

## Introduction

New York City is one of the largest cities in the country. With a population of 8.2 million people, the city is always alive with little to no downtime. With the vibrancy of the city comes an abundance of noise, whether it be cars, subways, buses, or everyday people. Our group seeks to discover the variance of noise pollution across New York City and examine how it impacts our avian neighbors, the pigeons, and the local bat population.

## Research Question

What is the effect of noise pollution on the people and animals that inhabit NYC neighborhoods and parks?

## Methodology

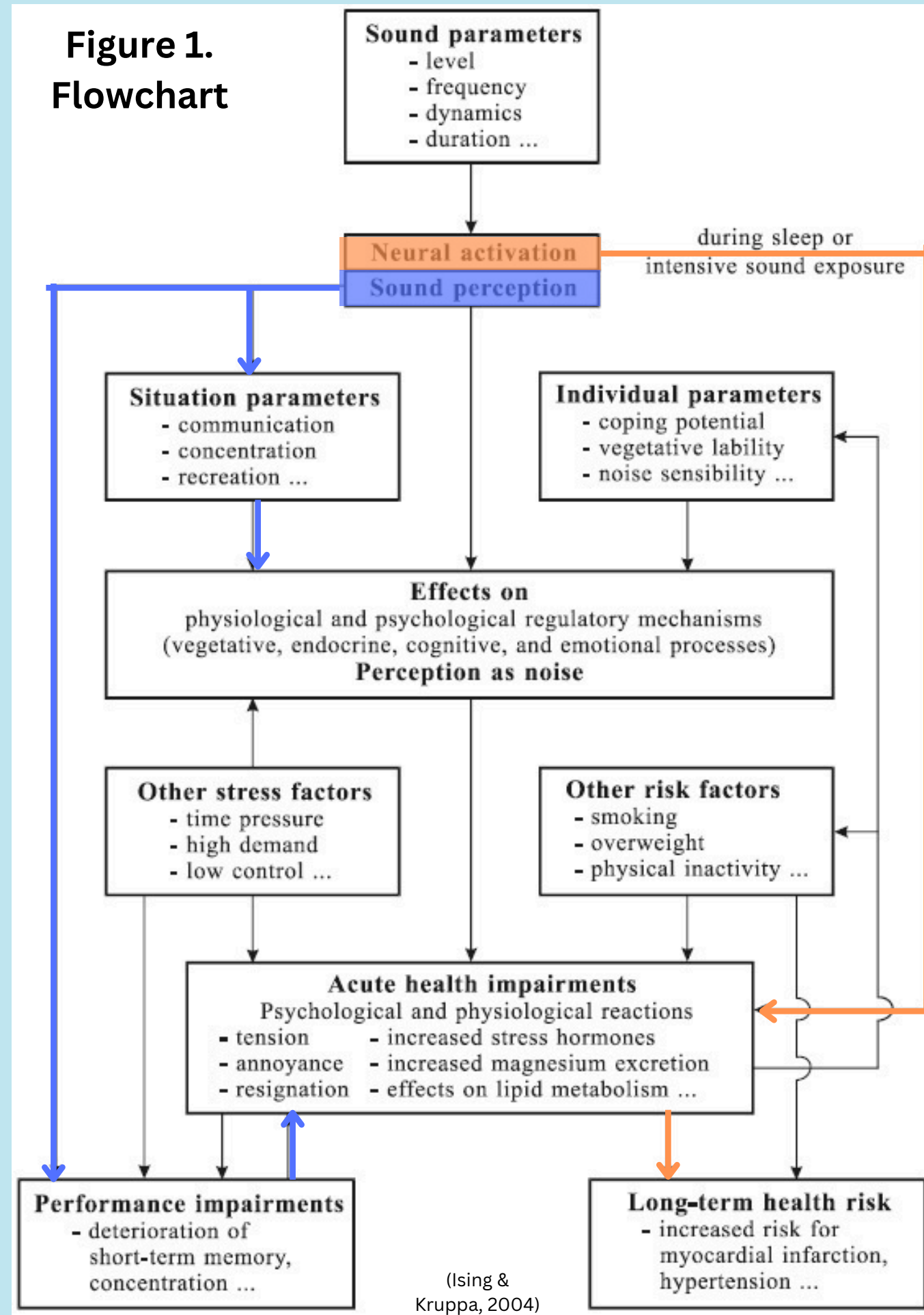
We conducted a literature review using databases Google Scholar, PubMed, and the City University of New York (CUNY) Library Catalog via Hunter OneSearch to collect urban sound pollution data. Our search organized sound pollution data from New York City and other large cities that had comparable urban-associated noise and activity levels.

