Analysis Shows How the NYC Subway System Can Derail Your Hearing Health

Millions of commuters in NYC know the subway system can be noisy, but just how loud is it? Hearing Health Foundation (HHF) has quantified the danger to hearing.

NEW YORK, NY, UNITED STATES, October 2, 2018 /EINPresswire.com/ -- Millions of commuters using the New York City subway system know it can be noisy, but just how loud is it? Hearing Health Foundation (HHF), the nation's largest charity funder of hearing and balance research, set out to measure the danger that the NYC Metropolitan Transit Authority (MTA) subway system presents to riders and employees.

> “Noise-induced hearing loss can result from a single, sudden noise event. It has a cumulative effect (not unlike sun exposure) and can lead to negative health effects when unknown and untreated.”
>
> *Lauren McGrath, Marketing Manager, HHF*

We found that the system significantly breaches the threshold of what is safe for our ears. To protect hearing, both the U.S. Environmental Protection Agency and the World Health Organization recommend an average exposure limit of 70 decibels (dB) over the course of 24 hours. But what we measured exceeds that limit: Our samples show the average noise levels on all subway platforms and on all subway rides (inside subway trains) is between 72.5 and 76.5 dB and between 74.1 and 75.8 dB, respectively. And, with maximum readings actually as high as 119 dB on platforms and 120 dB on rides—based on actual recorded data within the sample—the NYC subway is likely an auditory minefield. (See hhf.org/subway for full data.)

Using our data’s sample averages, we determined ranges as to what the actual averages are on all subway platforms and rides through the MTA system. Based on the data, we are 99 confident about our results.

From January to August 2018, three data collectors used Decibel Meter Pro, a smartphone app on iPhones and an iPad to collect 120 samples from platforms and rides. All 60 platform samples were equally represented at five minutes each. The 60 ride samples were assigned random recording lengths from 10 to 30 minutes. Samples on Saturday and Sunday or between 11 p.m. and 4:45 a.m. on any day were excluded. Random sampling was utilized as much as possible to help ensure generalizability on behalf of all platforms and rides.

The analysis examined potential harm to hearing from loud noises on subway platforms and loud noises during subway rides. For platform noise, the main variable is the number of trains that pass; for subway ride noise, the main variable is the number of local stations the train passes. We also investigated the number of seconds the subway noise level reached 75 dB or higher.
When measuring subway rides, we noted train travels between Manhattan and another borough or vice versa; whether a train runs above ground; whether the sample was collected during rush hour; and whether a local train ever becomes an express train, with fewer stops.

The statistical method of multiple regression was used to predict dangerous noise exposure on both platforms and rides. We can predict that each train that enters or leaves a platform will expose a rider’s ears to 16.53 seconds of noise at 75 dB or higher. For example, if a rider waits at

a platform where two trains come and go before their train arrives, that would be a predicted exposure of 82.65 additional seconds of noise at 75 dB or higher.

We can also predict that each subway stop that is passed will expose a rider's ears to 36.06 seconds of noise of 75 dB or higher. For example, if a rider passes 10 local train stops on their trip, the predicted exposure of noise at 75 dB or higher is 360.60 additional seconds—or 6.01 additional minutes.

HHF's recommendation for commuters, MTA staff, and platform retailers such as newsstand operators is simple: Wear ear protection. MTA staff and platform retailers are at elevated risk given the hours they spend underground and on the trains. The tendency for many commuters to block noise by raising the volume of their headphones is not a helpful approach and could, in fact, damage hearing even more.

The subway is merely only one of many sources of daily noise. "Noise-induced hearing loss can result from a single, sudden noise event and from constant exposure to loud noises that has a cumulative effect (not unlike sun exposure) and can lead to related negative health effects when unknown and untreated," says Lauren McGrath, HHF's marketing manager.

The MTA appears aware of the issue of subway noise. The newly built Second Avenue subway line uses effective noise-reduction measures such as "low vibration tracks and sound absorbing panels." We hope the MTA will continue to use these quieter, low vibration tracks when making subway and station upgrades, especially since they are more cost-effective than traditional wooden tracks.

Hearing Health Foundation's mission is to prevent, treat, and cure hearing loss, tinnitus, and related conditions and to promote hearing health. Learn more at www.hhf.org, email HHF at info@hhf.org, or call HHF at 212.257.6140 (voice) or 888.435.6104 (TTY).

Lauren McGrath
Hearing Health Foundation
2122576146
email us here
