



Health*Insider*

Traffic Noise Outside the Home

POR-02-65-S

December 2002



Noise

Background

Noise is often described as an undesirable sound that annoys people, interferes with communication, disturbs sleep or rest or causes loss of hearing. Noise pollution can come from a number of sources, including road, rail and air traffic, construction and industrial activities, motorboats, snowmobiles and loud music.¹ However, studies have shown that the two major sources of noise are road and air traffic.²

Noise is measured in decibels (dB). An audible whisper registers about 10dB and normal conversation is measured at about 60dB. The noise level on a major road is about 75dB and the noise from a highway ranges from 80 to 90dB. In Canada, all levels of government share responsibility for the control of environmental noise.

While the risk of hearing loss from outdoor noise is negligible in people who do not work with loud equipment on a regular basis, it is possible to suffer temporary hearing loss from such noises. More importantly, noise can cause stress. Like other sources of stress, it can temporarily affect the heart rate, blood flow and may also affect the immune system and the biochemistry of the blood.³

In the last *HealthInsider*, 51% of Canadians reported that they were slightly to extremely bothered by environmental noise and almost 8% of those who responded indicated that they were very or extremely bothered by noise from outside their home in the past 12 months. Overwhelmingly, the most bothersome type of noise was road traffic.⁴

Findings

The results of the last *HealthInsider* showed overwhelmingly that the most bothersome type of noise experienced by Canadians was road traffic. Therefore, building on results from the last survey, participants were asked how much they were bothered by the noise from road traffic.

Of the sample of Canadians who answered the question “Thinking about the last 12 months or so, when you are at home, how much does noise from road traffic bother, disturb or annoy you?” almost 63% responded “not at all.” Among the remaining 37% who reported that they were slightly to extremely bothered by road traffic noise, almost 7% were either very or extremely bothered (Fig 1).

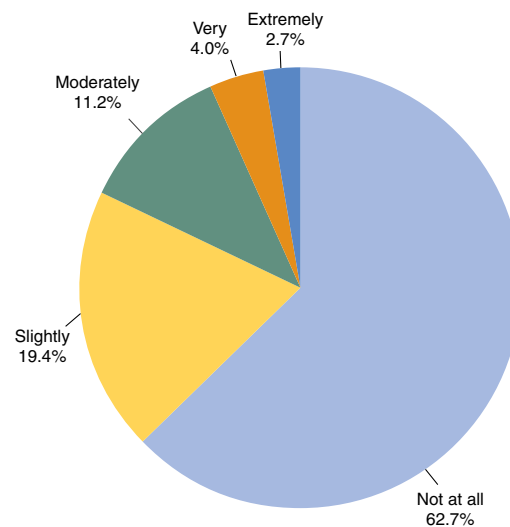


Figure 1: Extent to which Canadians are bothered by road traffic

When asked to rate how much they were bothered by noise on a scale from zero (not at all) to ten (extremely bothered), 45% responded with an answer of zero, indicating that they were not at all bothered, and 65% responded with a number between zero and two (Table 1). A detailed comparison of the two questions can be found in Appendix C.

The mean value of the responses was 2.14 and the median value was 1.00. This would indicate that 50% of the sample believed that they were at least very slightly bothered by road noise. More than 25% of the sample indicated that noise bothered them at a level of four or higher.

Table 1. Rating of the extent to which Canadians are bothered by road traffic

Rating		%
Not at all bothered	0	44.9
	1	9.8
	2	10.6
	3	8.7
	4	5.1
	5	6.8
	6	5.0
	7	4.1
	8	2.6
Extremely bothered	9	0.7
	10	1.7

A greater proportion of females than males reported being bothered by noise from road traffic. Females were about one-and-a-half times more likely to report that they were slightly to extremely bothered by the noise from road traffic. When comparing the mean rating of noise from road traffic on a scale of zero to ten by sex, females rated their annoyance from road traffic as a mean of 2.37 versus a mean of 1.93 by male respondents.

Canadians 65 and over were the least likely to be bothered by road traffic. More than 71% of those 65 and over indicated that they were “not at all” bothered by noise from road traffic, compared to 67% of people 45 to 64 years, almost 59% of people 25 to 44 and almost 61% of people under 25.

Being bothered by noise from road traffic was also significantly associated with education status. Almost three-quarters of people with less than a secondary education indicated that they were not at all bothered by noise from road traffic, compared to less than 65% of those with a secondary education and only 60% of those Canadians who had some post-secondary education.

