

Sound Levels and Sleep Quality in Winthrop, MA



Sleep Quality Using the Typically Reported A-Weighted Sound Level



Our Sleep Disruptor Metric shows how many times over the course of one hour the A-weighted sound levels (dBA) exceed 65 dBA and 75 dBA. We show the breakdown from 7 pm to 7 am. Our data suggests that on average, 5 minutes of every hour exceeds 65 dBA.

How Loud Is Winthrop?

On average, daytime sound levels in the City of Winthrop are 61 dBA and nighttime sound levels are 55 dBA. Sleep is affected at decibel levels as low as 30 dBA (WHO). The World Health Organization recommends that nighttime sound levels from road traffic should not exceed 45 dBA and from aircraft traffic, 40 dBA (WHO).

World Health Organization. (2018). *Environmental Noise Guidelines for the European Region*.



9.1%

Winthrop is exposed to sleep disrupting sound levels over 65 dBA for about a tenth of the night



Why Aren't You Getting Enough Sleep?

Dominant sources of sound in Winthrop include:



Air Planes

Proximity to Boston Logan International Airport



Road Traffic

Proximity to major routes of Boston traffic

Sleep Quality Using Community Noise Lab's Low Frequency Metric



Low Frequency sound levels are more vibrational in nature (thunder or bus engine) and are particularly insidious due to their ability to travel long distances and penetrate walls. Our Sleep Disruptor Metric for Low Frequency Sound shows how many times over the course of one hour this metric exceeds 65 dB and 75 dB. We show this breakdown from 7 pm to 7 am. Our data suggest that on average, 21 minutes of every hour exceeds 65 dB. Unfortunately, low frequency sound is not commonly measured, regulated, or used to determine soundproofing eligibility.

Learn More

Community Noise Lab is a research lab within the Department of Environmental Health at the Boston University School of Public Health. We work with communities as they grapple with specific noise issues and support them using real-time sound level monitoring, our smartphone app, NoiseScore, laboratory based experiments, and community engagement activities. You can learn more about our work at communitynoiselab.org or follow us on twitter @noiseandthecity. Download our app, NoiseScore at the apple store or google play.



Research Methods

Data was compiled from 7 monitoring sites in Winthrop, MA, from 6/21/2019- 2/7/2020. Data was gathered in 1-second increments and was averaged over the course of 1 minute. Our "Sleep Disruptor" Metric measures the number of minutes per hour sound levels were over 65 and 75 dBA between nighttime hours, which are defined as hours from 7 pm - 7 am. For Low Frequency sound metric represents the cumulative decibel levels for frequencies ranging from 1 hz to 250 hz.