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Special Report # 14

Neighborhood Noise and Its Consequences: Implications for Tracking Effectiveness of NYC Revised Noise Code

A survey in collaboration with



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April 2007

Executive summary

This Special Report discusses findings of an eTownPanel online survey, conducted in collaboration with The Council on the Environment of New York City, about neighborhood noise. This survey replicates previous surveys reported in November 2004 and January 2006 (see eTownPanel Special Report #3 and eTownPanel Special Report #9).¹ As before, the survey focused on general perceptions of neighborhood noise, specific sources of noise in communities, complaints about noise, and the behavioral and emotional consequences of neighborhood noise.

Compared to respondents nationally, the survey again found that New Yorkers reported being bothered more frequently by noise and that they were more likely to have made a complaint about it. New Yorkers also suffer various behavioral and emotional consequences of noise much more often.

Methodological note: The survey was conducted from July 17 through July 28, 2006, and included online responses from 1307 panelists, 159 of whom live in New York City. The panelists were recruited using the Internet and other sources to participate in online research; they are not a random sample, and thus the results are not scientifically projectable to the larger population. However, results are adjusted by gender, race, age, and geography to more closely reflect the general demographic profile of the US and New York City.

Background

That our society is becoming noisier and that more people are being disturbed by noise is evidenced by the growing number of anti-noise organizations around the world, the number of websites dealing with noise (www.cenyc.org, www.nonoise.org, <http://noiseoff.org>) and the numbers of noise stories that are appearing in the media and press (www.boomcars.org; www.nonoise.org; <http://noiseoff.org>) Many of these news stories describe the fights that erupt because of noise such as the story that drew much attention in the New York media recently (Lueck, 2006) which sadly resulted in the death of a young woman. Her death "...was the result of a chain of events set off by a complaint common to New York City residents: construction noise."

Noise complaints are not restricted to major metropolitan areas such as New York City but have also been registered in quieter towns such as Greensboro, North Carolina and Kalispell, Montana. A worldservice BBC four-segment radio program in March 2005 entitled "The Noisy Ape" addressed the noise problem faced by residents living in Richmond, Virginia and the study by Bronzaft, et al. (2000) looked at noise complaints worldwide. A recent measure of how intrusive noise has become is the public outcry against the possibility that cell phones may be used in aircraft. With the voices of so many being raised against noise pollution, one cannot say that noise complaints are unusual.

¹ Available at www.ETownPanel.com/SpecialReports.htm

Noise is not simply intrusive and bothersome but it has been demonstrated that noise is indeed a health hazard. The National Institutes of Health (1990) estimated that of the 28 million Americans who suffer some hearing damage, at least 10 million could be attributed to loud sounds. In 2004 it had been estimated that 31.5 million people suffer from hearing loss and this number is estimated to increase to 41 million by 2025 (Zind, 2007) with undoubtedly loud sounds accounting for a portion of this increase. However, sounds that may not be that loud, but are still unwanted and uncontrollable, can have dire consequences for the listener, especially if the intrusive sounds occur over a period of time. If the source of the noise is an agent or agency that has demonstrated little concern for the individual suffering from the impacts of the noise, and, as a result, has done nothing to abate the noise, then the noise becomes even more disturbing.

When intrusive noises persist, the body continues to react to these intrusions physiologically and over time there is the possibility of permanent bodily damage - damage to the circulatory, cardiovascular and gastrointestinal systems. Studies reporting these non-auditory effects appear in the following: Bronzaft, 2002; Kryter, 1985 and 1994; Fay, 1991. The studies cited in these compilations indicate that individuals living near noise have more cardiovascular and circulatory ailments. Looking at the wide body of literature on the effects of noise on mental and physical well-being, one has to conclude as Passchier-Vermeer and Passchier (2000) did after they examined the literature on noise and health: "Exposure to noise constitutes a health risk."

With the federal government essentially leaving noise control to local authorities, New York City passed its first Noise Code over thirty years ago. In December 2005 New York City passed and the Mayor signed a Revised Noise Code to go into effect July 2007. This was done in response to the growing number of noise complaints to its 311 citizen service hotline (331,587 complaints in Fiscal '05 and 354,378 in Fiscal '06 - personal communication with 311 analyst for community affairs) and in recognition of noise as a health hazard. Other cities are similarly responding to noise pollution (www.boomcars.org; www.nonoise.org, <http://noiseoff.org>).

Now that an updated Noise Code has been passed, it would be prudent for the City to assess its effectiveness. One method of assessment could involve examining the number of complaints received by the City's 311 system, including the types of complaints. 311 could be asked to track how the appropriate city agencies, DEP, police department, etc. handle the complaints assigned to them. An effective Code should result in fewer complaints and more successful amelioration of the complaints. It is also possible that certain sections of the Code will be more effective in resolving complaints than other sections; less effective sections should be modified

Another way to assess the Code could involve asking New York citizens themselves about the city's noise level employing the methodology of the eTownPanel project. In December 2004 Bronzaft & Van Ryzin released the results of an online survey on the noise problem in New York City and the nation and a second study followed a year later. These two studies were part of a series of surveys that Bronzaft and Van Ryzin hope to conduct in the next few years. The first survey gathered views from 135 New Yorkers and 575 other US residents during the month of July 2004. Results were weighted by gender, race and age to better reflect the demographic profile of New Yorkers and citizens nationwide. The survey found that New Yorkers were most often bothered by honking horns, car alarms, and boom car stereos or "boom cars". By contrast, residents nationally were most bothered by lawn mowing and barking dogs. New Yorkers reported much higher levels of neighborhood noise and also suffered more behavioral and emotional consequences, such as difficulty sleeping and relaxing. They also felt more annoyed, angry and upset. The second survey, which was conducted in July 2005 and used the same methodology to weight the data, gathered input from 1752 panelists, 134 of whom lived in New York. Neighbor's activity or voices rose to be the number one New Yorker

complaint and number two in the nation, although barking dogs remained number one nationally and car stereos or boom cars still came in second in NYC. New Yorkers still suffered more consequences and feel more upset about noise across the board, and their perception of noise in their own neighborhood rose slightly from the previous year.

