Noise Pollution - Community Health Considerations

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Community Health Promotion

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Introduction

Acoustic ecologist Gordon Hempton deems silence an endangered species. As cities expand and populations grow, noise pollution is now an important consideration to inform urbanization policies and community health promotion. Ambient environmental noise is all but omnipresent, and the built environment in which one lives is a key determinant of these noise pollution levels. Highways, traffic, construction, mass transit hubs, airports, and densely packed housing units contribute to the noise levels in which people live. We do ourselves disservice by not finding time for peace, quiet, and stillness in our waking hours. But what about those who do not have the luxury of choice, and cannot escape incessant background noise?

Silence is an important element of maintaining focus and mental stability. If one is inundated with constant high noise levels, it increases the duration of their stress response because noise has an effect on the sympathetic nervous system (Hammer, Swinburn, & Neitzel, 2014). Continual exposure to elevated noise levels, at an average of about 55 decibels for a 24 hour long period, is a risk factor for both children and adults, associated with short and long term effects such as hypertension, endocrine disruptions, heart disease; sleep disturbances from noise affect cognition, cortisol levels, and mood stability (Holzman, 2014; Center for Hearing and Communication, 2018). Overtime, these factors contribute to depression and atherosclerosis (Holzman, 2014).

Community Health Promotion Strategies

On a national level, coalitions and networks have been fostered between the EPA, Departments of Health and Human Services/ Labor/Transportation. They have created a National Prevention Strategy geared toward “Educating the public, facilitating research, and creating a

national noise control strategy can protect the public from the damaging effects of environmental noise pollution"(American Public Health Association, 2013). There are certain materials, such as quiet pavements that are useful in altering noise levels in an otherwise difficult-to-alter environment. So far, local efforts to prevent and abate noise are not effective enough, and there ought to be greater federal and state mandates to trickle down into the communities (Hammer, Swinburn, & Neitzel, 2014). Therefore, in designing a community specific intervention, it is perhaps important to provide individuals with resources to cope with the issues of noise pollution in the meantime.

Community Description

The city of San Jose is a noise pollution hotspot. It has a population density of about 5,359 people per square mile and a total population of 1,035,317 (US Census Bureau, 2018). It is the tenth largest city in the United States and holds more than half the population of Santa Clara County. White/Caucasians make up 42.2% of the population, Asians at 34.1%, 32.6% Hispanic/Latino, Black/African Americans 3.1%, and Hawaiian/Pacific Islander 0.4%, and Native American/Alaska Native 0.5%. The median income for San Jose is 90,303 while 10.9% live in poverty (US Census Bureau, 2018).

Policies and Politics

The Environmental Protection Agency has set forth the national regulation guideline that anything over 55 decibels for a 24-hour period of time is injurious to health, and this is especially injurious at night when sleep is disturbed (Holzman, 2014). Some of the San Jose-specific policies that have an effect on noise are the Bay Area Rapid Transit (BART) expansion and the Expressway 2040 project. The Expressway 2040 project has been undertaken by Santa Clara

County to plan for highway expansion projects, as “more than 50% of Santa Clara County residents travel on expressways every day”(County of Santa Clara, 2017). The BART expansion to Silicon Valley from its terminus in Fremont will definitely lend more noise to the San Jose/Santa Clara area, especially during the construction phase as they would tunnel through downtown to create a subway line, though development and completion is projected not to start until the 2020’s (Valley Transport Authority, 2018).