Keywords: "noise pollution," "urban," "New York City," "anthropogenic noise," "health," "activity," "communication"

## Results

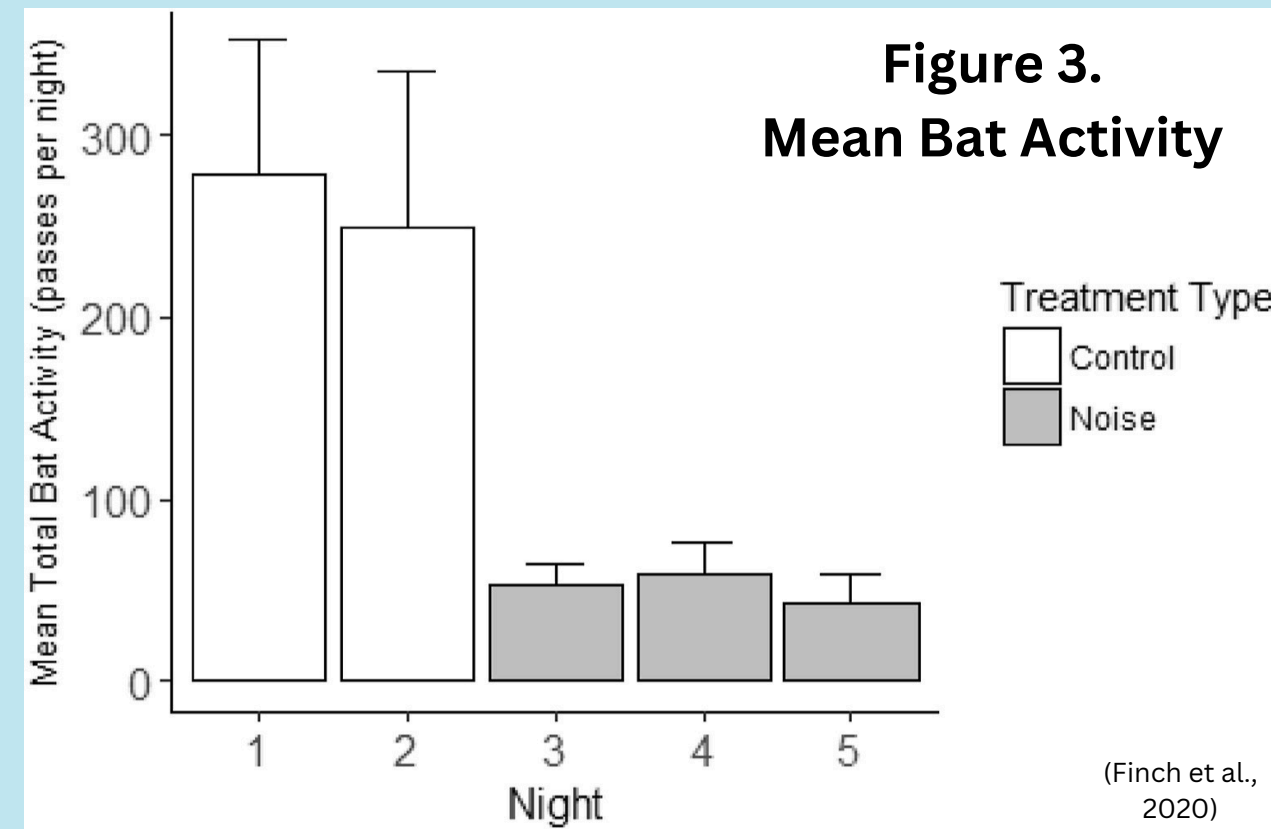
- Noise levels exceed health guidelines
- Prolonged noise exposure can harm human health
  - Increased risk of cardiovascular diseases
  - Degradation of cognitive performance
- Noise pollution negatively impacts birds' behavior, communication, and physiology
  - Inhibits bird vocalization essential for communication
  - Disrupts hormones for reproduction and development
- Traffic playback impairs bats' communication & feeding behavior by reducing activity and silencing echolocation calls
- Rise in long-term health risks for animals & humans

