**Drug Product Database (DPD) - Health Canada**

**Overview:**

“Drug Product Database (DPD) contains information about the various categories of drugs used for human, animals, disinfectants, and other. This database also provides information on status of the products, its packaging, ingredients, and companies associated with it.

**Business Problem:**

To extract insightful information on the drugs associated with different categories, their ingredients, and their status on the market, and identify the trends and relationships between the features. This could help companies and healthcare providers to maintain an improved healthcare system.

There are many related entities that must consult the feasibility of their products or ingredients meeting the standards allowed by the government of Canada, and the timely consultation of the feasibility of their needs can be more effective and easier to analyze. Some of the uses can be the shortage of medicines and drugs post-pandemic, how long takes the new medicines to reach patients in Canada or benchmarking over other similar countries like US, Japan or some European countries how long takes for the release authorization of new products, bio equivalents drugs policies authorizations, or the distribution capacity to hospitals, pharmacies and community-related organizations.

**Analytics Goal/Project Goal/Action Plan:**

**Gathering Data:** The data has been collected official website of Health Canada. The dataset consists of zipped files of 4 different status categories which contains data in the form of flat files (comma separated).

All preliminary data set is provided by:

* Government of Canada through the official web site (Canada, 2002)
* Some of the reference given from University of Manitoba (*Term: Drug Product Database (DPD) | MCHP Concept Dictionary and Glossary for Population-Based Research | Max Rady College of Medicine | University of Manitoba*, n.d.)
* Papers research (Moreno et al., 2020)
* Drug shortages Canada (*Summary Report*, n.d.)
* Media publications (*Health Canada Reviewing Safety of Controversial Breastfeeding Drug | CBC News*, n.d.)

**Ethical Concern**

The ultimate ethical goal of the pharmaceutical industry is the discovery and development of safe and effective drugs that enable patients to live longer, healthier, and more productive.

The Canadian government works in detail on each component or ingredient in the drugs authorized to distribute within the territory, whether for human or animal use. Ethical use is not only limited to legal aspects, but also to the health of people or animals, and may cause immediate or long-term damage or death.

**Organizing Data:** Observing the structure of the files, the datasets need to be organized and cleaned and structured in a proper format.

The goal of this project is to provide an inference approach for the categorization of drugs that would enhance the accuracy of such classification. The process implements some clustering algorithms in order to classify the data.

The project goal is clustering the accuracy of this classification as well as the resources to aid in decision-making in any related organization.

**Create Visualizations:** after Organizing the data, our next goal will be creating analytics visuals**.** We will create interactivity between different features and draw conclusions based on the charts/reports.

Applying a practical data analysis, in order to cluster, classified, and simplified all related data in order to provide stakeholders with easy navigation for their documentation and research.

The goal of this project is to provide a fuzzy inference approach for the categorization of drugs that would enhance the accuracy of such classification. The process implements some clustering algorithms in order to classify the data.

Clustering the accuracy of this classification as well as the resources to aid in decision-making in project-oriented organizations.

**Extract Insights:** With the help of customized dashboards and reports, we will be able to conduct strategic data analysis, uncover patterns, and draw conclusions to support Canadian Healthcare systems.

Some of the skills and tools to explore the project will be

**Tech tools:**

* Python
* Tableau
* Excel
* Easy Morph

**Skills:**

* Exploratory Data Analysis
* Marketing Analysis
* Classification data
* Clustering Data

**Pipeline:**

→ Deciding the topic for the project → Gather the necessary data

→ Organize the structure of the data → Performing EDA

→ Clean and Transform the data → Review the processed data.

→ Work on suggested modifications

→ Select right elements, tables, and features for creating visualization.

→ Create reports and dashboards → Review and apply the necessary changes

→ Finalize the Dashboard → Build a suitable model if applicable

→ Create final project report

References

Canada, H. (2002, December 9). *What is the DPD Data Extract? - Drug Product Database (DPD) Data Extract - Health Canada* [Education and awareness]. https://www.canada.ca/en/health-canada/services/drugs-health-products/drug-products/drug-product-database/what-data-extract-drug-product-database.html

*Health Canada reviewing safety of controversial breastfeeding drug | CBC News*. (n.d.). Retrieved February 10, 2023, from https://www.cbc.ca/news/canada/breastfeeding-lactation-drug-domperidone-health-canada-1.6731315

Moreno, M. Á., Collineau, L., & Carson, C. A. (2020). *Antimicrobial Usage in Companion and Food Animals: Methods, Surveys and Relationships with Antimicrobial Resistance in Animals and Humans*. Frontiers Media SA.

*Summary Report*. (n.d.). Retrieved February 10, 2023, from https://www.drugshortagescanada.ca/rws-search?perform=1

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