Community Assets and Challenges

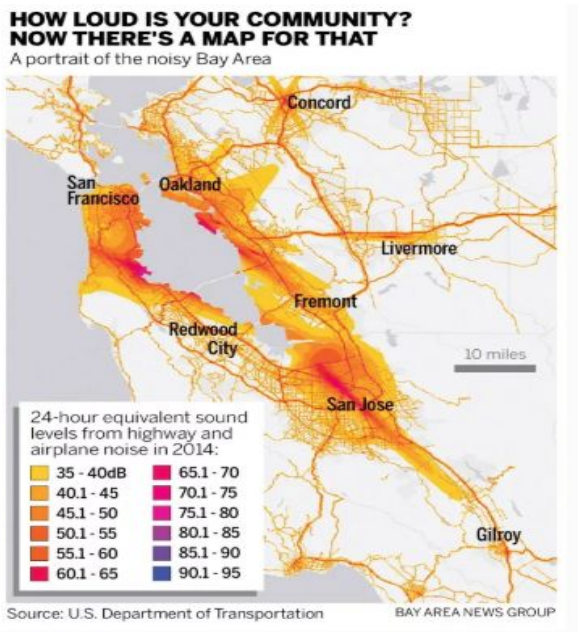
The city of San Jose has a very diverse population, fair to good transportation services, a public university, and many burgeoning businesses in the tech and financial sectors. With an influx of jobs and economic opportunity, San Jose is an attractive choice for many individuals. San Jose State has many students and faculty in programs such as Urban and Regional Planning, Public Health, Social Work, and Civil Engineering that could work directly with the community in projects to remedy these issues as the community members see fit. Bureaus and public interest groups such as the Silicon Valley Group, Kiwanis Club of San Jose, and the municipal City of San Jose and County of Santa Clara departments oversee the sectors of governance within San Jose and could be a great resource for local outreach.

Challenges and Deficits

Some of San Jose’s challenges are that the population is so large, and there already exist huge investment in projects such as the BART and highway expansions. Around the airport, the noise is as high as 70 decibels at varying intervals of time (Krieger, 2017), and it can be argued that the airport has already done what it can to reduce their noise levels. Also, while it is economically beneficial for San Jose to receive an influx of educated, talented professionals and academics, this also can be a polarizing factor between socioeconomic groups. The reported

median income is fairly high, as there are many wealthy neighborhoods that might possess more resources and political capital, but this is also a conflated figure, because when broken down, it can be determined that there still exist socioeconomic, racial, and health disparities. Those who can afford to live and work in nice neighborhoods, or to move into houses and fix them up, drive up housing prices and this pushes people of lesser socioeconomic standing out of these areas. They may have to look for housing elsewhere in less desirable areas.

The decision to choose San Jose for a community intervention is informed by a map graphic (see below), designed by the US Transportation Agency, which shows the concentration of noise throughout all US cities. Looking at the West Coast, the city of San Jose (along with other Bay Area cities like San Francisco and Oakland) in particular, it takes no effort to understand that these areas are in major need of help.



(Krieger, 2017)

A successful intervention would have to engage with pre-existing community organizers, leaders, and public officials to spread the word, and encourage engagement in outreach activities.

Church leaders, teachers, newspaper editors have access to a huge section of the population. The main population that needs direct attention are those who live in high-noise level areas, such as those who live right near the highway, or beneath flight paths. These people can be targeted and engaged by communicating in a variety of ways, through ads on multi-lingual radio stations, tabling events at local schools, college campuses such as San Jose City College and San Jose State, and at local cultural events.

Community Health Promotion Intervention

Intervention Proposal

This community health promotion intervention would aim to mainly educate children and adults about the health risks associated with living in a noisy environment, since not much attention has been brought to this issue. This promotion program would make an impact by promoting a sense of resilience, and would intervene on the primary, secondary, and tertiary levels by educating the public and raising awareness of environmental health risks, and also by taking steps to implement infrastructure changes. This program aims to be accessible to all community members, whether or not they have already begun to feel the effects of noise pollution.

