

**B24**

Mohamed Heiba

Advisor(s): Hannah Brooks

### **Eyes on the Stroke Belt: Assessing BRFSS Data Accuracy on Geographic Disparities and Visual Impairment**

This study explores the utility of the Behavioral Risk Factor Surveillance System (BRFSS) to understand the prevalence and disparities of visual impairment across different regions in the United States. Recognizing the Stroke Belt—a collection of Southeastern states with notably high stroke incidence and mortality rates—as a critical area of study, we analyzed BRFSS data to explore the association between stroke risk factors (such as diabetes mellitus (DM), hypertension (HTN)) and visual impairment across different geographical locations. To do so, we cleaned the BRFSS data, extracted crude prevalence of visual impairment, demographics, risk factors, and comorbidities across three regions: the Stroke Belt, the Northeast, and the remainder of the U.S. Statistical analysis using Python's Scipy.stats library for ANOVA, logistic regression, and subgroup analysis revealed significant variations in the prevalence of visual impairment, with the Stroke Belt exhibiting the highest rates (7.14%) compared to the rest of the country (6.05%) and the Northeast (5.15%). Furthermore, diabetes and smoking emerged as significant predictors of visual impairment. Our findings underscore the significance of BRFSS as a tool in predicting health outcomes and highlight the necessity for targeted public health interventions to address these disparities. Despite limitations related to self-reported data in the BRFSS dataset, this study illuminates the potential use of large-scale data in informing public health strategies and emphasizes the need for future research to refine data analysis methodologies for more accurate vision public health surveillance.