In July 2006, eTownPanel project was used for the third time to gather information on perceptions of neighborhood noise, sources of noise, complaints about noise, and the behavioral and emotional consequences of neighborhood noise in New York and the nation. The use of this online panel, because it tracks and records the responses of many of the same individuals over time, offers the potential to serve as a gauge of the effectiveness of New York City's Noise Code in the future. Results of the third survey, which follow, will be compared with the results of earlier surveys, giving us a three year overview of the noise problem in New York City, and the authors hope to continue tracking noise complaints in New York City using eTownPanel.

Method

The survey was conducted from July 17 through July 28, 2006, and included online responses from 1307 panelists, 159 of whom live in New York City. The panelists are part of the eTownPanel project and were recruited using the Internet and other sources to participate in online research, including web directory listings, Google ads, Craigslist postings, and announcements sent via email to membership lists of various nonprofit organizations in New York City that have partnered with eTownPanel over the years. It is important to point out that the panel of respondents is not a random sample, and so the results are not scientifically projectable to the larger population. However, results are weighted by gender, race, age, and geography to more closely reflect the general demographic profile of the US and New York City. Both national and New York City weights were constructed using simple post-stratification methods.²

Table 1 presents the demographic profile of the survey respondents, both weighted and unweighted, and compares this profile to data from the US Census. As the unweighted results in Table 1 show, respondents nationally are disproportionately white, female, and in the 45 to 64 age group. Respondents nationally over-represent the northeast and under-represent blacks, Asians, Hispanics, those 18-24 year of age, those 65 and older, and those in the lowest income group. The weighted results, by design, more closely mirror the Census figures nationally. The unweighted New York City respondents, compared to Census figures for New York City, are again disproportionately white, female, between 45 to 64 years and those in the highest income group. They under-represent blacks, Asians, Hispanics, those 18 to 24 years old, those 65 and older, and the lowest income group. The weighted results again bring the profile of New York City respondents into line with Census figures for the city (except for income, which was not a weighting variable). The following results in this report for both New York and the nation are all weighted results.

² The weighting procedure involved two steps. First, weights were constructed to bring the sample into geographic balance based on the population of Census regions. This geographic weight was then applied to the data, and new weights were calculated to align the sample to the Census in terms of gender, race, and age. This weighting procedure was carried out separately for New York City and the nation. Income was not used as a weighting variable because of missing data on the income question.

Findings

As was done in the previous reports on noise, the findings below are reported separately for the nation as a whole and for New York City. This section begins with general perceptions of neighborhood noise. It then focuses on sources of noise within a neighborhood as well as complaints made about noise. It concludes with an analysis of the behavioral and emotional consequences of neighborhood noise.

Perceptions of neighborhood noise

Figure 1 compares New York City and the nation in terms of an overall index of perceived neighborhood noise. Respondents were asked to rank their satisfaction with the noise level in their neighborhood, as well as compare it to what they had expected and to their ideal level of noise. The answers to these three questions were then converted to a 0-100 scale and averaged to obtain the final index. The survey indicates that New Yorkers perceive much more neighborhood noise than respondents nationally. The results of this third survey also demonstrated that New Yorkers, overall, perceived their neighborhoods to be noisier in 2006 than they did in 2005, and 2005's rating was higher than 2004.³ On the other hand, the overall index of perceived neighborhood noise remained about the same for the national respondents for the three years.

When asked to compare the noise level this year with last year (**Figure 2**), 38% of New Yorkers responded that the problem was worse, 12% of the New Yorkers said the problem was better, and 49% of them stated the problem remained the same. By comparison, 20% of the respondents nationwide noted that noise was worse, 66% stated about the same, and 15% claimed it was better. The percentage of people who felt noise was worse in 2006 than in 2005 was nearly twice as large in New York as in the nation.

Sources of noise

New Yorkers identified car alarms as most bothersome, followed by honking horns, car stereos or boom cars, rowdy passersby or people hanging out and neighbor's activity or voices (**Figure 3**). For the nationwide respondents, barking dogs or pet noises were the most bothersome, with lawn mowing or other power tools coming in at a close second. Car stereos or boom cars, police, fire or ambulance sirens and neighbors' activity or voices were tied for third (**Figure 4**). Even though respondents from New York placed different concerns into their top 5 as compared to national respondents in general, two of the sources were the same for both groups: neighbors' activity or voices, and car stereos or boom cars. It should be noted that when music, TV or radio from neighbors is combined with neighbors' activity or voices, neighbor noise ranks very high as a source of noise, especially in New York City.

Noise complaints

New Yorkers are much more likely to complain about noise than respondents nationwide (**Figure 5**). Nearly twice as many New Yorkers complained to their neighbors; six times as many New Yorkers complained to a government helpline such as 311; the police were

³ The results for 2004 and 2005 that are shown in **Figure 1** differ from those reported in eTownPanel Special Reports #3 and #9 because of improvements in the weighting method used for New York City respondents. The results in this report use a consistent, corrected weighting method for New York City respondents that has been applied to all three years of survey findings. The weighting method for the national results has not changed and thus these figures are consistent with the prior eTownPanel reports.

contacted by more than twice as many New Yorkers; and far more New Yorkers contacted a government agency or government web site for help.