Household income level was also associated with being bothered by noise from road traffic. Canadians who indicated that their income before taxes was between \$20,000 and \$50,000 were most likely to be bothered by noise from road traffic. Almost 45% of this income group indicated that they were slightly to extremely bothered by noise from road traffic, versus 34% of those with annual incomes of less than \$20,000 and 35% of those with annual incomes above \$50,000. As well, people who were working were more than 1.25 times as likely to report being bothered by noise from road traffic than those who were not working.

People who lived in smaller communities were least likely to be bothered by noise from road traffic, compared to those in larger communities. Residents of communities with populations of 100,000 or more were most likely to be very or extremely bothered by noise from road traffic (Fig 2).

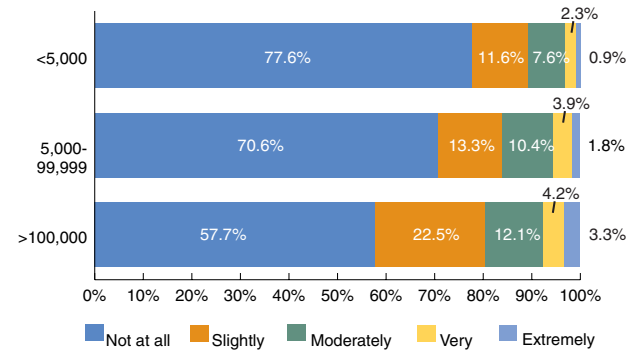


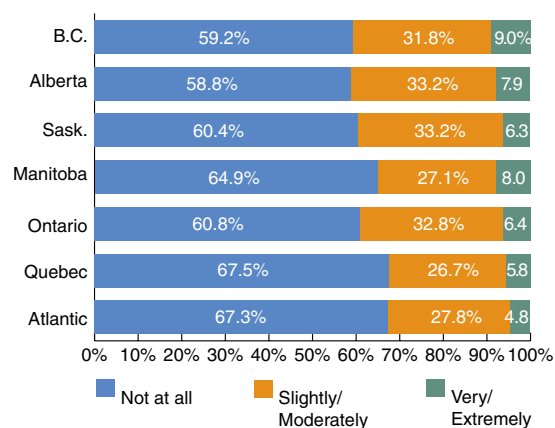
Figure 2: Extent to which Canadians are bothered by noise from road traffic by community size

Being bothered by noise from road traffic did not differ by either self-perceived health status or by the presence of chronic illnesses or conditions for the first question. However, the rating of noise on a scale of zero to ten did differ by perceived health status. Canadians who felt that their health was only fair or poor had a significantly higher mean rating for how much they were bothered by road noise: 2.47 versus 2.09 for people who indicated that their health was good or excellent compared to others their age.

Being bothered by noise from road traffic did not differ significantly by province when considering all possible

levels, from “not at all” to “extremely.” However, “not at all” versus “slightly/moderately” versus “very/extremely” did show some regional variation. Canadians living in British Columbia and Alberta were most likely to be bothered by noise, while those living in Quebec and the Atlantic provinces were least likely (Fig 3).

Figure 3. Extent to which Canadians are bothered by noise from road traffic by region



Closing Comments

Almost 37% of Canadians said they were slightly to extremely bothered by noise from road traffic. When asked to rate how bothered they were with road traffic noise on a scale from zero to ten, the mean rating was 2.14 and the median rating was 1.00, suggesting that 50% of Canadians are bothered at least very slightly by road noise. The extent to which respondents were bothered by noise varied by sex, age category, income, education, work status, community size and region.

¹ Environment Canada, Health and the Environment, 2001
² World Health Organization, www.who.int/peh/noise/guidelines2.html.
³ Health Canada, Health and the Environment—the Built Environment, 1997
⁴ IBM Business Consulting, HealthInsider, 2002.

Appendix A

Methodology



Methodology

Interviewing Dates, Sample Size and Margin of Error

The HealthInsider survey was carried out by IBM Business Consulting Services' National Survey Centre in Ottawa, Canada. The results are based on a probability sample of 2,667 Canadians, 15 years of age and older. The survey was conducted by telephone between Wednesday October 16, 2002 and Saturday, November 2, 2002.

The national margin of error for this research is plus or minus 1.9 percentage points in 19 samples out of 20. The margins of error are correspondingly higher for regional (i.e., provincial), demographic and other subgroups.

