Intrusive Community Noise Negatively Impacts South Florida Residents

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Abstract: This study investigated how intrusive noises affect local university students in their communities. The Community Noise Survey solicited information about types of bothersome noises, how often these noises were bothersome, activities intruded upon by these noises, feelings elicited by noise intrusions, and what participants did to abate the noises.

Noise pollution in South Florida has become a pervasive issue in recent times due to an increase in population that has led to an expansion of local airports, increased traffic and construction. Noise pollution is defined as unwanted noise (Berglund & Lindvall, 1995) and has been shown to have negative psychological and physiological effects on those affected most (Blomberg, 2000; Bronzaft, 1998; Staples, 1996). Recent literature has indicated that airplane noise pollution was the most intrusive by those surveyed (Staples, 1996). Noise pollution legislation was passed in the 1970's but was repealed in the early 1980's, and the problem has not been revisited, mostly due to lack of political and financial support (Bronzaft, 1998; Staples, 1996; Suter, 1991).

Noise pollution regulation responsibilities have fallen to the Environmental Protection Agency (EPA) (Staples, 1996; Suter, 1991). Current literature implies that the EPA is unwilling to regulate or punish businesses and the travel industry for fear of political and financial ramifications (Blomberg, 2000; Bronzaft, 1998). Not until recently has the government issued regulations for aircraft companies and airports (Bronzaft, 1997; Suter, 1991). Locally, Miami International Airport receives over 1,400 flights daily and has installed a noise monitoring system, a noise barrier, and has re-scheduled flight paths to reduce flight noise in residential areas (Miami International Airport, 2003). Studies have shown that residents affected by flight paths suffer from psychological and physiological ailments such as stress, high blood pressure and cholesterol levels, and lower immune systems. Research has demonstrated that children living in these areas are affected by intrusive community noise and are on the lower range of the academic grading scale, including lower reading levels (Bronzaft, 1997, 1998; Staples, 1996; Suter, 1991).

Local governments in South Florida have initiated legislation to reduce noise pollution in residential areas. The city of Coral Gables enforces strict constraints on community noise levels and Miami Dade County ordinances limit noise levels as well. These ordinances restrict times when heavy machinery is allowed to operate and noise levels in homes that may be annoying to neighbors including pets, parties, and television and audio decibel levels. Ordinances like these in South Florida and other areas nationwide were established to curb noise levels and create noise civility among residents (Blomberg, 2000).

Noise pollution affects us all whether we are aware of it or wish to acknowledge it. Airplane traffic, construction and local ground traffic all contribute to frustration and anger experienced by residents. Sounds emanating from cranes, cement mixers, welding, hammering, and other work processes are the most frequent construction offenders. Construction equipment is often poorly silenced and maintained, and building operations are sometimes carried out without considering the environmental noise consequence (Berglund & Lindvall, 1995).

Although construction is a major complaint among residents, traffic seems to garner just as many complaints (Suter, 1991). Trucks, buses, motorcycles and cars generate almost all of noise pollution attributed to traffic. Suter (1991) describes narrow streets lined with tall buildings in a so called canyon effect in which the traffic noise is amplified and reverberates [Author: this needs page number. Editor: Page number is only required for direct quotes.] Since South Florida is continually growing and a major hub for international travel, noise pollution is a part of daily life. The objective of the study was to identify intrusive noises, intensity of the intrusion, interference with daily activities, emotional responses to the intrusive noise, and action taken for abatement of the noise in South Florida residents.

Methods

Participants

Potential participants were randomly selected from Florida International University (FIU) students to reflect the points of view of a diverse student population. The Community Noise Survey was completed by 119 participants, of which 54.7% were female and 45.3% were male. Ages ranged from 18 to 31 years old with a mean age of 21.7 $\pm$.2 years. The majority of respondents resided in the FIU area (18.6%), on FIU campus (17.7%), Hialeah/Miami Lakes area (14.2%), Kendall (13.3%), and Broward or Palm Beach (10.6%) counties (see Tables 1 and 2).

Community Noise Survey

The Community Noise Survey was originally developed by the League for the Hard of Hearing International Noise Awareness Day steering committee (Bronzaft, 2000). The seven-question survey solicited the following information: types of bothersome noises, how often these noises were bothersome, the activities intruded upon by these noises, feelings elicited by noise intrusions, and what participants did to abate the noises. The survey included Likert-type and open response type questions.

Procedure and Data Analysis

Institutional Review Board approval was obtained prior to study implementation. Participants completed the survey as part of a study investigating how obtrusive noises affect local university students in their communities. Classes surveyed were randomly chosen to reflect a diverse participant population. Professors were contacted and provided access to survey their class. The survey was conducted at the beginning of class and required approximately three to five minutes. Data were tabulated and analyzed using cross tabulation and rank ordering. Statistical software used was SPSS 11.0 (SPSS, Inc. Chicago, IL).