Behavioral and emotional consequences

New York City residents report that they more frequently experience various behavioral and emotional consequences of noise when compared to respondents nationwide. New Yorkers are more likely to close their windows, have trouble relaxing, lose sleep and have trouble reading (**Figure 6**). Similarly, the New Yorkers surveyed are more likely to feel annoyed, angry, helpless, upset and tired because of neighborhood noise (**Figure 7**).

Responses for the seven behavioral and seven emotional consequences questions were then averaged and converted to a 0-100 scale, creating behavioral and emotional consequences index. Nationally it was at 25.0, while for New Yorkers this index was 46.9, which represents a highly statistically significant difference between NYC and the rest of the country.

Noises most associated with consequences

Correlations were calculated between the various sources of noise and the behavioral-emotional consequences index. The correlation coefficient (Pearson r) measures the statistical association of one variable with another in standardized units. Because being bothered by a noise generally produces more consequences than fewer, the correlations are all positive (with a possible range from 0 to 1). Thus, each correlation measures the extent to which being bothered by a given noise is associated with overall behavioral and emotional consequences.

In New York City, as **Figure 8** demonstrates, the top noises most strongly associated with behavioral and emotional consequences: Neighbor's music, TV or radio; rowdy passersby; highway or street traffic; honking horns and car alarms. Nationwide (**Figure 9**) they are: rowdy passersby; neighbor's activity or voices; car stereos or boom cars; neighbor's music, TV or radio and honking horns. Three of these causes, namely neighbor's music, TV or radio, rowdy passersby and honking horns, make the top 5 both in New York and nationally.

Discussion comparing 2004, 2005 and 2006 survey results

Perceptions of neighborhood noise have remained relatively the same nationwide over the last 3 years. For New Yorkers however, perceived noise has been steadily increasing. (**Figure 1**) As we found in 2004 and 2005, New Yorkers are more likely to complain about the noise, and they more frequently experience behavioral and emotional consequences as a result of noise intrusions.

One could hypothesize that New Yorkers complain more about noise because New York City is noisier than most other places nationwide. One could also hypothesize that New Yorkers are more outspoken and that is why they are more likely to complain to neighbors, police or a government agency. That 36% of New Yorkers called a government helpline in 2006 and 33% in 2005, as compared to 13% in 2004, may be due to the introduction of and the publicity given to the 311 helpline.⁴

In looking at the correlations indicating the noise most associated with behavioral and emotional consequences, car alarms, which was number one for New Yorkers in 2004, did not even make the top ten in 2005, but rose back to fifth in 2006. Back-up beeps on

⁴ These results are comparable across years using a constant, corrected weighting method (see footnote 3).

the other hand rose from sixth in 2004 to the most strongly correlated with emotional and behavioral consequences in 2005, but fell entirely out of the top 10 in 2006. It would be worthwhile to learn in the following years whether the effects of these noise sources on New Yorkers are changing, or if one of these years was an anomaly.

Conclusions and Policy Implications

New Yorkers, more than respondents nationwide, have more trouble listening to music, radio or television, relaxing or falling asleep in their homes because of noise intrusions from neighbors, traffic, honking horns, car alarms, etc. That New York has become a noisier city in which to reside is underscored by the City's passage of a Revised Noise Code in December 2005. New York needs a code that is more responsive to the noises of the 21st century and it is hoped that this Code will lessen the din in New York City.

While New Yorkers, for the most part, have learned to tolerate some noises, namely noise from subways, buses or street traffic as they go about their daily business, they expect quiet when they close the doors to their houses and apartments. New Yorkers do not want to listen to "neighbor noise" which ranks high on the list of complaints. Despite the stronger New York City Noise Code, "neighbor noise" complaints are not adequately dealt with in the code. Although 311 forwards noise complaints to the police department, e.g. a complaint of a loud noisy party is lessened by police for only a short period of time, resuming once the police have left. Police, however cannot deal at all with a wide range of neighbor noise complaints: audible walking in apartment dwellings when neighbors above don't cover floors properly, playing radios and television sets loudly in evening, excessively loud voices and shouts.

A pilot study on "neighbor noises" in apartment dwellings on the Upper East Side of Manhattan (Bronzaft & Wallerstein, 2006) found that managing agents, for the most part, ignore neighbor noise complaints. With so many people living in apartment dwellings in New York City, the New York City Council should investigate why leases and rental agreements don't provide tenants with the quiet enjoyment to which they are entitled under New York State Property Law.

In a pilot study of train, subway station, and bus stop peak noise level measurements, not average noise levels over time, Gershon, et al.(2006) reported very high levels of noise exposure. The authors stated that these high levels had the potential of exceeding recommended guidelines of the World health Organization and the U.S. Environmental Protection Agency. Although the methodology of this study does not allow for broad generalizations about average noise exposure for passengers traveling on subway trains, waiting on subway platforms, or waiting at bus stops, at the very least, its findings call for additional noise studies of New York's transit system. However, in our survey, subway noise, by contrast, ranked low on list of complaints for the nation and for New York City. This would probably not be true for those New Yorkers living and working near elevated train lines. Furthermore, the New York City Transit Authority (private communication with Dr. Bronzaft) reports that it doesn't receive many noise complaints and the Straphangers Campaign also said it receives few complaints about noise (Bennett, 2006).

Probably, most New Yorkers have learned to deal with subway noise as they travel to and from business, shopping, medical visits, and visits to friends and family. Despite the low ranking, the New York City Transit Authority should abate subway noise because, at the very least, subway noise makes subway trips more stressful and unpleasant. Even when people appear to be dealing with the noise, the noise can still have an impact on their well-being. Dealing or tolerating noise, as many people do, especially those living in major cities, takes effort and this effort puts greater stress on the body. Dr. Bronzaft who has studied the adverse effects of elevated train noise on children's learning (Bronzaft &

McCarthy, 1975) queried teachers about teaching in noisy classrooms. Although many of them reported that they believed they were doing a good teaching job, they also commented that they came home very fatigued because of the extra effort exerted teaching in a noisy classroom.

