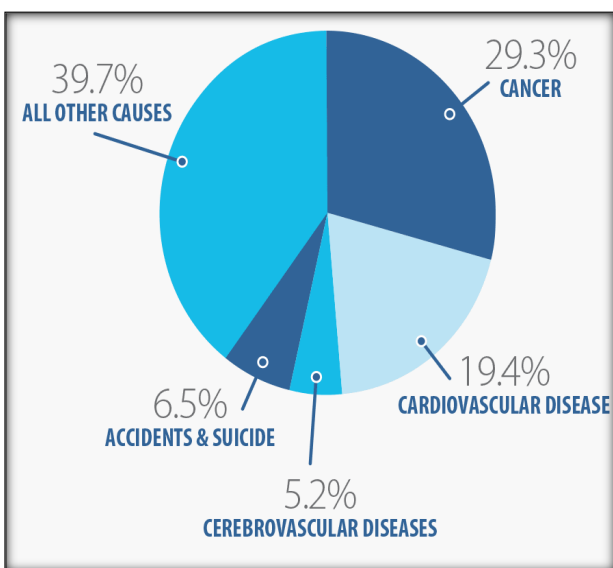# DAB 304 HEALTHCARE ANALYTICS: PROJECT PROPOSAL

Cancer Trends in Canada

Introduction:

- According to Ontario Cancer Statistics 2018, cancer is the leading cause of death in Ontario, accounting for 29.3% of all deaths. In addition, more than twice as many cancer cases were registered in Ontario in 2013 as in 1983.

- Experts expect that one in every four Ontarians will die from cancer and that one in every two will get cancer throughout their lifetime, with the likelihood of contracting cancer being comparable in men and women. Cancer care costs in Ontario increased by over 150% from roughly $1 billion in 2005 to $2.6 billion in 2012. Lung, colorectal, breast, and prostate cancers are the primary causes of mortality from cancer.

Motivation:

- Cancer was the second greatest cause of death in the United States in 2020, after only heart disease.
- There will be 602,350 cancer deaths in 2020, with 284,619 females and 317,731 men.
- At least one third of common cancers are preventable.
- Millions of lives might be saved each year by implementing resource-appropriate preventive, early diagnosis, and treatment techniques.

Data Science Insight:

- Cancer is a persistent problem in Canada, particularly in Ontario. The provincial government is working on a few measures to lessen the impacts of cancer.
  - Ontario Breast Screening Program (OBSP)
  - High Risk Ontario Breast Screening Program (OBSP)
  - Ontario Cervical Screening Program (OCSP)
  - Colon Cancer Check (CCC)
  - Faecal Immunochemical test (FIT) launch

- Ontario Health (Cancer Care Ontario) is collaborating with the Ministry of Health to include HPV testing as a recommended cervical screening test in colposcopy services. HPV testing is more accurate than the current Pap test in identifying people who are at risk for cervical cancer.

- To address this ongoing public health issue, Ontario Health (Cancer Care Ontario), in collaboration with the Ontario Ministry of Health, operates three organised cancer screening programmes: the Ontario Cervical Screening Program, the Ontario Breast Screening Program, and Colon Cancer Check. The goal of these programmes is to reduce the mortality and morbidity associated with cervical, breast, and colorectal cancer.

Evaluation:

Following methods and tools will be used to execute this project:

- Data Collection
- Data Cleaning (MS Excel, Python)
- Exploratory Data Analysis (Python)
- Data Visualization (Python, Excel, Tableau)
- Build and apply suitable algorithms (Python)

Successful outcome of this project will be:

- The cancer profile will aid in addressing Ontario's ongoing cancer disease burden.
- It will aid in the management of strategies and the identification of priorities for clinical and research services.
- By understanding the report, government can set their goals to eliminate respective cancer. For example, Canada government has been set target to wipe out cervical cancer by 2040.

Resources:

- Datasets: https://www.cancercareontario.ca/en/data-research/view-data/cancer-statistics/ontario-cancer-profiles
- Software: Jupyter Notebook, Excel, Tableau
- Language: Python

Contributions:

Group Members:

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- All group members were present at the time of dataset selection. After going through many data sets, we have decided to work with above mentioned datasets which we already merged in to single .csv file.
- For Project Proposal, each group member shares their ideas and evaluations on this topic and creates a project proposal.

References:

- https://open.canada.ca/data/en/dataset/b89ab9d1-bddc-4baa-9133-34a446623c5b
- https://www.who.int/health-topics/cancer#tab=tab_3
- https://www.kaggle.com/search?q=cancer
- https://www.cancercareontario.ca/en/cancer-facts/ontario-cancer-profiles-lets-you-explore-cancer-statistics
- https://public.tableau.com/app/discover
- https://www.worldcancerday.org/what-cancer