Intervention Development Process

In order to see improvement in these issues, it is important to involve regular community members, as well as public investors, and those who can lend resources and expertise toward solving these issues. Those with experience in tobacco cessation education should be involved, as they have a lot of experience with community engagement and have been successful in implementing intervention programs. They can serve as advisors and partners in program development. One key leadership group to reach out to is the Silicon Valley Organization,

formerly the San Jose Chamber of Commerce. As far as political and financial support for our community intervention plans, this organization has already been a key player in community action. They have a Leadership San Jose training program and on their webpage is the statement that "along with the educational aspect of the program, cohort members complete a chosen, community-based project that gives back to San Jose by donating time and services to a regional non-profit" (Silicon Valley Organization, 2018). Another advantage of involving this organization is that "notable alumni include former San Jose Mayor Chuck Reed, Mercury News Columnist Sal Pizarro, and National Geographic Magazine Editor in Chief Susan Goldberg" (SVO, 2018). Such connections could be a big help in mobilizing communication with policy makers. Additionally, local rotary clubs and Kiwanis also have a robust network of committees and individuals to push progress forward by utilizing their skills in public relations, event planning, and fundraising. By involving these community players, greater visibility can be focused on these issues that ultimately relate to the built environment.

Intervention Activities

This health intervention program would mainly consist of group-focused educational sessions, and initiatives to push forward project funding for noise-abatement resources along public roadways. In the first phase of the intervention, there would be outreach and a communication campaign. Following the Spectrum of Prevention model, these activities would mainly be focused within strengthening individual and skills/ promoting community education, educating providers, and fostering coalitions and networks. The first phase of this intervention would be to recruit individuals from different cultural backgrounds and leadership positions within the community to relay information to their constituencies. This falls under the

community education section of the spectrum of health. A team of San Jose State students in the college of health and human services, regional/urban planning department, and social work program could volunteer to disseminate information about the association between environmental noise and health disparities to these individuals, who would then provide feedback on what they would need to effectively communicate this knowledge to their friends, family, congregation, etc. These individuals along with student volunteers and faculty would reach out to local school districts, to hold school rallies to educate school kids about the effects that too much noise could have on their health. In terms of educating providers, school counselors and teachers could be trained to focus on the association between fatigue, poor cognition, and possible environmental factors. Within the volunteer base, liaisons could be appointed to encourage implementation of short meditation sessions before each school day to reduce student stress levels.

To foster coalitions and networks, the San Jose Parks, Recreation, and Neighborhood department could work with volunteers and community centers to host group walks in city parks. Walking and light exercise has been shown to be effective in reducing stress, hypertension, and improving memory and cognition. The group walks would aim to bring community members together, to combat some of the side effects of the stressful environment in which they live. The San Jose State volunteer team consisting of public health/regional and urban planning/social work could work with Silicon Valley Public Health Department, Transportation office, and Silicon Valley Organization to investigate and measure which areas in San Jose most affected by noise on a daily basis. They should also conduct surveys to understand the challenges that are faced by residents of these at-risk neighborhoods, and to examine these health outcomes in

real-time. They could then take this data to the County and City officials to advocate for more resources to be allotted toward sound barriers and acoustic insulation improvements for houses/buildings for those living near the airport/major highways/transportation hubs.

This intervention would have to be sustained over a long period of time by carving out a sector in the public health department geared toward a noise pollution education and reduction task force. The surveys, activity plans, and post-program evaluations of the first intervention and all subsequent interventions would be archived for future reference in later efforts.

For this first intervention cycle, success would be measured by how many community cohorts were reached, how knowledgeable participants were before and after according to continual community outreach, reported levels of stress and adverse health outcomes would decrease over time along with the decibels noise at each area that was previously identified to be an area of higher noise volume.

Conclusion

The city of San Jose is rich in diversity, assets, and industry. It is exciting to take part in this community as a student of San Jose State, and as a public health major. There is still a lot of potential in this city, and a lot of ground to cover in terms of improvement. I would like to operationalize what I learned in this research project by designing educational frameworks to inform community members about the importance of taking care of oneself in the midst of a hectic environment, and how noise pollution really does have lasting effect on one's health.

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