That noise has behavioral and emotional consequences for New Yorkers and respondents nationwide speaks to the adverse impacts of noise to one's health and well-being. Noise annoys but it also upsets and angers people; it also makes some people feel anxious and helpless. The literature on the adverse effects of noise is plentiful as noted above and the World Health Organization has found that noise diminishes one's quality of life. Thus, passing noise legislation which can lessen the noise in a city is important in providing a healthier environment for residents. However, tracking effectiveness of this legislation is also very important.

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About eTownPanel. eTownPanel is a university-based, nonprofit project that aims to expand the potential of the Internet as a tool for measuring the quality of life in communities across the US and for providing citizen-driven feedback on the performance of local governments. eTownPanel also serves as a cost-effective research tool for local nonprofit organizations and government agencies that seek to understand what citizens think about important local issues. The project currently focuses on New York City but will soon include additional cities and towns from across the US.

For more information visit www.ETownPanel.com or email info@ETownPanel.com

TABLE 1. Demographic profile of survey respondents (percents)

	The Nation (n=1307)			New York City (n=159)		
	Census	Weighted	Raw	Census	Weighted	Raw
Northeast	19.0	21.1	31.0	100.0	100.0	100.0
South	35.6	33.5	29.7	0.0	0.0	0.0
Midwest	22.9	21.8	23.2	0.0	0.0	0.0
West	21.9	23.6	16.0	0.0	0.0	0.0
White, non-Hispanic	69.1	71.6	84.9	35.0	35.3	70.3
Black or African						
American	12.3	11.6	7.5	24.5	23.5	14.2
Asian or Pacific						
Islander	12.5	8.7	3.3	27.0	27.7	8.4
Hispanic or Latino	3.7	5.4	2.6	9.7	7.6	3.2
Other	2.4	2.7	1.7	3.8	5.9	3.9
Female	51.0	51.9	73.7	51.0	51.4	67.5
Male	49.0	48.1	26.3	49.0	48.6	32.5
18 to 24 years	13.4	13.1	5.0	13.1	7.5	3.8
25 to 44 years	40.7	40.5	48.6	43.5	55.9	38.2
45 to 64 years	29.6	31.8	42.1	27.9	26.1	51.6
65 years and over	16.7	14.6	4.3	15.5	10.5	6.4
Less than \$25,000	28.7	16.9	14.7	34.9	11.2	9.5
\$25,000-\$49,999	29.3	38.9	34.9	25.7	28.3	23.4
\$50,000-\$74,9999	19.5	23.0	26.8	16.7	24.0	25.5
\$75,000 or more	22.5	21.2	23.5	22.7	36.5	41.6

Note: Census figures from American FactFinder, 2000 Census Quick Tables, available at www.census.gov.

Weighted results reflect post-stratification adjustments for region, race, age, and gender.

FIGURE 1. Overall index of perceived neighborhood noise (0-100 scale)

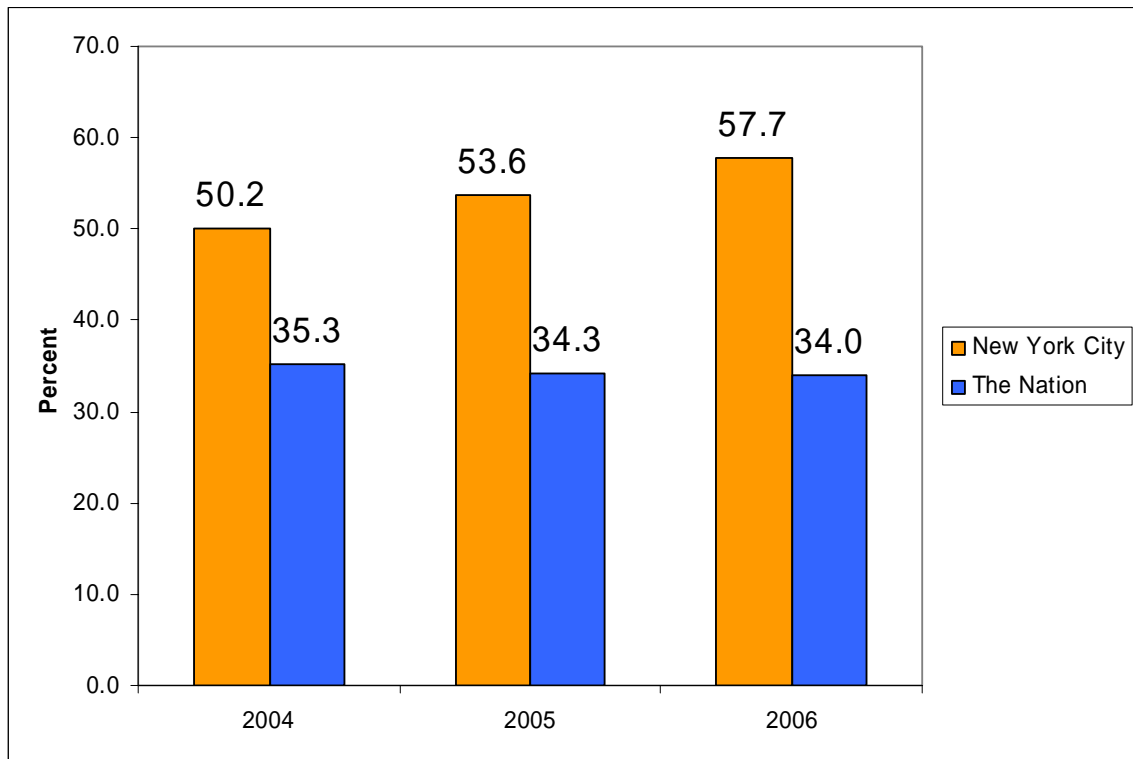


FIGURE 2. Compared to this time last year, would you say the problem of noise in your neighborhood has gotten . . .