Questionnaire Design

IBM Business Consulting Services prepared the questionnaire. The instrument was pre-tested among 23 respondents. The final questionnaire required, on average, 26.5 minutes to administer. Respondents were interviewed in their official language of choice, with both French and English surveys available simultaneously on the Computer Assisted Telephone Interviewing (CATI) system.

Telephone Interviewing

Experienced, professional telephone interviewers administered this survey. Prior to the field work, each interviewer was briefed thoroughly about the nature of the study. Field supervisors were present at all times to ensure accurate and consistent interviewing and recording of responses. All responses obtained during the conduct of interviews were entered directly into the CATI system, which is programmed to automatically check responses for appropriateness of range and logical consistency at the time of data entry.

Upon completion, each interview was checked for any possible interviewer error. This procedure is equivalent to 100% keypunch verification when traditional paper and pencil methods are employed.

In addition, more than 10% of each interviewer's work was unobtrusively monitored in accordance with the verification standards of the Canadian Association of Marketing Research Organizations (CAMRO). Field operation super-

visors monitored the interview over a one-way telephone while watching a terminal that showed the interviewer's keystrokes.

Sample Design

Table 1 shows the sample design for HealthInsider No. 8.

Table 1 Sample design by province

Code	Province	Percentage of Canadian population	Sample size	MOE (95% CI, 70% Prop)
10	Newfoundland	1.92%	85	9.8%
11	Prince Edward Island	0.47%	85	9.8%
12	Nova Scotia	3.16%	213	6.2%
13	New Brunswick	2.57%	213	6.2%
24	Quebec	24.83%	328	5.0%
35	Ontario	37.40%	428	4.7%
46	Manitoba	3.87%	328	5.0%
47	Saskatchewan	3.44%	328	5.0%
48	Alberta	9.38%	328	5.0%
59	British Columbia	12.95%	328	5.0%

Sample Selection

The sample for HealthInsider was generated using a stratified two-stage random sampling technique. Each of the ten provinces in Canada was allocated a quota. This quota was treated independently in the sampling process of the survey.

Each of the provinces was stratified into five community sizes:

- 100,000 to 999,999 residents
- 30,000 to 99,999 residents
- 10,000 to 29,999 residents
- 5,000 to 9,999 residents
- less than 5,000 residents

The provincial quota was then distributed among community strata according to their contributions to the provincial

population. In addition, separate strata were created for Montreal, Toronto and Vancouver. As a result, Quebec, Ontario and British Columbia had a total of six strata.

At the first stage of sampling, households were selected from a stratum using random digit dialling (RDD). Each sampled number has been checked against published phone lists and categorized as either "Directory Listed" (DL) or "Directory Not Listed" (DNL). The full RDD sample is composed of both the DL and DNL components. In total, 17,240 telephone numbers were generated through this method.

At the second stage of sampling, one eligible respondent was chosen from each household identified by a selected telephone number using the Trolldahl-Carter technique. This technique ensures that the sample accurately represents the eligible population according to its age and sex structures. Once a potential respondent was chosen using the Trolldahl-Carter technique, no other person in the household could be substituted as a respondent.

Table 2. Report on telephone interviewing

<i>Total telephone numbers dialled</i>	16,144
Ineligible numbers	2,639
Non-residential/duplicate	327
Not in service/fax	2312
Total eligible phone numbers	13,505
No answer / busy	1,469
Answering machine	1,176
Interview not completed	8,193
Call-backs	1,405
Refusal (screening/introduction)	5,511
Refusal (incomplete interview)	191
Language barrier	429
Mental/physical disabilities/age	252
Respondent not available/quota filled	405
Completed interviews	2,667

Table 3. Report on valid interview attempts

Number of interviews required	2,662
Number of valid interview attempts	8,369
Refusals	5,702
Refused to participate (screening/introduction)	5,511
Refused to participate (incomplete interview)	191
Completed interviews	2,667
<i>Completion rate</i> <i>(completed interviews/number of valid attempts)</i>	31.87%

Weighting

At the conclusion of the survey and prior to the analysis, the data for the Health *Insider* were weighted and verified against 1996 Statistics Canada census information.

IBM Business Consulting Services generated three sets of weights for within-province weighting: community size, sex and age. A composite provincial level weight was derived from these weights for each case, which was used for provincial comparisons. A national weight was also generated from the combination of the composite provincial weight with a national population weight for each province reflecting each province's contribution to the national total.

These weights were used for the purposes of analysis to adjust for any differences in response rates.



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12-02
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