Data Analysis 2 :

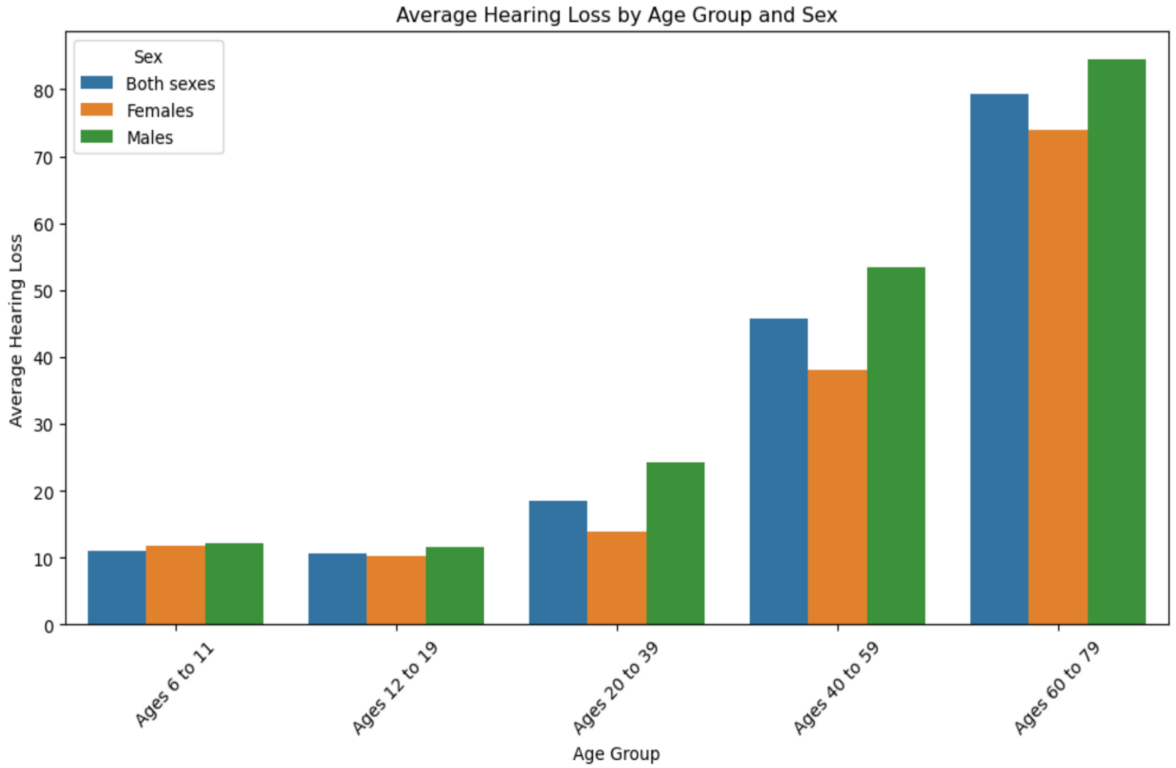
We conducted a detailed data analysis on a dataset (Government of Canada, 2021) featuring information about the prevalence and characteristics of hearing loss within the Canadian population, offering a detailed breakdown by age, sex and type of hearing loss.

The data analysis yielded answers to several key questions, as follows :

“How does average hearing loss differ between genders, and what trends can be identified regarding the prevalence and severity of hearing loss among males and females?”

Inference :