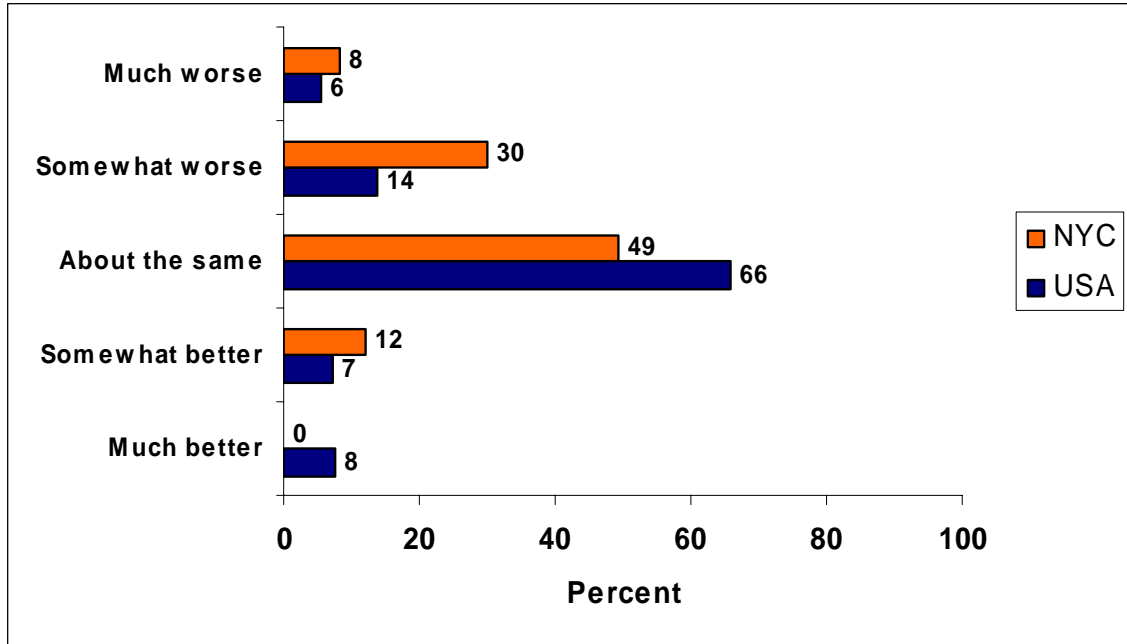


FIGURE 3. How often are you bothered by the following sources of noise in your neighborhood? (New York City)

