Problem

A lack of awareness about the long-term implications of noise exposure
15% of Americans between the ages of 20 and 69 experience hearing loss that may have been caused by noise at work or during leisure activities.
Studies on the health consequences of noise have indicated that noise *elevates heart rate, blood pressure, vasoconstriction,* and *stress hormone levels.*
Meditation produces long-lasting changes in brain activity.

Areas involved in attention, working memory, learning, and conscious perception are improved.
130+ dbs.  < 1 minute
115 dbs.  15 minutes
105 dbs.  1 hour
95 dbs.  4 hours
85 dbs.  8 hours
70 dbs.
50 dbs.
Noise exposure is cumulative; Awareness is key.
Very noisy work environment
Some control over exposure levels

Moderately noisy work environment
Lacks control of his noise exposure

Dartmouth student who is exposed to noisy social environments multiple days per week
Has control over exposure levels
Takeaways

Users don’t want an external device that would inhibit normal work tasks.

Generally aware of risks, unaware of implications.

Varying levels of control over exposure.

Interested in understanding patterns of exposure and knowing implications.
Tasks
Measure noise level at frequent and regular intervals throughout the day.
Display Current “Soundscape”

Display the current noise level and report safe exposure time.
Display Data Over Time

Display noise exposure data over an extended timescale (day/month/year). Indicate patterns in behavior.
Adapt Behavior

Make effort to minimize risky exposure and maximize “zen time”.
Integrate crowd-sourced data

Gain environmental awareness using data from user base.
Designs
Design #1

- Small Dynamic Adaptive Microphone that measures dB levels
- Microprocessor that calculates and limits dB levels
- Standard 3.5 mm input jack
- Ear volume
- Environment volume
Design #2:

4:38
Notification
- warning, >80 dB
- swipe to learn more

when >80 dB
swipe to learn more
show more related info on screen

Statistics

24 hr | 1 wk | 1 month

 Quietest day xx/xx/xx
Worst day xx/xx/xx
rotate to see more

Map
Select time: 12:00 AM

location
show noise exposure levels in heated map
Design #3

- Currently Tracking Icon
- Location Average
- Current Time Average
- Timeline Overview of Past 24 hrs
- Current progress
- comparable volume
- Warning Level Indicator
- Log
- Add Note
- Info
- Settings
Storyboards
Tracking Zen

1. Jimmy goes through his day while passively recording the sound of his environments.

2. At the end of the day, he checks the data he’s gathered and sees he needs to have more “zen” in his day.

3. Jimmy makes some adjustments the next day in his routine to lessen the amount of noise he encounters.

4. He is happy to see that his efforts to reduce the noise in his environment have paid off!
Exposure Analysis

GREAT JOB FINDING SOME ZEN TIME EVERYDAY!
INCORPORATING MORE QUIET MOMENTS INTO YOUR DAILY LIFE CAN REDUCE STRESS AND INCREASE FOCUS – KEEP IT UP!
Questions?