**Figure 1. Flowchart**



(Ising & Kruppa, 2004)

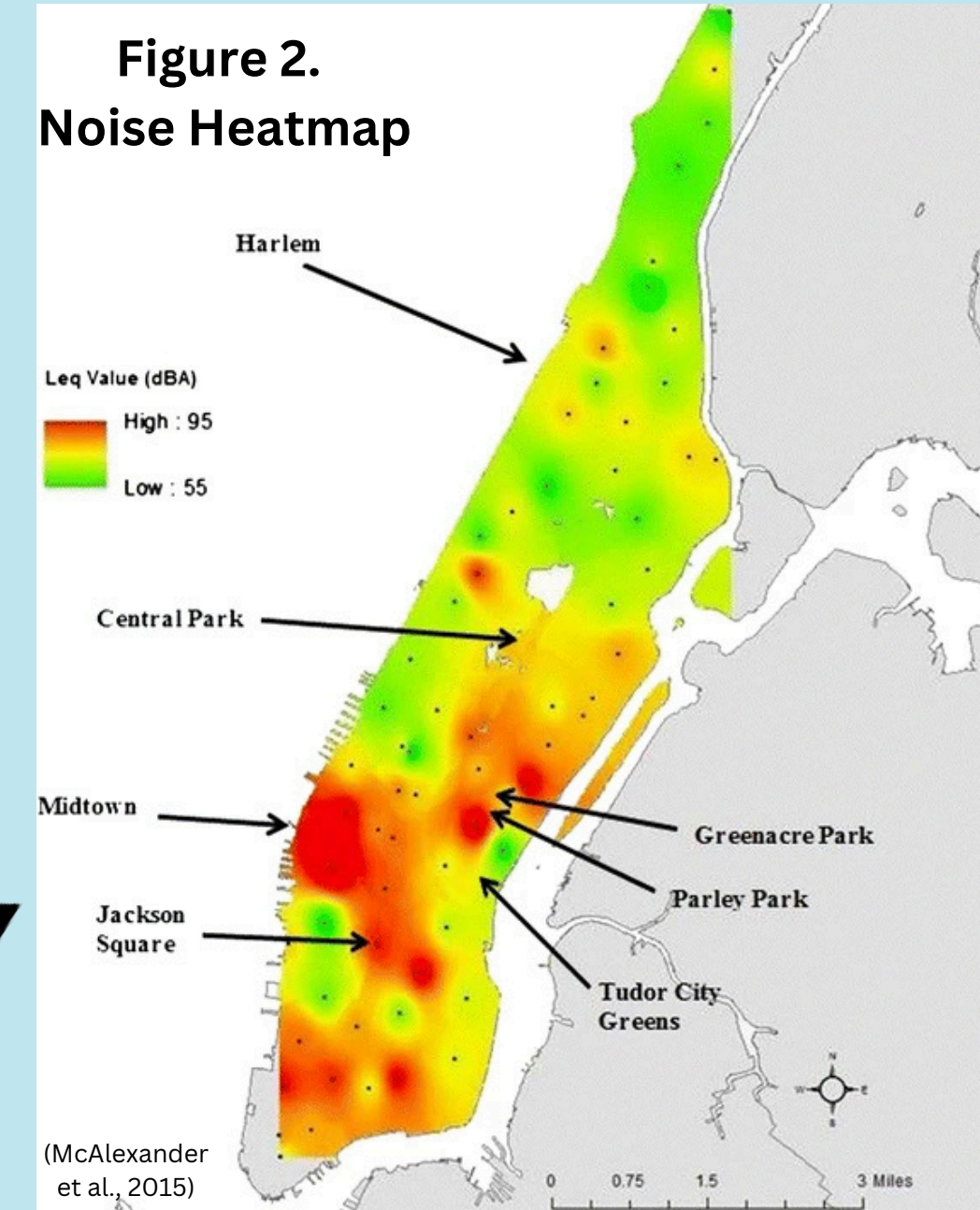
**Figure 3. Mean Bat Activity**



(Finch et al., 2020)

Mean nightly bat activity (+SE) during control (white) and noise (grey) treatment nights across the seven study sites; graph based on raw activity data