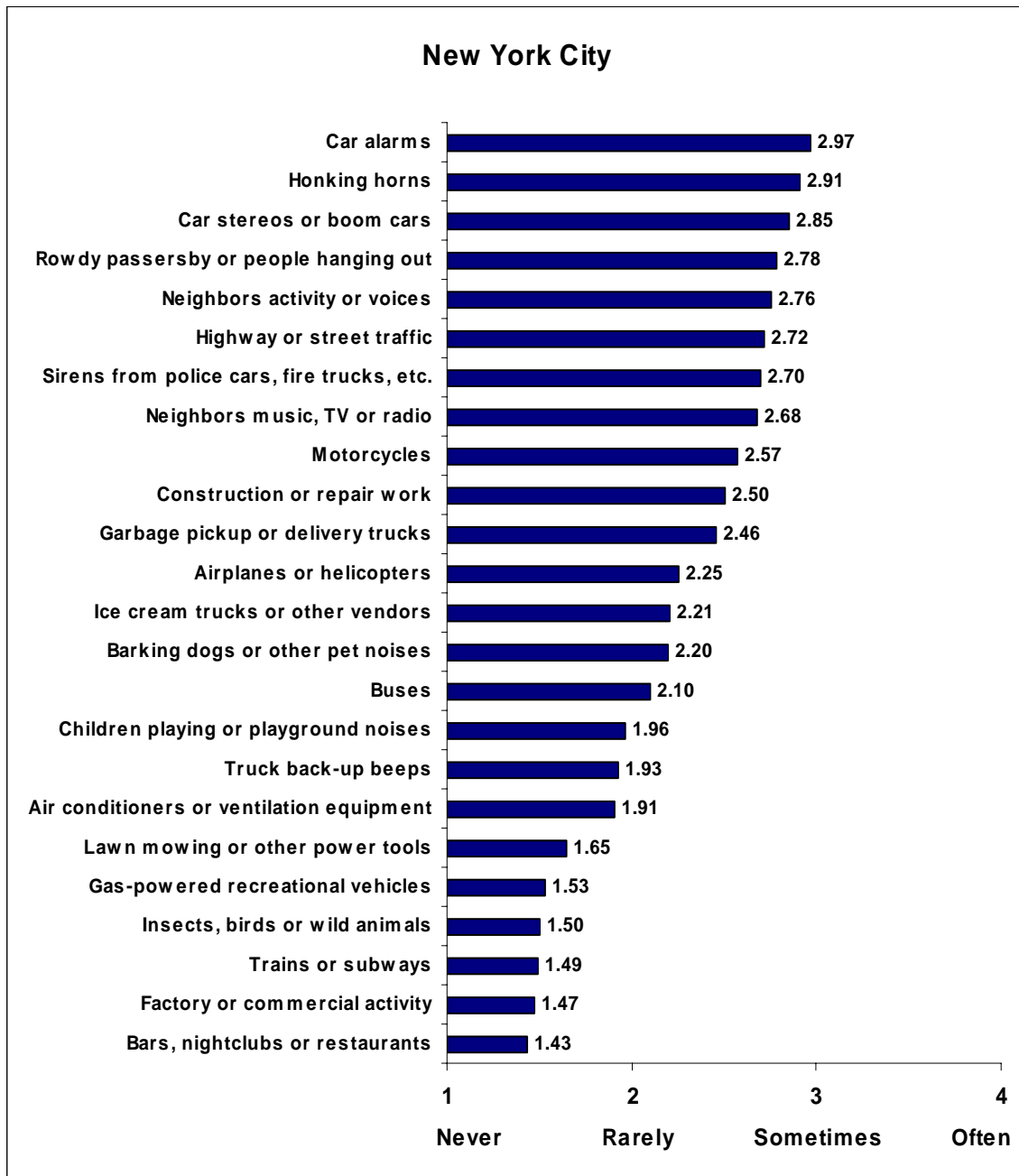


FIGURE 4. How often are you bothered by the following sources of noise in your neighborhood? (The Nation)

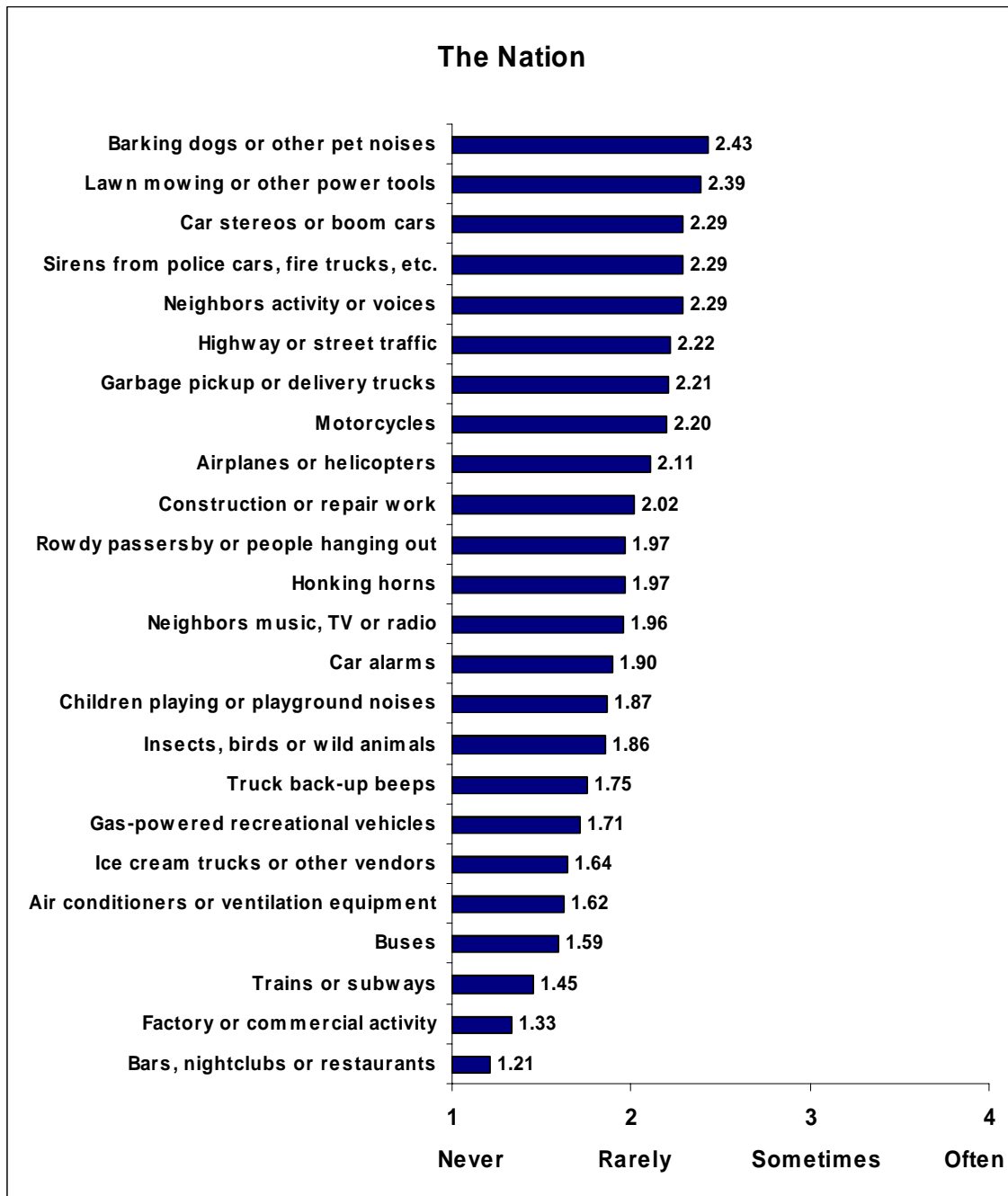


FIGURE 5. In the last year, did you make a noise complaint to any of the following?