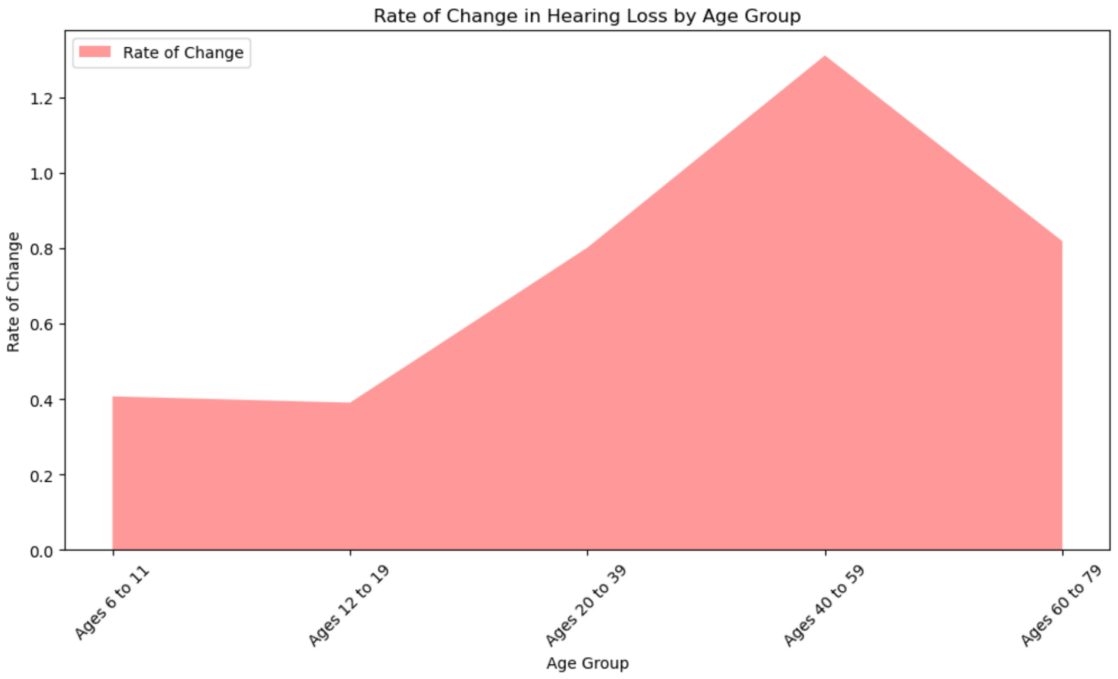
The graph indicates that males generally have greater average hearing loss than females, a consistent trend suggesting higher risk or severity of impairment in males. This insight is crucial for a sign language detection project, highlighting the need for technology tailored to male sign language users, who are more prone to significant hearing loss.



“How does the rate of change in hearing loss vary across different age groups ?”

Inference:

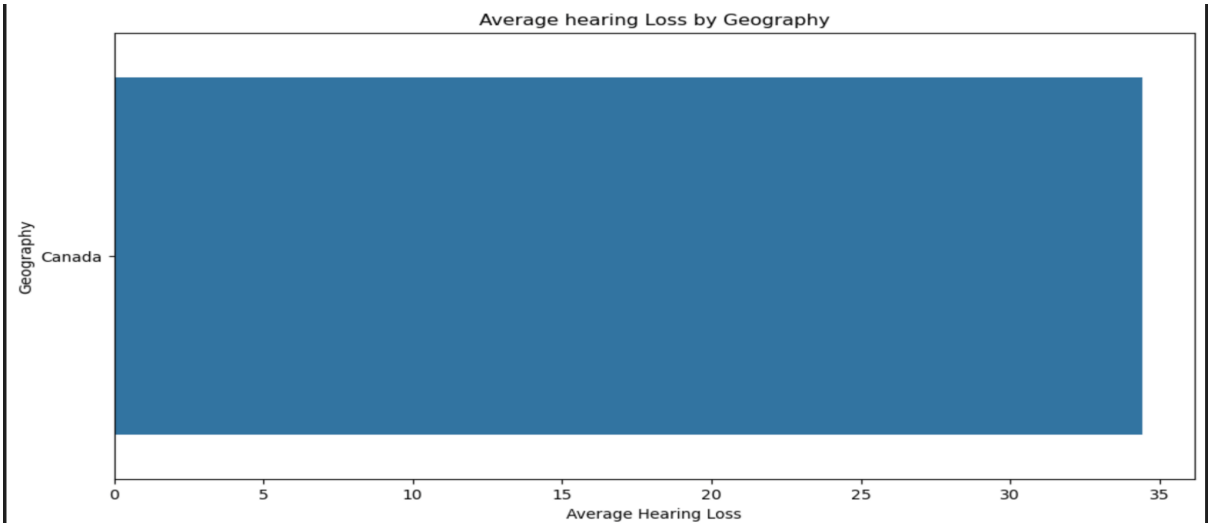
The graph demonstrates a stable rate of hearing loss in the youngest and oldest age groups, with a significant peak among those aged 40 to 59. This age group experiences a more rapid progression of hearing loss, suggesting the need for a sign language detection system with adjustable sensitivity, particularly catering to the needs of middle-aged users.



