“TURN THAT DAMN THING OFF!”

Countering Noise Pollution in Growing Cities

Team “Sound Monitor”:

Heidi Perry | Addison Nishijima | Alanna Risse | Ewa Manek
Sara Jensen | Elysia Avery Nason | Keeley Hammond | Susan Johnson

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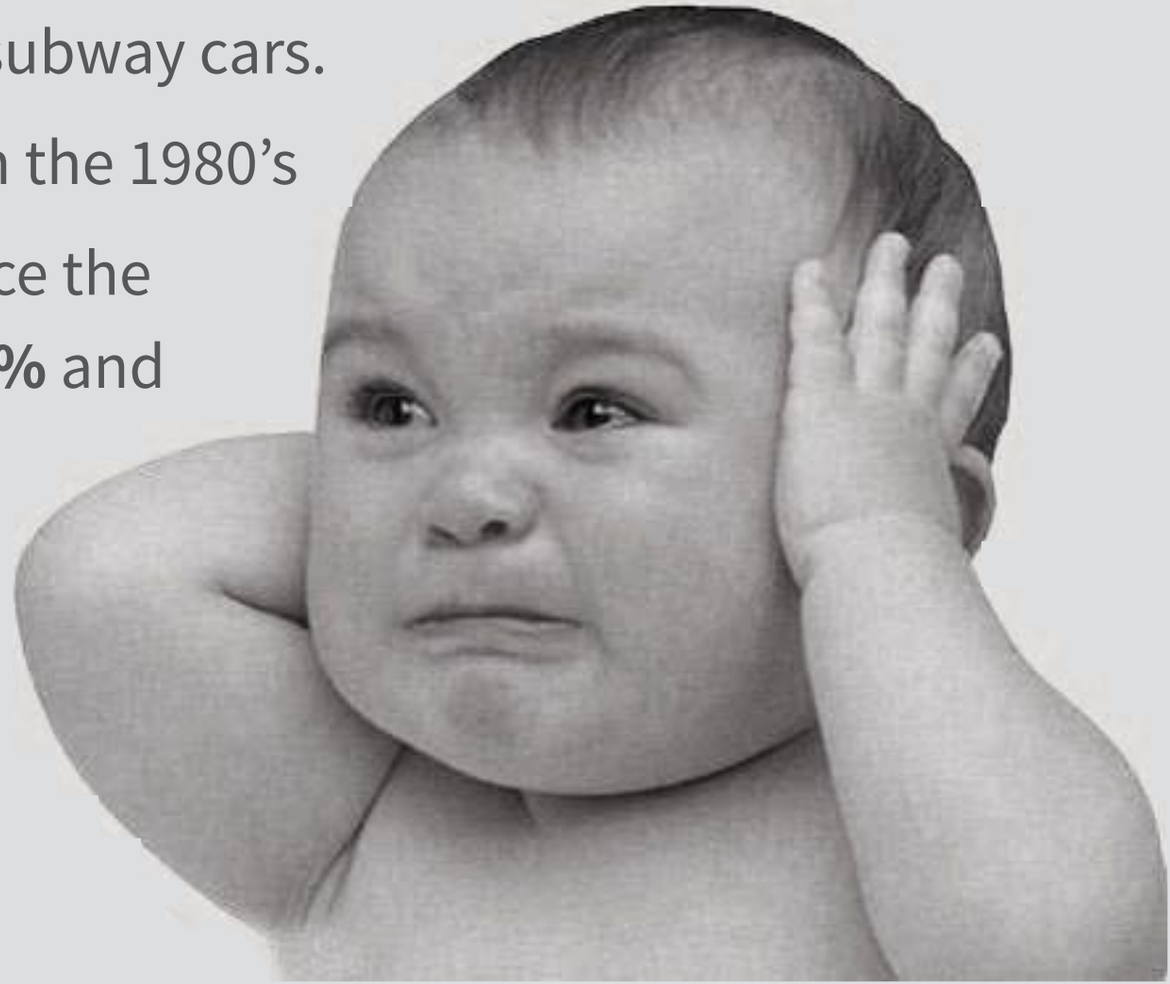
The Problem

Our cities are getting louder…
and it’s affecting people.

Our cities are getting louder

Noise pollution is an under-appreciated health risk of living in cities. As more Americans flock to urban areas, we need to think about how loud those cities are.