Results

Bothersome Noises

The survey listed 20 specific noises, and participants were asked to identify how frequently certain noises were bothersome on a 5-point Likert scale (1 = Never, 2= Rarely, 3= Some of the time, 4= Most of the time, and 5 = All the time). We combined the percentages of participants that reported being affected by the intrusive noises some of the time, most of the time, or all of the time for the Likert based questions. Gardening and lawn equipment use (58.9%) were ranked by the majority of respondents as bothersome at least some of the time, while car alarms (49.6%) and car and truck noises (47.1%), were ranked second and third most bothersome. Honking (40.3%), barking (39.7%), and noise (35.7%) were ranked fourth, fifth, and sixth respectively. Participants ranked recreational vehicles and restaurants least bothersome.

Activities Intruded Upon

The survey listed six activities potentially intruded upon by community noises. An open response question allowed participants to add their own activities intruded upon by community

noise to the list. Participants were asked to select all intrusive community noises that affect activities of daily living. A majority of participants reported that noise interfered with sleep (53.0%), work/study (41.9%), and ability to keep the windows open (18.8%). A combined 28.8% complained about noise interfering with listening to radio and television, talking on the phone, or holding a conversation.

Feelings Elicited by Noises

The survey identified six emotional responses to noise and participants were instructed to identify multiple responses, if applicable. Two open-ended questions allowed participants to identify a specific illness or a feeling not listed. The majority of participants (69.2 %) reported feeling annoyed by community noise. Feelings reported equally by participants were angry and upset (15.4 %), followed by helpless (6.0%), overwhelmed (3.4 %), and made physically ill (1.7 %).

Taking Action to Abate Noise

Participants were asked whether they had ever filed a noise complaint and, if so, to specify the type of noise, the response to the complaint, how quickly the response came, and whether the complaint lessened the noise. Few participants (6.0%) reported that they had filed noise complaints with the police or governmental agency. Of the participants who reported that a complaint was filed, the majority was males (71.0%) and most complained about music or parties (71.0%) and helicopter noise (7.0%). A majority (86.0 %) of participants received a response to the complaints and 57.0% had the problem resolved.

Differences among Participants

Age. Respondents ages were categorized into18 - 22 years old (78.2 %), 23 - 29 years old (19.1 %), and 30 years or older (2.7%). Noise was most likely to interfere with the ability to study or work in 18-22 year olds. Respondents between the ages of 18-22 were most likely to be bothered by garden equipment noise (44.5%), car noise (41.8%), and car alarms (39.1%).

Gender. The majority of participants surveyed were women (54.7 %) and men constituted 45.3 % of the participant population. Males were significantly more bothered by radio and television noise.

Residential locale. Half of the participants living on campus or the FIU area were bothered by car alarms and garden equipment noise equally. Garden equipment noise also bothered participants living in Hialeah/Miami Lakes (75.0%) and Kendall (80.0%).

Complainant vs. non-complainant. Although the majority of the participants were women, men were more likely to file a formal complaint (71.0%). Also, women reported car noise (60%) and city services (64.8%) as more bothersome than did men.

Discussion

The objective of the study was to identify bothersome intrusive community noises that affect South Florida residents. Garden and lawn equipment noise was identified as the most bothersome community noise by respondents of the Community Noise Survey. Participants also reported that intrusive noises interfered with sleep, work and studying. Although noises were mostly found to be annoying, 94% of respondents did not file formal complaints.

A nationwide community noise survey (Bronzaft, 2000) included 647 respondents and found car noises to be most bothersome. In contrast, South Florida residents complained mostly about garden and lawn equipment noise as the most bothersome. Our survey results revealed that residents of six of nine neighborhoods found garden and lawn equipment noise to be bothersome. This finding may be attributed to the lush tropical landscape common in South Florida, which receives 50 inches of rain annually, with 70% falling between June and October (Obeysekera &

Stoieff, 1999). To keep up with all the foliage growth, many communities have landscaping services with loud commercial gardening equipment contributing to the intrusive community noise problem. The landscaping companies begin work at early hours and continue through the day. Noise emitted by landscaping machinery appears to interrupt residents' ability to sleep, work, and study. After gardening equipment noise, South Florida residents complained about car related noises.