“What is the average hearing loss experienced within the geographical context of Canada, and what can this data suggest for the allocation of health resources and development of assistive technologies?”

Inference:

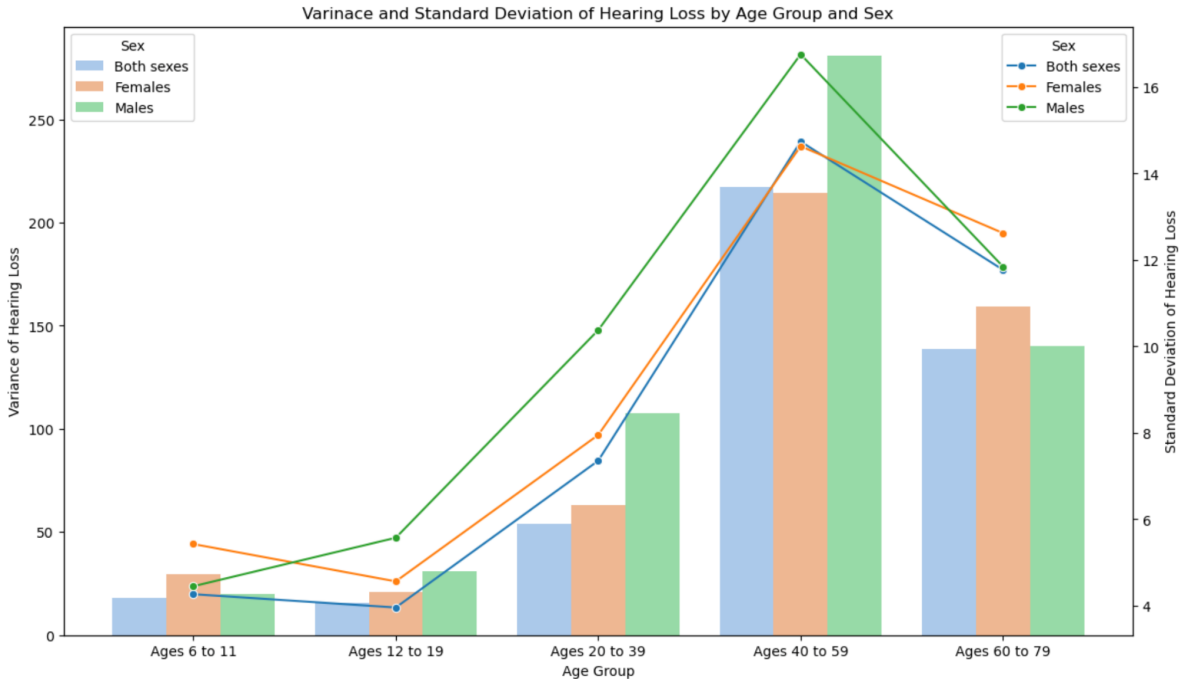
The data indicates that the average hearing loss in Canada is approximately 34.43 dB. This level of hearing loss can impact communication and quality of life, suggesting a significant need for hearing-related health services and assistive technologies across the country.

