concerns them in their local neighbourhood, noise was the highest concern.

Perceptions of Neighbourhood

Interviewees were then asked to rate their neighbourhood as a place to live (noise still hadn’t been indicated as the main subject of the survey).

When asked to grade the perception of their neighbourhood from excellent to poor, 37% of respondents rated their neighbourhood as an excellent place to live, 54% as good, 7 % as fair and 1% as poor. When compared to the 1988 Survey there is little change in the assessment of neighbourhoods.

Interviewees were asked what they like most about their neighbourhood. The responses were categorised into noise related and non-noise related responses. The results show that 31% of respondents rate noise as a measure to assess what they like about a neighbourhood. When asked what they disliked about their neighbourhood, 27% cited noise-related problems.

Respondents were asked whether they consider their neighbourhood to be noisy or quiet. The results were then graded into slightly, moderately, very or extremely for each response except neither/don’t know. Eighty – one percent (81%) of respondents believed they had a quiet neighbourhood and 13% considered their neighbourhood to be noisy (with 5% of respondents considering their neighbourhood to be very noisy and 1% extremely noisy).

The 1998 survey results for this question could not be accurately compared to the 1988 survey results due to wording differences in the question.

Annoyance

The next series of questions in the questionnaire related to noise annoyance.

The interviewees were asked if they had ever been bothered or annoyed by noise in their neighbourhood over the past year. Forty-seven percent (47%) of respondents said that they had and 53% said that they had not been bothered by noise in the past 12 months. This result was compared to the 1988 Survey in which 47%

had been bothered and 52% had not been bothered with 1% not knowing. Although the questions were worded slightly differently, both surveys had an almost identical response.

Of the 47% of respondents bothered or annoyed by noise over the past year, 33% considered that noise had increased, 6% thought that it had decreased and 61% believed that noise had stayed the same over the past year.

The 47% of respondents bothered or annoyed by noise were then asked to identify the time of day, season and location that they are annoyed by noise. The results are listed in Table 1.

In summary, if there is a particular season in which noise is more annoying it is summer. There is no significant variation in noise annoyance between the weekend and weekdays. Respondents were more annoyed by noise in the morning, evening and late night periods than the daytime. Those respondents annoyed or bothered by noise were mostly affected indoors. A comparison was made to the 1988 survey, which indicates a similar distribution of results, except that respondents were more annoyed during the day than morning, evening or night.

All the respondents were asked to rate the degree that they are bothered by noise from different sources (which were read from a list), on a scale of 1 to 5 where 1 is not at all annoying and 5 is extremely annoying. The noise sources and the percentages of the respondents considering the particular type of noise as being very or extremely annoying (scales 4 and 5) are shown in Table 2. The term 'Seriously Annoyed' is used to represent this combined response.

The respondents claiming to be 'seriously annoyed' were then asked to rate the effect that noise from each noise source has on their lifestyle, on a scale of 1 to 5 where 1 is no effect at all and 5 is adversely affects your lifestyle. The percentage of 'seriously annoyed' respondents rating that a particular noise source 'seriously affected' their lifestyle is shown below in Table 3. 'Seriously affected' are those respondents who answered 4 or 5 in a scale of 1 to 5 where 1 is 'no effect at all' and 5 'adversely effects your lifestyle'.

Table 1: Time of Day, Season and Location Respondents were Bothered or Annoyed by Noise

Time and Location for Noise Annoyance at Home	Percentage of Respondents Annoyed By Noise
Season	
Winter	1
Spring	1
Summer	19
Autumn	0
No particular season	79
Time of Week	
Week-ends	30
Week days	27
No particular part of week	44
Time of Day	
Morning 6am to 9am	17
Daytime 9am to 5pm	9
Evening 5pm to 10pm	24
Late night 10pm to 6am	18
No particular time of day	32
Location at Home	
Indoors	53
Outdoors	20
No particular location	27

Table 2: Percentage of Respondents Seriously Annoyed by Noise from Different Noise Sources

