

# Analyzing Prostate Cancer Prevalence and Demographic Factors Over Time

## Introduction

The project aims to analyze trends in prevalence rate and associated demographic factors over time using data from Behavioral Risk Factor Surveillance System [BRFSS]. The data ranges from 2011 to present containing close to 12,000 rows and 27 columns about 50 states in USA.

The project will use time-series analysis to identify patterns in the prevalence rates from 2011 to present. By creating different fragments of data using demographic features, population specific trends can be identified.

The articles written on this data mainly focus on relationships between behavioral as well as demographic factors and prostate cancer. We on the other hand are trying to understand if there are any seasonal patterns in prostate cancer across all demographic categories. Some of the related works are cited below:

- [1] Li, J., Hall, I.J. & Zhao, G. **Prostate cancer screening decision-making in three states: 2013 behavioral risk factor surveillance system analysis.** *Cancer Causes Control* **28**, 235–240 (2017). <https://doi.org/10.1007/s10552-017-0860-8>
- [2] Li J, Thompson TD, Richards TB, Steele CB. **Racial and Ethnic Differences in Health Behaviors and Preventive Health Services Among Prostate Cancer Survivors in the United States.** *Prev Chronic Dis.* 2016 Jul 21;13:E95. doi: 10.5888/pcd13.160148. PMID: 27442995; PMCID: PMC4956476.
- [3] Garg, V., Raisch, D., Selig, J. *et al.* **Health disparities in clinical practice patterns for prostate cancer screening by geographic regions in the United States: a multilevel modeling analysis.** *Prostate Cancer Prostatic Dis* **16**, 193–203 (2013). <https://doi.org/10.1038/pcan.2013.3>
- [4] Chang-Rong Chen, Logan Briggs, Mara Koelker, Benjamin V. Stone, Khalid Alkhatib, Muhieddine Labban, Alberto Briganti, Francesco Montorsi, Giorgio Gandaglia, Quoc-Dien Trinh, **The association between behavioral habits and physical health status in prostate cancer patients: a large US national health-related survey,** *Prostate International*, Volume 12, Issue 4, 2024, Pages 207-212, ISSN 2287-8882, <https://doi.org/10.1016/j.prnil.2024.08.001>.
- [5] K.R. Fontaine, M. Heo, D.B. Allison, **Obesity and prostate cancer screening in the USA,** *Public Health*, Volume 119, Issue 8, 2005, Pages 694-698, ISSN 0033-3506, <https://doi.org/10.1016/j.puhe.2004.09.002>.

## Motivation

Prostate cancer is one of the most common diseases in old age men, and the prevalence rate of this disease is mainly influenced by behavioral factors including smoking habits, physical inactivity, obesity etc. Do demographic factors influence this cancer? Can demographic factors and cancer be inter-related over time? Did the behavioral habits of men change over time after having knowledge on these topics? Trying to understand these questions is the reason for motivation in doing this project.

## Evaluation

The success of this project will be an end analysis of how demographic trends and prostate cancer are related over time. This also includes discovering population-specific trends based on different break-out categories and generating actionable insights. Success will be evaluated based on clarity, accuracy and its potential impact on public health.

## Resources

1. Dataset
  - Behavioral Risk Factor Surveillance System (BRFSS) Prevalence Data (2011 to present)
    - **Dataset:** [BRFSS Prostate Cancer Data](#)
2. Tools
  - **Python:** For data cleaning, segmentation, and time-series analysis
  - **Tableau:** For creating interactive dashboards

## Contributions

1. Data Collection, Cleaning, Preparation and Time-series Analysis
  - Jibin George
  - Jibin K Sebastian
  - Kailas Krishnan
2. Visualization and Reporting
  - Vishal Ramesh Babu
  - Yashas Mysore Srihari

## References

- <https://pmc.ncbi.nlm.nih.gov/articles/PMC7931121/>
- [https://data.cdc.gov/Behavioral-Risk-Factors/BRFSS-Table-of-Prostate-Cancer/jwtk-e7wd/about\\_data](https://data.cdc.gov/Behavioral-Risk-Factors/BRFSS-Table-of-Prostate-Cancer/jwtk-e7wd/about_data)
- <https://www.cdc.gov/brfss/>