Trucks, buses, and cars generate almost all of noise pollution attributed to traffic. Consistent to Bronzaft's (2000) results, we found that at least 40% of our respondents found the following community noises to be intrusive: car alarms, car and truck traffic noise, and honking related noises. Although Bronzaft identified motorcycle noise second and aircraft noise third, our respondents were less likely to complain about these noises. In our study, South Floridians ranked motorcycle noise 13th possibly due to the lack of motorcycle riders in the area. Aircraft noise was ranked 7th most bothersome by South Floridians perhaps due to noise abatement efforts by local airports, which have reduced the noise pollution created by aircraft traffic.

Emotional responses to noise pollution, especially annoyance, were experienced by the majority of participants. Contrary to popular belief, on the average, men (20.7%) were more likely than women (16.6%) to emote feelings about the noise affecting them. Men outscored women in every category of emotion except being made physically ill. Notably, men tended to be more annoyed, angry, helpless, and upset. These emotions can lead to a reduced quality of life (Bronzaft, 1998; Suter, 1991), including the inability to enjoy hearing music, watching television, studying, or enjoying time outside. Sleep, work and study ranked highest among activities intruded upon by noise. Our survey revealed that over 50% of students living on campus complained about noise created by their neighbors, perhaps due a combination of the close proximity, thin walls, and late studying hours.

One of the limitations of this study was that 80% of the respondents were under the age of 23. Although this study does not encompass a spectrum of age groups, it does illustrate that the younger population is also bothered by loud noise. Most other studies (Bronzaft, 2000) have focused on the larger population, an older population, and received similar results. The largest inconsistency between the current study and Bronzaft (2000) was within the younger population's reluctance to call authorities and complain about the surrounding noises. Of the 119 participants in the current study, only 7 participants made formal complaints about noise pollution in their communities, with 5 of the complaints resulting from loud music or parties. Bronzaft's study (2000) showed that 40% of respondents complained to authorities about noise pollution in comparison to the 6% our study revealed. Our results were in agreement with the 5 to 10 % of noise complainants estimated by Berglund and Lindvall (1995).

The explanation offered is our subjects, being of college age, are probably more used to loud noises and may even try to even the noise level affecting them by raising the volume of their television, radio or conversation instead of filing a formal complaint. On the other hand, Bronzaft's (2000) subjects had a mean age of 43 years, might be less likely to tolerate such loud noise due to their age and insistence on "peace and quiet." A student's day may not end until late at night, while an older adult might go to bed earlier due to an early rise. These are all factors that may be considered when concluding why our subjects had such a low complaint response.

Comments made by 12 of the 21 participants indicated that the participants did not have many problems with noise and say that they live in a relatively quiet neighborhood. University campus residents or those living in the FIU area experienced the most noise pollution. Residents

of Kendall, Coral Gables, Hialeah/Miami Lakes, South Miami, Broward/Palm Beach residents claim noise pollution is not an issue in their communities. The cities with very little noise pollution complaints were dispersed throughout the tri-county area and are known for being residential, commercial, and industrious cities. Although our participants claim not to be affected by noise pollution, reports have found that the average noise level outside an urban apartment can be 1,000 times more intense than in a rural residential neighborhood but is perceived like an eight-fold increase (Suter, 1991).

This study aimed to report on how noise affects young South Florida residents and confirmed many of the findings of previous studies that noise pollution affects people of all ages and location. The most bothersome noise, garden and lawn equipment noise, was attributed to the preponderance of trees and greenery in South Florida. The young population provided an insight as to the feelings, complaints, and quality of life noise pollution plays in their lives. The results have shown that activities of daily living are continually interfered with by a preponderance of environmental noises. These effects of these noises have long reaching consequences, including physiological and psychological consequences (Bronzaft, 1997, Suter, 1991). Further research and programs that increase awareness can identify the implications of noise pollution and may allow for the possibility of future legislation.

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Table 1
Participants' Neighborhood

Neighborhood	Participants	Percent Reporting
FIU Campus	20	18.6
FIU Area	21	17.7
Hialeah/Miami Lakes	16	14.2
Kendall	15	13.3
Broward/Palm Beach	12	10.6
Coral Gables	11	9.7
City of Miami	8	7.1
South Dade	7	6.2
North Dade	3	2.7

Table 2
Regional Neighborhoods for Purpose of Data Analysis

Region	Neighborhood
FIU Area	Westchester, Unincorporated Dade, Fontainebleau, Doral, Sweetwater, West Dade
Hialeah/Miami Lakes	Hialeah, Miami Lakes
Kendall	Palmetto Bay, Snapper Village, Pinecrest
Broward/Palm Beach	Ft. Lauderdale, Miramar, Pembroke Pines, Plantation
Coral Gables	Miami, Shenandoah
South Dade	Perrine, Cutler Ridge, Homestead, Country Walk
North Dade	North Miami