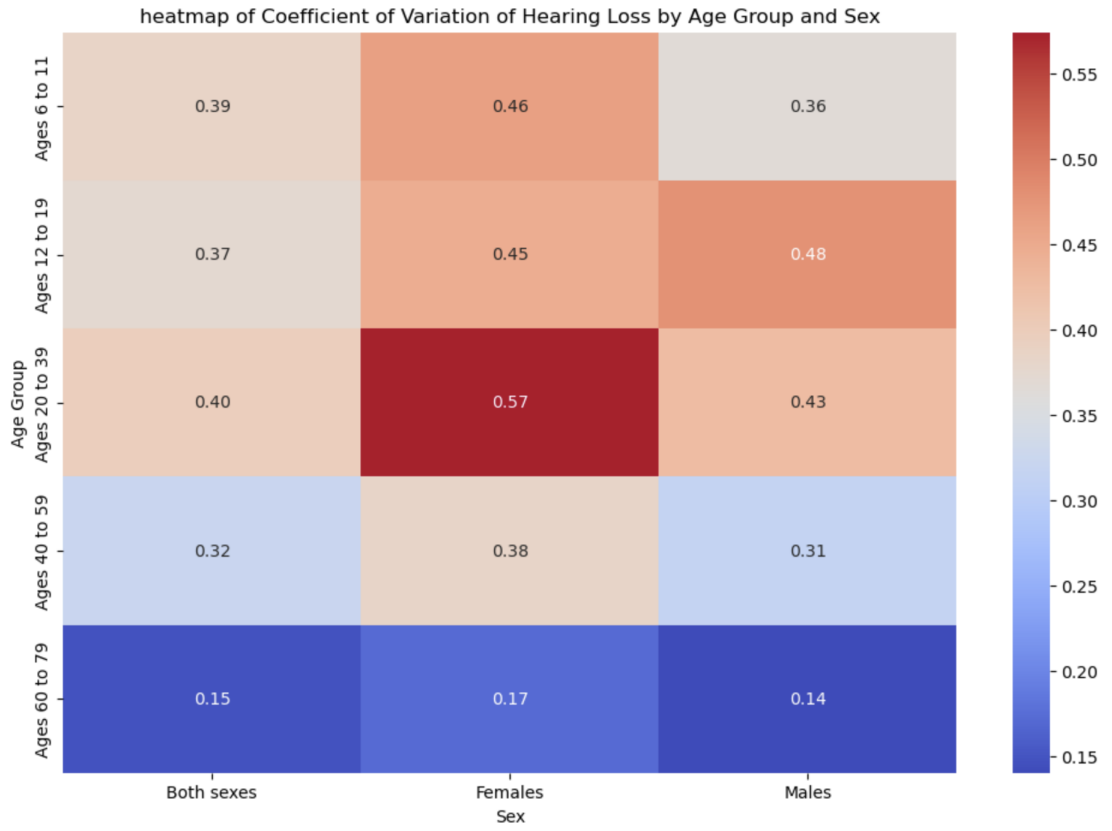


“How do the variance, standard deviation, and coefficient of variation in hearing loss across different age groups and genders guide the customization and functionality of sign language detection technologies?”

Inference :

The variance and standard deviation in hearing loss shows significant differences across age and gender, especially in the 40 to 59 age group and 20 to 39-year old females, with a coefficient of variation (CV) ranging from 0.24 to 0.57. This underscores the importance of adaptable sign language detection technologies for varied hearing impairments.

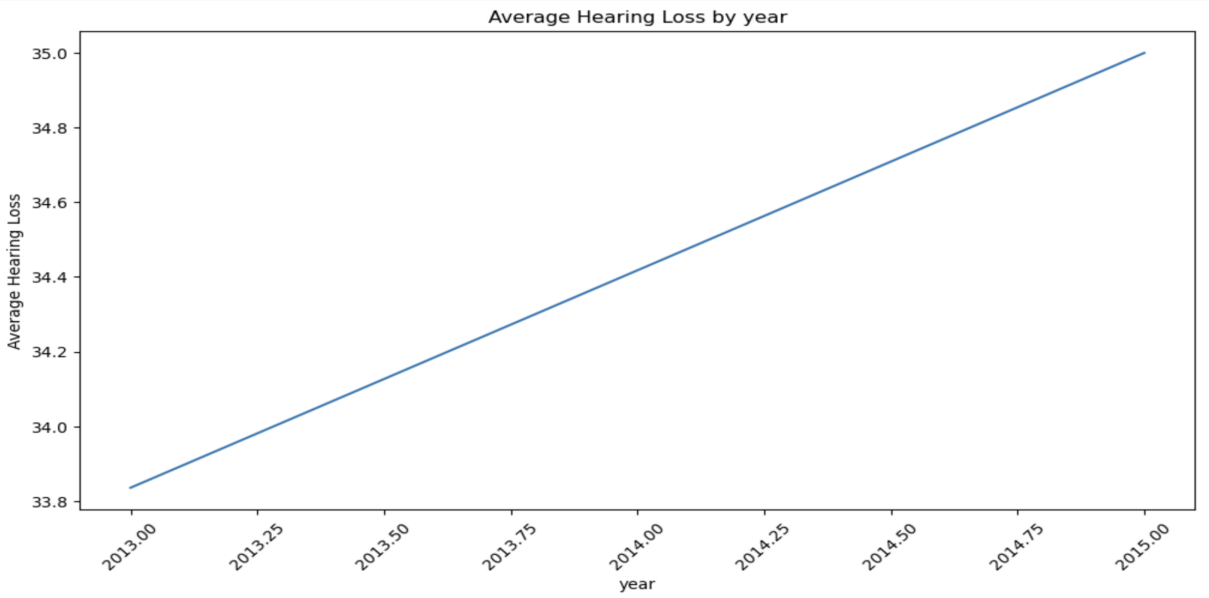




“How has the average hearing loss trended over the years based on available data points, and what does this indicate about the progression of hearing loss over time?”

