



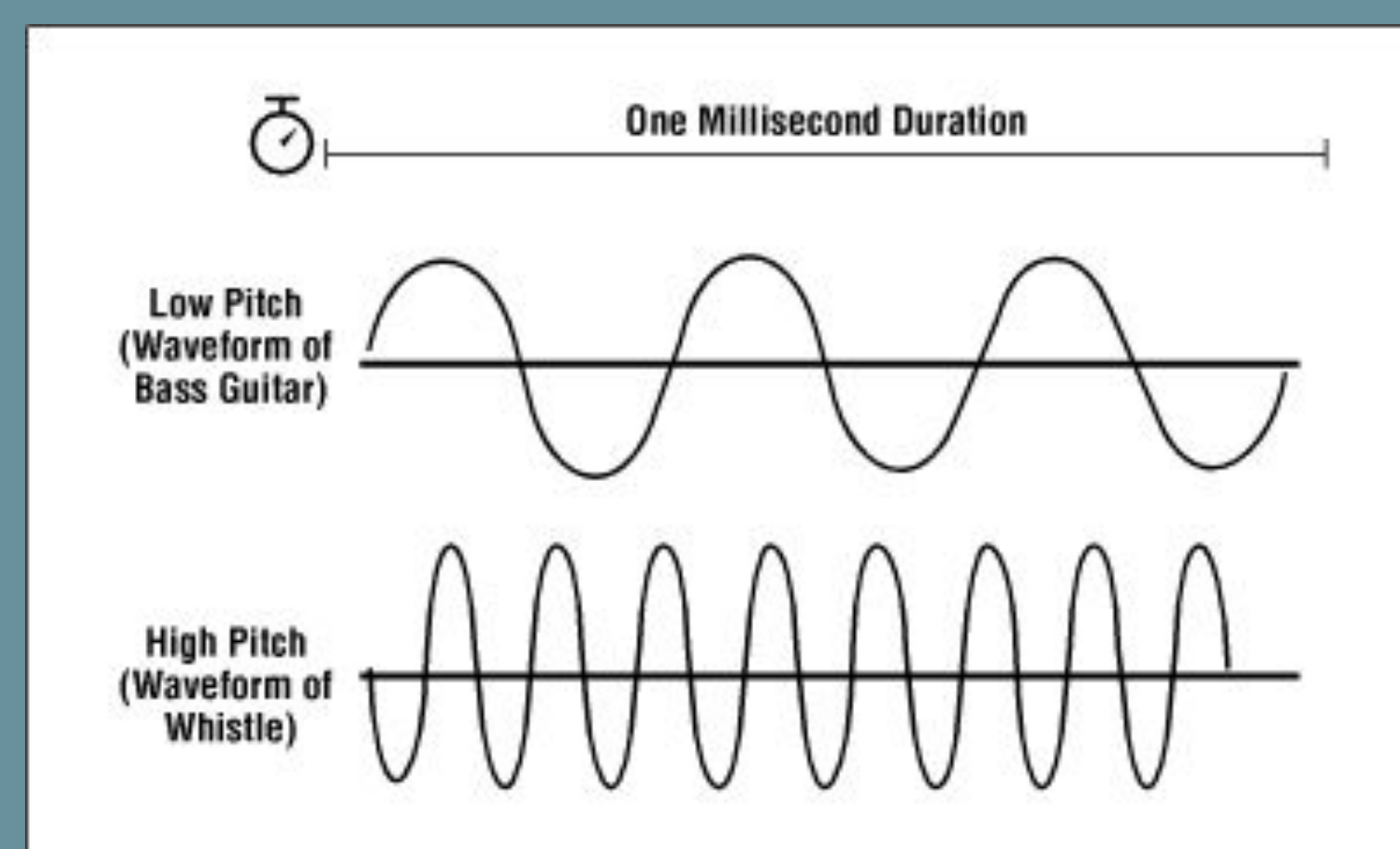
The Science of Music

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INTRODUCTION

Pitch is defined as the step of a musical scale in the human brain that is measured in Hertz in physics. Although the sound frequency of each pitch on the piano keyboard stays the same, the decreasing tendency of ratio between sound frequency and pitch is especially occurring in the range of high pitches. A possible cause of this problem is the psychological issue of human ears that as they determine higher pitches with low tendency of increasing sound frequency.