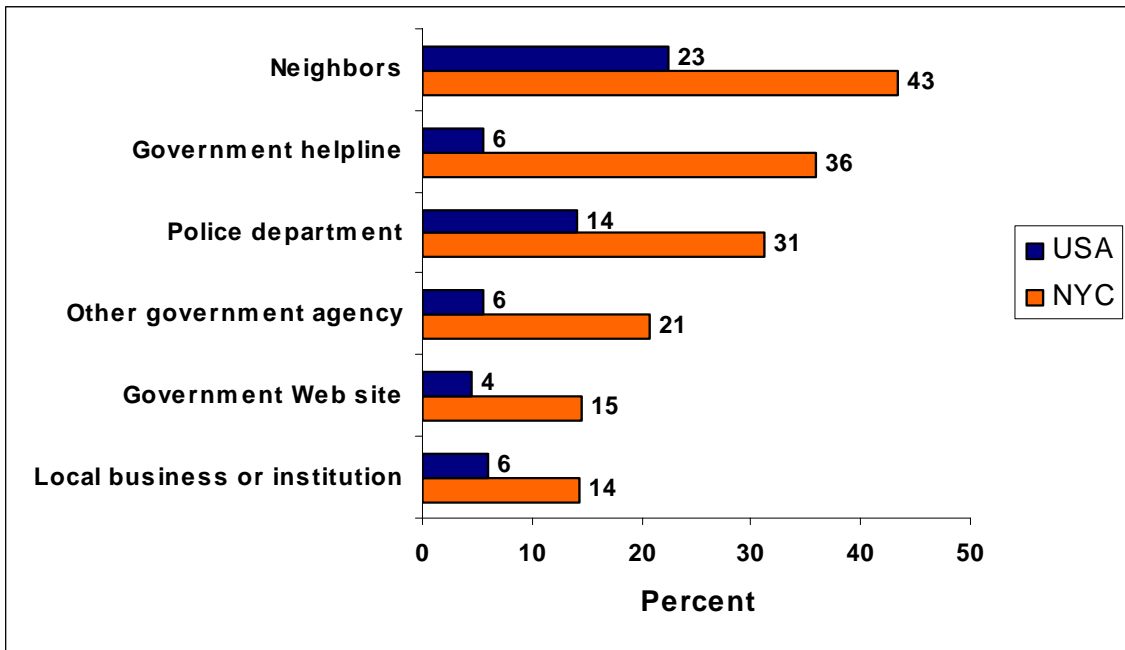


FIGURE 6. Behavioral consequences: "Because of noise, how often while at home do you . . ."

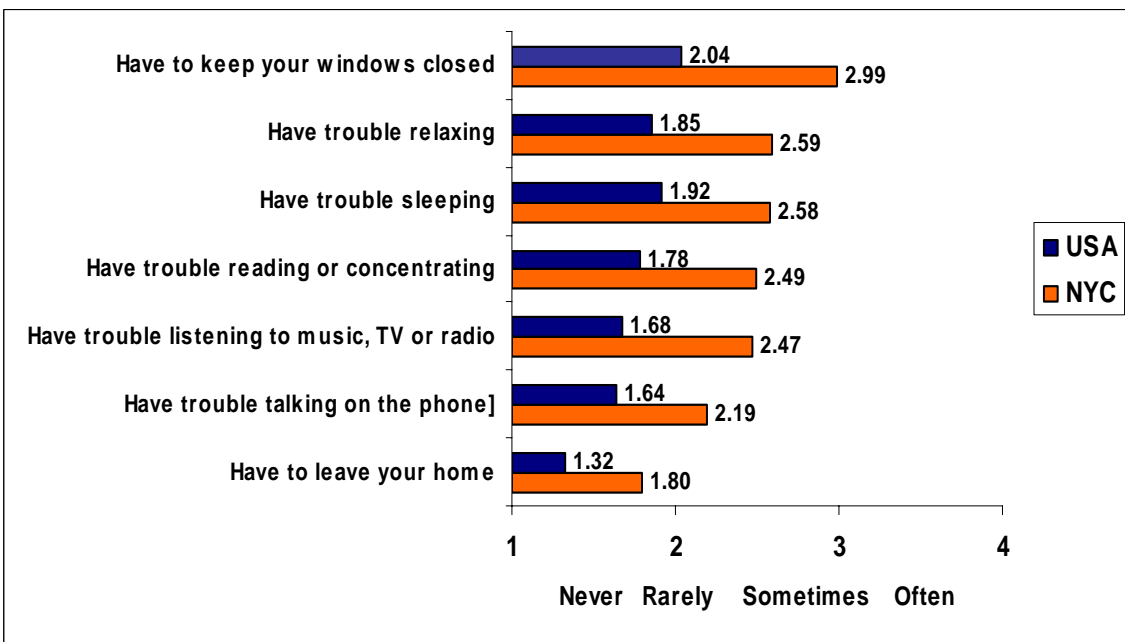


FIGURE 7. Emotional consequences: "Because of noise, how often do you feel ..."