- **65%** of the US population is regularly exposed to unhealthy noise.
- In New York City, maximum noise levels measured **106 dB** on subway platforms and **112 dB** inside subway cars.
- Environmental noise increased by **10%** in the 1980's
- A **5-decibel noise reduction** would reduce the prevalence of high blood pressure by **1.4%** and coronary heart disease by 1.8%.
- Chronic noise exposure increased the risk of cardiovascular disease by **80%**.



The Solution

Monitor (and better control)
your noise exposure.

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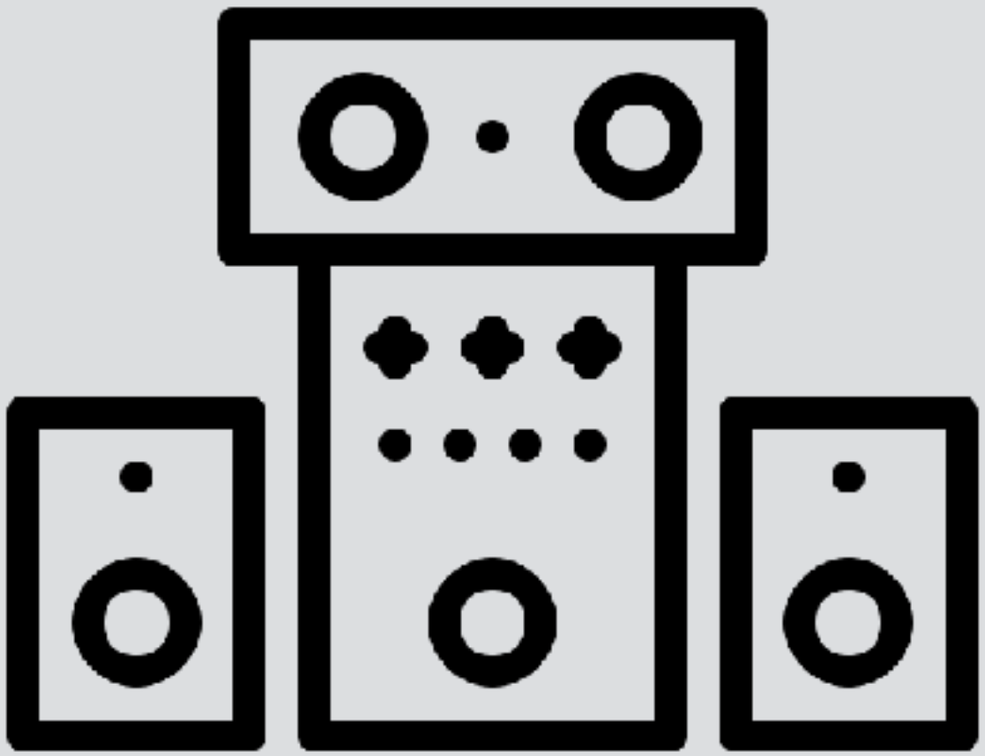
Personal Noise Pollution Monitor



Meet “ENDY”

E.nvironmental

N.oise

D.etector

Our monitor can detect the level of noise that you are exposed to, both in a single moment and over a 24 hour period.

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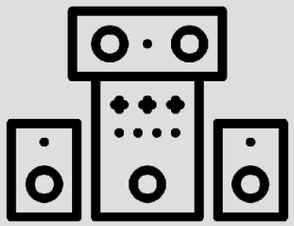

E.N.D.Y Features

- **Instantaneous Feedback**: Red and green LEDS alert you to sounds that are either over 90dB (OSHA's recommended sound level) or if your heart rate is elevated.
- **Cumulative Feedback**: The monitor will store your exposure for a 24 hour period, and alert you when you've hit above the WHO's recommend noise exposure for the day.
- **Accessibility**: The monitor also comes equipped with vibration and a buzzer for the visually impaired.
- **Compatibility (*Planned*)**: The monitor pulls data from Strava or Fitbit to measure heart rate and graph it against noise exposure.