Rank	Type of Noise Source	Percentage of Respondents Seriously Annoyed
1	Light Vehicles (such as cars, vans and motorcycles)	13.3
2	Heavy Vehicles (such as trucks and buses)	9.8
3	Pets/ Animals	9.1
4	Aeroplanes/ Helicopters	8.4
5	Garbage Trucks	4.9
6	Audible Alarms	4.4
7	People's Voices	4.4
8	Power Tools (such as drills and saws)	4.4
9	Residential Construction	4.2
10	Power Garden Equipment (such as lawn mowers and weed eaters)	4.0
11	Parties/ Celebrations/ Rowdy Behaviour	3.6
12	Radios/ TVs (other amplified noise), musical Instruments	2.7
13	Generators, Engines, Motors, Pumps	2.4
14	Sporting Venues	2.4
15	Construction of Public Works	2.4
16	Railways	2.2
17	Industrial Construction	1.3
18	Other Council Activities	1.3
19	Entertainment Venues, including Hotels, Clubs, Cafes	0.9
20	Factories	0.7
21	Air-conditioners	0.4
22	Swimming Pools and Spas	0.2

Table 3: Percentage of 'Seriously Annoyed' Respondents Claiming to be 'Seriously Affected' by Various Noise Sources

Rank	Type of Noise Source	Percentage of 'Seriously Annoyed' Respondents Claiming to be 'Seriously Affected'
1	Light Vehicles (such as cars, vans and motorcycles)	31.3
2	Heavy Vehicles (such as trucks and buses)	23.8
3	Pets/ Animals	22.7
4	Aeroplanes/ Helicopters	19.8
5	Garbage Trucks	13.1
6	Parties/ Celebrations/ Rowdy Behaviour	12.9
7	Residential Construction	12.4
8	Audible Alarms	11.3
9	People's Voices	10.7
10	Power Tools (such as drills and saws)	10.4
11	Power Garden Equipment (such as lawn mowers and weed eaters)	9.8
12	Radios/ TVs (other amplified noise), musical Instruments	8.9
13	Generators, Engines, Motors, Pumps	8.0
14	Railways	8.0
15	Sporting Venues	6.2
16	Construction of Public Works	5.8
17	Industrial Construction	4.7
18	Other Council Activities	4.7
19	Factories	2.4
20	Entertainment Venues, including Hotels, Clubs, Cafes	2.4
21	Swimming Pools and Spas	2.0
22	Air-conditioners	1.3

Effects of Noise

Respondents 'seriously annoyed' by noise were asked about the effect the noise has on their lifestyle. Multiple responses were allowed. Twenty-nine percent (29%) of the responses indicated that the noise disturbed their sleep, or caused them to sleep in another room of their house. Twenty-six percent (26%) said it caused them to keep windows shut. Sixteen percent (16%) said it caused listening or communication difficulties. Sixteen percent (16%) said it affected their health by causing headaches, irritability or stress and 9% said the noise caused their behaviour to become aggressive. Five percent (5%) reported other effects/no effect or don't know.

While the greatest effect on lifestyle is sleep disturbance, the most important finding is that 9% of the responses described aggressive behaviour. The 1988 Survey reported that 3.1% of respondents become aggressive in a barking dog situation but this statistic is not available from the 1998 survey.

One percent (1%) of respondents actually moved house because of noise and 12% considered moving home to reduce their exposure to noise. The majority of respondents annoyed by noise took some form of action by closing doors and windows.

Noise Complaints

The respondents were also asked if they have ever complained about noise from a list of sources. Thirteen percent (13%) of all respondents had complained about noise but only a small proportion of the 'seriously annoyed' respondents made a complaint to authorities. Only 2% of seriously annoyed respondents complained about animal/pet noise, 2% complained about light vehicles and 2% complained about parties and rowdy behaviour. Seventy-two percent (72%) of the respondents reporting to be 'seriously annoyed' by some form of noise did not complain. The reasons given for this were;

- because they considered there was nothing they could do or nothing would be done about it (34%),
- not that serious to complain (22%),
- temporary / knew that noise would cease soon (14%),
- Don't know who to complain to (13%).