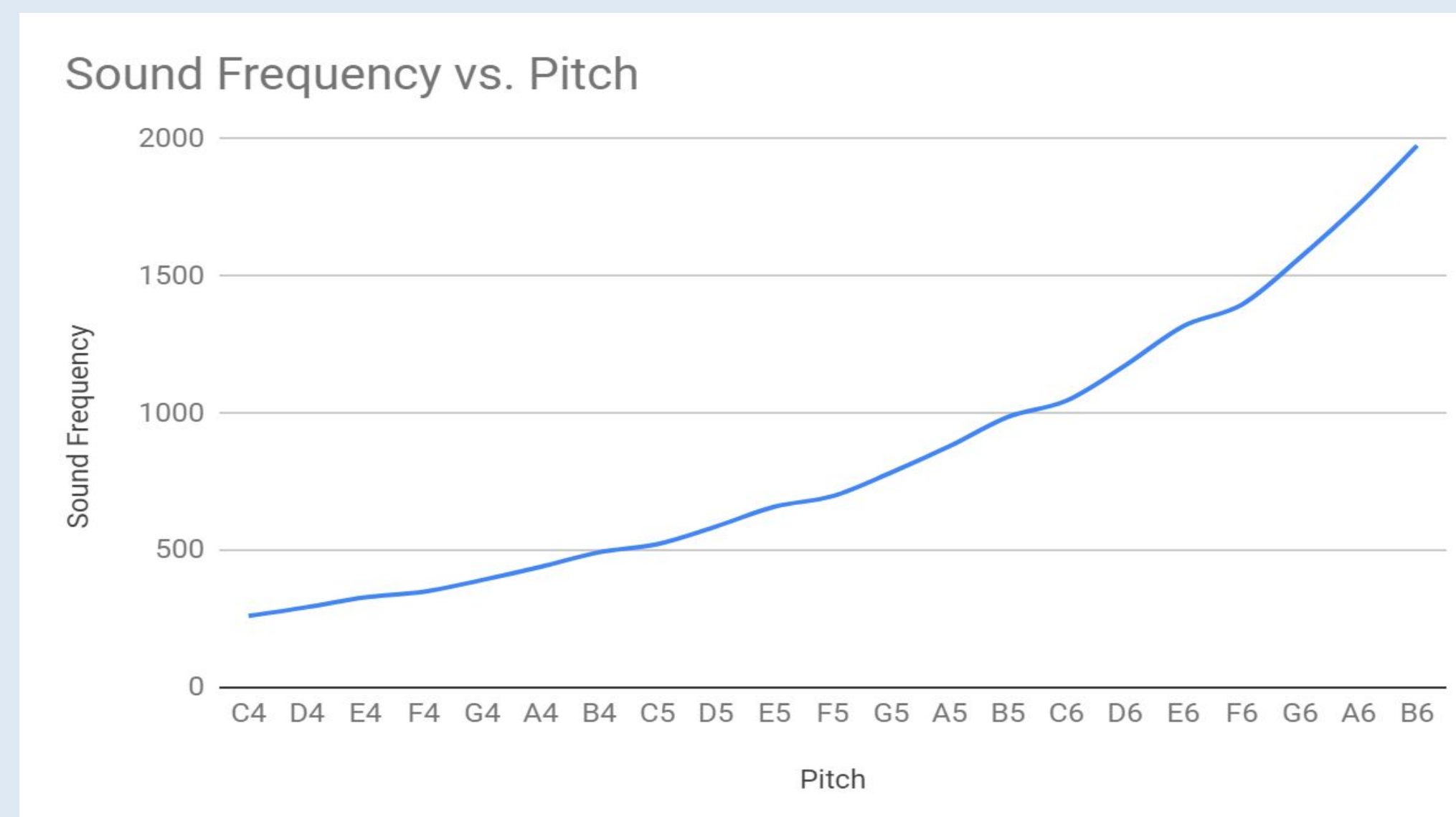


RESEARCH METHODOLOGIES

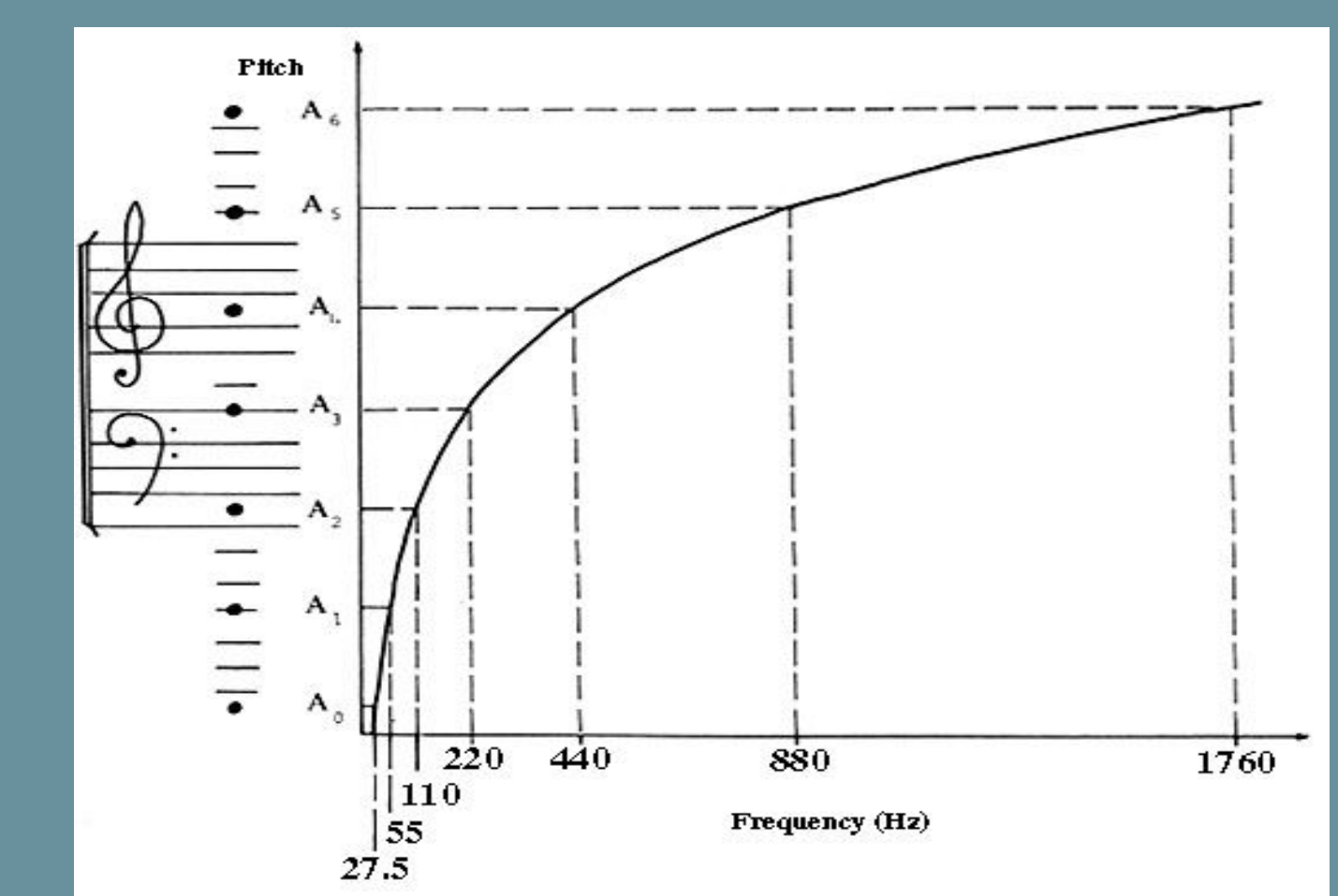
This research was both observational and experimental if the resources were applicable, since collecting data from the database and previous experiments and conducting experiments by the researchers were significant for the accuracy and precision of data.

This project's inquiry approach was content analysis and correlational research, mainly focused on collecting data online in scholarly articles or databases in order to find the correlation and intersections of that data.