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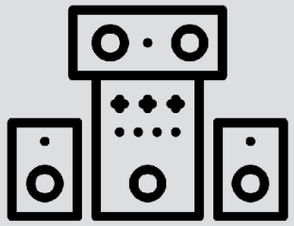
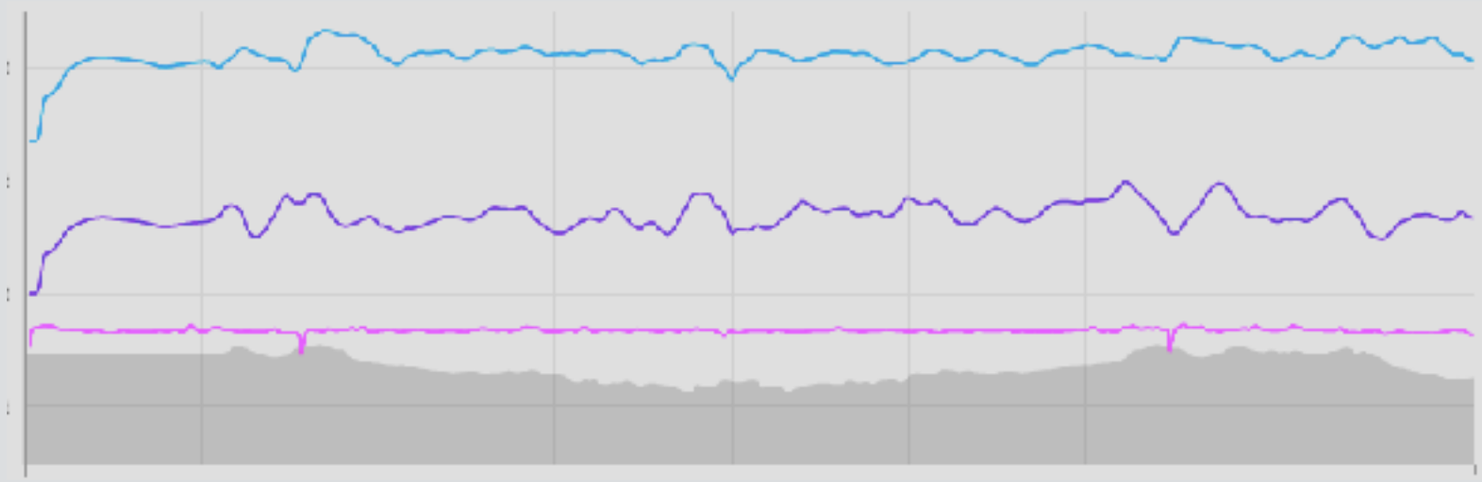


Health and Noise

Measure the noise around you and compare to metrics such as heart rate, sleep and other health app data. Find patterns on how noise might be affecting you.



- **Vibration (*Motor Rotate)***: Two different vibrations for sudden noise (fast) vs. cumulative noise (long pulse).

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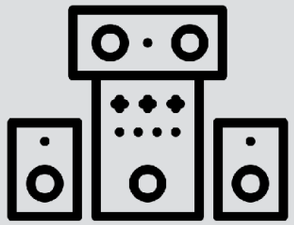

The Specs

Hardware Requirements

- Grove Starter Kit Plus containing:
- Intel Edison platform with an Arduino breakout board
- Grove Sound Sensor
- Grove red, green and blue LEDs
- Grove Rotation Motor

Software Requirements

- Intel System Studio IoT Edition
- Intel XDK
- Node.JS library

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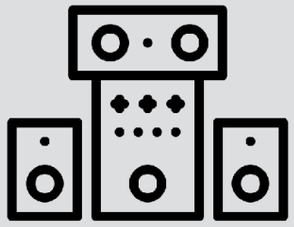

Future Implementation

In addition to what you saw today, here are possibilities for the future.

- **Wearable Integration**: Red and green LEDS alert you to sounds that are either over 90dB (OSHA's recommended sound level) or if your heart rate is elevated.
- **GPS API Calls** / **Learn Your "Quiet Places":** The monitor will listen and learn which places you visit that tend to be loud, or tend to be quiet. The monitor can suggest quiet places to go, should you exceed your sound threshold.
- **City Soundscape:** By expanding the sensors to a larger audience, we could store city data to create a larger "city soundscape" - showing where noise tends to be worst, and how it might affect those neighborhood residents.
- **Specific Workplace Implementations:** We'll use the monitor in specific places, such as construction sites or airports, to make sure that employees aren't overexposure to harmful sound. (Ex: Breaks will be required after "x" minutes in "x" threshold).

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Questions?

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Thanks!

Thanks to Intel and Women Who Code for sponsoring this event - we had a blast.

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