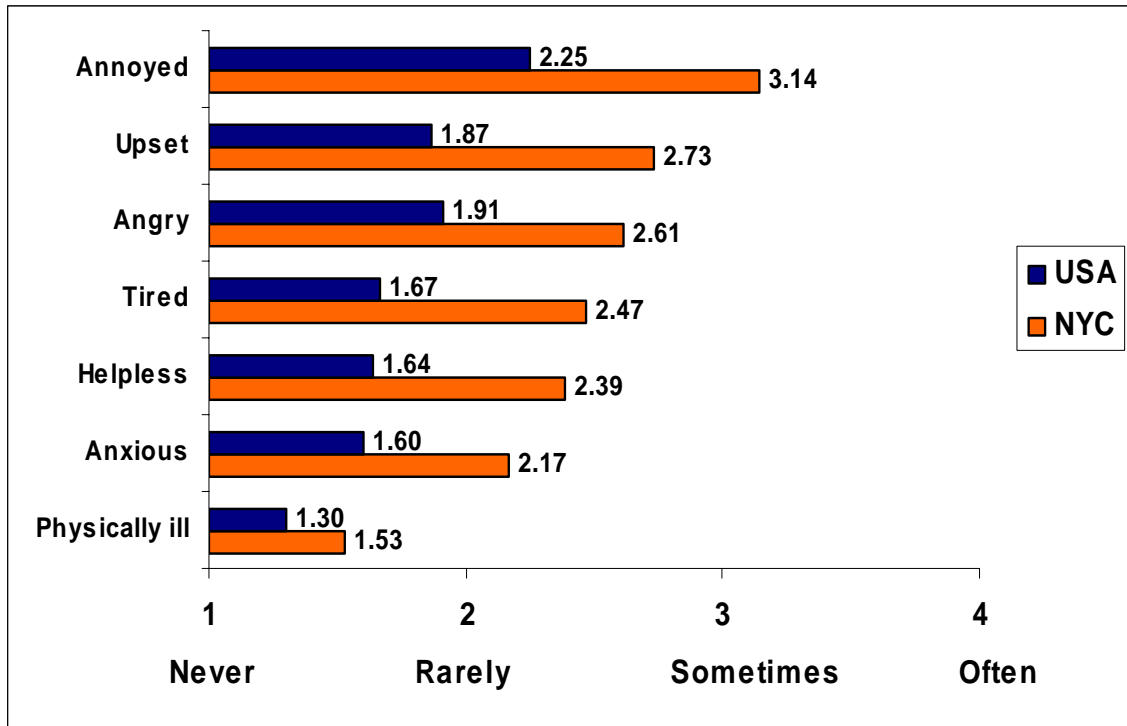


FIGURE 8. Correlation of noises with index of behavioral and emotional consequences (New York City)

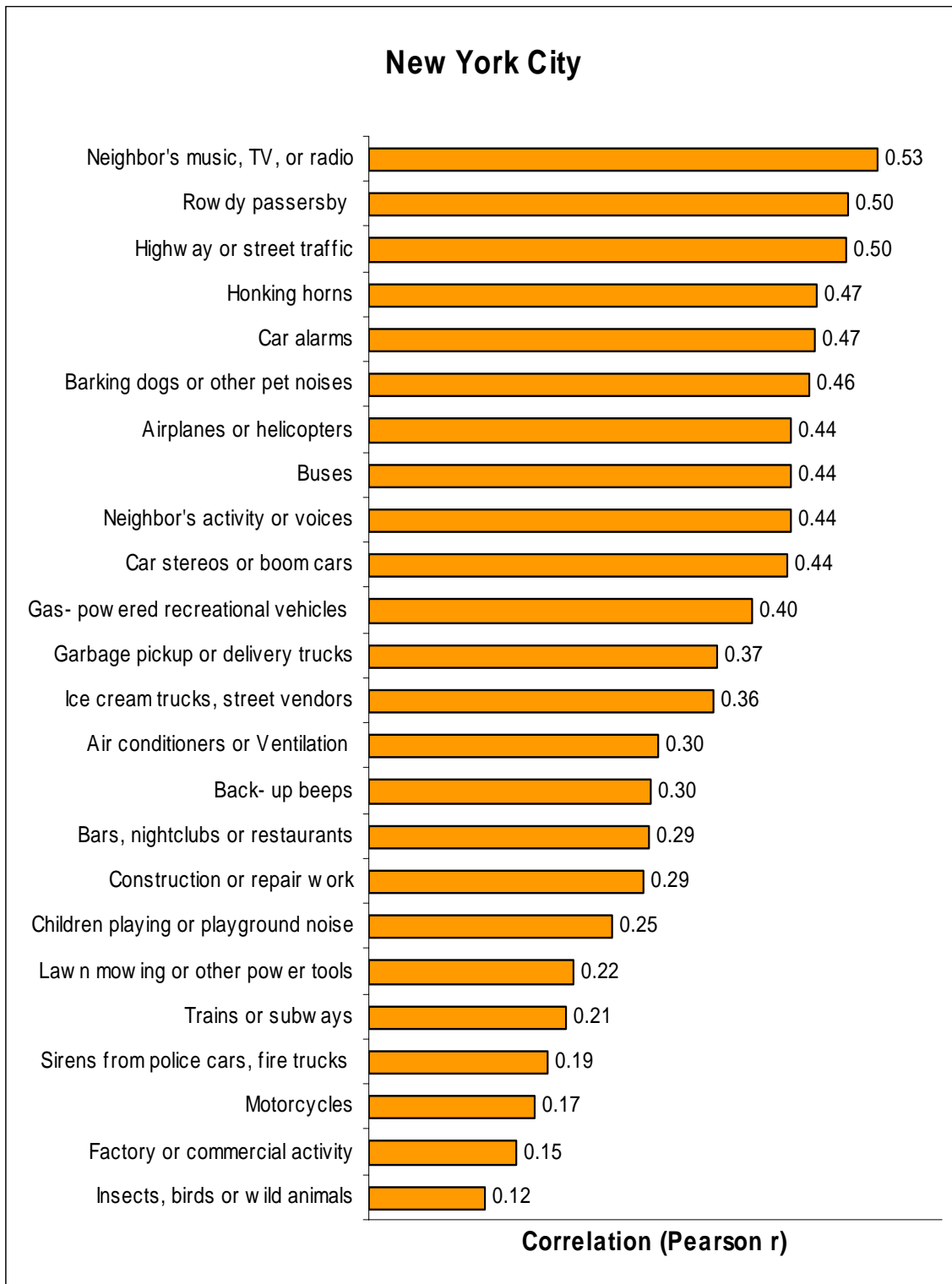


FIGURE 9. Correlation of noises with index of behavioral and emotional consequences (THE NATION)