Inference:

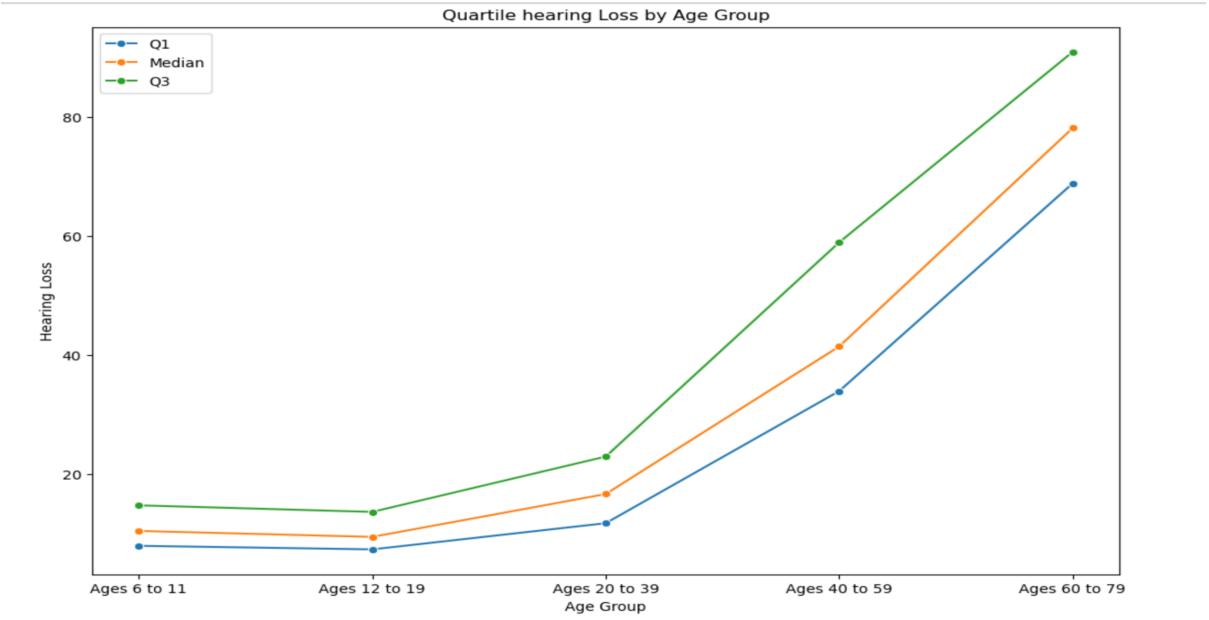
The rising trend in hearing loss from 2013 to 2015 suggests an escalating issue, necessitating sign language detection technologies to adapt for an expanding and more severely affected user base. This emphasises the need for scalable and flexible recognition systems to meet diverse and intensifying demands.



“How does the prevalence and severity of hearing loss, as indicated by the first, second (median), and third quartile measures, vary across different age groups in the Canadian population?”

Inference

The data shows increasing hearing loss severity with age: low quartile values in ages 6 to 11 and 12 to 19, a sharp increase in ages 40 to 59, and the highest severity in ages 60 to 79 with the third quartile nearing 91%. This pattern underlines the need for early detection and intervention, especially for assistive technologies like sign language detection applications, targeting age groups with higher quartile values.



“What is the significance of the changes in the average estimate of hearing loss between 2013 and 2015 when considering the low and high confidence intervals?”

Inference:

The data shows a slight increase in the average estimate of hearing loss from 2013 to 2015. This trend suggests a growing need for effective sign language detection technology. Stable confidence intervals imply reliable data, which can guide the development of such projects. Therefore, enhancing sign language recognition systems becomes increasingly vital to support those with hearing loss.