DATA AND FINDINGS



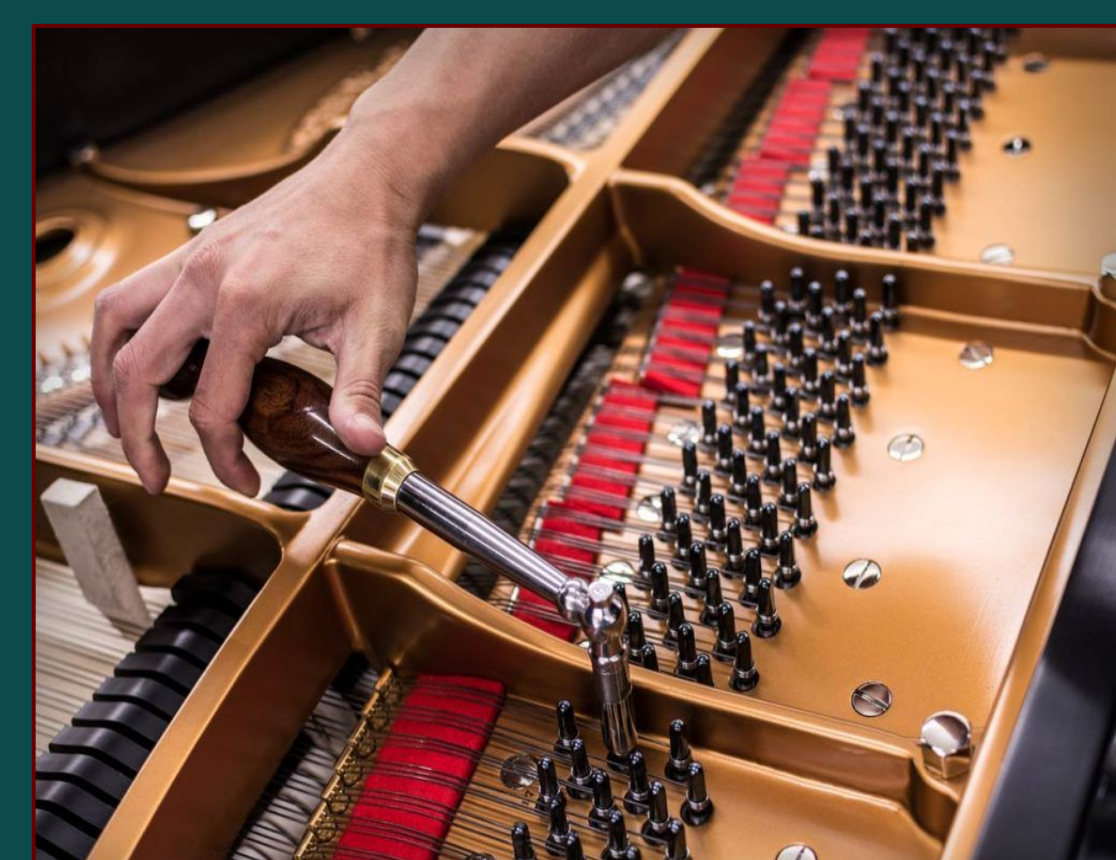
“ Ratios can be determined from experiments with halving and doubling of sensations, but not absolute values. To get absolute values it is necessary to define a reference point for the sensation “ratio pitch” as a function of frequency (Fastl, 1999). ”



CONCLUSIONS AND ANALYSIS

This set of data illustrates that the relationship between pitch and sound frequency is not exact, which means that the pitches are not determined by sound frequencies. This indicates that there is a connection of identifying pitch and human ears. Therefore, the actual frequency influences how musicians hear compared to the exact pitch measured by tonometer.

This is also why people who tune musical instruments don't use sound frequency when tuning, simply because of the inconsistent ratio between pitch and frequency.



- Data**
 - Data collection on databases
 - Self-conducted experiment
 - Relationships of my own data and existed data
- Graph**
 - Non-perfect curve
 - No exact correlation
 - Indicating other factors besides this experiment
- Correlation**
 - Frequency and pitch are not directly proportional to each other
 - As pitch increases, the rate of change increases as well

IMPLICATIONS AND NEXT STEPS

Psychological factors might suggest that human ear and brain activity determine why sound frequency and pitch do not appear to be at the same ratio.

Analysis of brains of people who have perfect pitch (the ability to identify or re-create a given musical note without the benefit of a reference tone) is needed. Perfect pitch also tends to

run in families, and studying why could also reveal useful information. Analyzing people with perfect pitch can help develop methods to help other people develop perfect pitch.

Researchers can continue to study how perfect pitch can help musicians and music students accurately identify the music and which part of the brain is active when people are trying to identify the pitch.

ACKNOWLEDGEMENTS / REFERENCES

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***Works Cited:

Fastl, H. (2005). Psycho-acoustics and sound quality. In *communication acoustics* (pp. 139-162). Springer, Berlin, Heidelberg.

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