In 1998 Brisbane City Council received 8,446 noise complaints, including 6,730 barking dog complaints (this represents 80% of the total), 471 domestic construction noise complaints (6%), 79 air-conditioner noise complaints (1%) and 78 pool filter complaints (1%). Complaints were also made about domestic power tools, amplified music, industry and commercial activities. Traffic noise complaints from Council controlled roads were not recorded in 1998 [5].

The Department of Main Roads recorded 21 complaints about traffic noise from major roads [6]. The Police received 9,775 noise complaints in total, which

includes noisy parties, rowdy behaviour, noisy vehicles, amplified music and alarms [7]. AirServices Australia received 7,881 complaints concerning aircraft [8]. The Department of Environment and Heritage received 1,421 complaints about commercial and industrial activities [9].

All the above complaint data was recorded in Brisbane and refers to the total number of complaints recorded, not the number of complainants (ie. one person may have made 100 complaints).

Noise Sensitivity of Respondents

The 1988 and 1998 Surveys both asked the respondent to rank whether they considered themselves less, about the same, or more sensitive to noise than most people. Table 4 shows a comparison of the result of the two surveys.

Table 4: Sensitivity to Noise

Rating	1988 Survey Percentage of Respondents	1998 Percentage of Respondents
Less	20	37
About the same	64	45
More	13	18
Don't know	3	2

The results indicate that people were more polarised in 1998 than 1988. There appears to be a shift towards less sensitivity to noise between the respondents in the two surveys and this may be a result of the different demographics outlined in the next section of this paper.

Demographics

The type of home in which the respondent lives may affect the potential for noise control. For example, brick houses with tile roofs are more effective attenuators of outside noise, when windows and doors are closed, than a wooden high set Queenslander style house. Furthermore, the benefit from traffic noise barriers reduces for high set or two storey homes because the upper levels often overlook the tops of the barriers.

The ease with which respondents can relocate is often related to whether a home is rented or purchased and the time they have lived at their present address may also have a bearing on the attitude towards a neighbourhood.

Forty-five percent (45%) of respondents owned their home outright, 32% of respondents had a mortgaged home and 22% rented.

Seventy percent (70%) of respondents have changed address in the ten years since the 1988 Survey and 88% of the respondents had been living in their home for more than a year, compared with 79% of respondents in the 1988 Survey who had lived in their home for more than a year.

Thirty-four percent (34%) of respondents lived in a high set house, 34% in a low set house, 17% in a two storey house, 10% apartment or flat, 3% townhouse, 2% other.

Materials for home construction in Brisbane have changed in the period from 1988 to 1998. There are now many more brick homes built and less wooden homes. The 1988 Survey remarked on the difference between home construction materials in Brisbane compared to other Australian cities. It was suggested that Brisbane's population would be disadvantaged since sound could penetrate the home more easily in a wooden house. In 1988 there were approximately 1 in 5 brick homes, whereas, in 1998 brick homes number 1 in 2. This change narrows the differences in house construction between Brisbane and southern cities and will reduce any acoustic disadvantage.

Similar changes have been found in the type of roofing materials. In 1988 the most common roofing material was metal, but in 1998 it was tile.

Conclusion

One of the key findings of the Brisbane Community Noise Survey 1998 is that when asked about environmental problems in general the respondents tended to focus on global rather than local issues, but when asked specifically what concerns them in their local neighbourhood, noise was the highest concern.

The Survey also indicates that Authorities cannot rely solely on complaint statistics to assess the impact of noise in the community, as the noise source of greatest concern to respondents (transport) is not the subject of the highest number of complaints (barking dogs and building construction). Also, only 13% of all respondents had complained about noise and significantly, only a small proportion of the 'seriously annoyed' respondents made a complaint to authorities. The most common reason given for not complaining was that the respondent believed nothing could or would be done to reduce the noise.

The most common effect environmental noise has on respondents is disturbance of sleep. It is also the most significant effect due to the link between sleep disturbance and health [10]. Another finding of concern is that 9% of the responses describe aggressive behaviour when seriously annoyed by environmental noise.

Although the sample size was small in comparison to some international community noise surveys, the Brisbane Community Noise Survey 1998 provides useful information to guide policy makers in improving the management of environmental noise.

References

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