**Figure 2. Noise Heatmap**

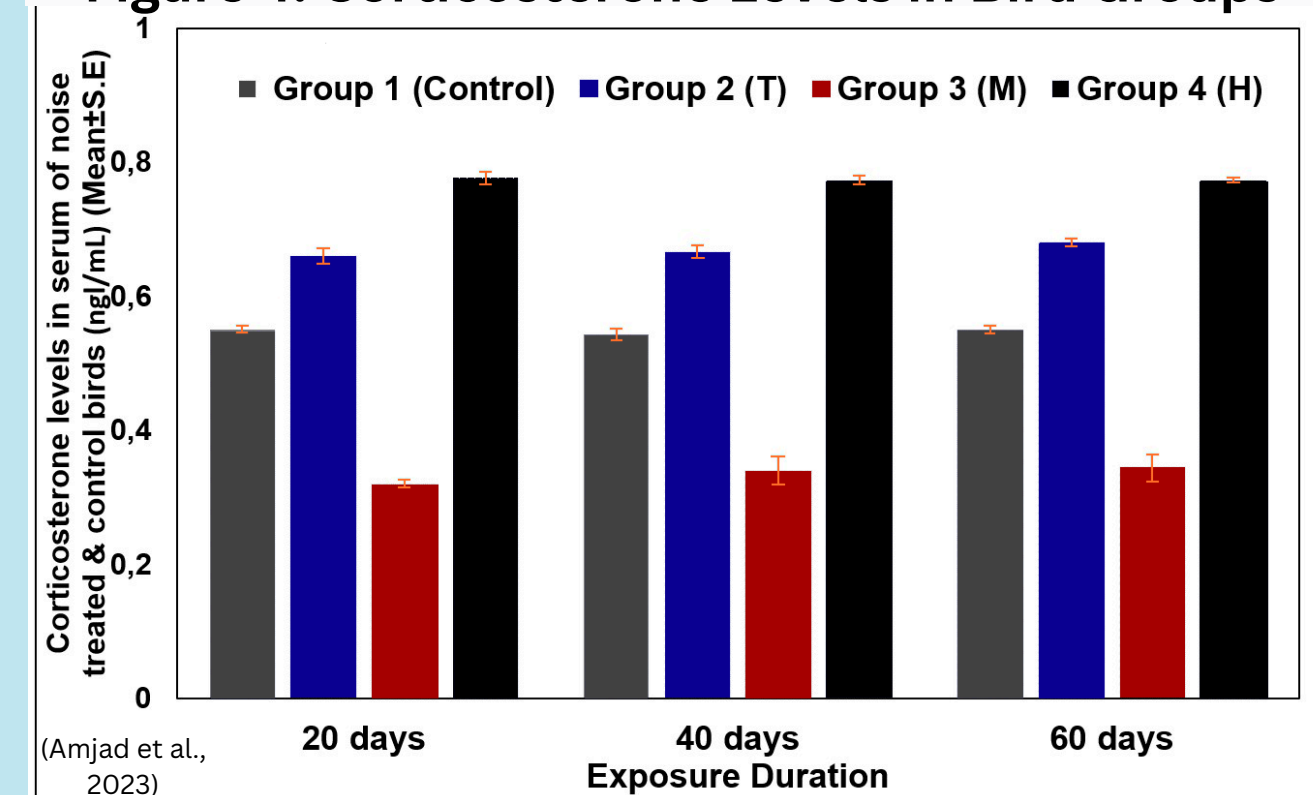


(McAlexander et al., 2015)

a flowchart with visualizes the impact of noise above 65dB on physiological health, specifically cardiovascular as aggregated from 25 years of studies

a visual representation of the noise levels in Manhattan and illustrates the range of noise from 55 dB up until 95, with most of the city above the EPA standard of 70 dB

**Figure 4. Corticosterone Levels in Bird Groups**



(Amjad et al., 2023)

Corticosterone levels of birds in various groups when exposed to different types of sound

## Discussion & Future Implications

- Increased risk of coronary heart disease, hypertension, stress, cognitive impacts and sleep disturbance
- POC communities are likely disproportionately affected
- Bird pop at risk due to impaired flight and further investigation into how the population is adapting is needed
- Decreased activity in NYC bats will likely cause influx in pest populations
- Work needs to be done to understand causes and preventative measures of urban sound pollution

## References

