**Prescribing Trends of Antidepressants in the U.S. Using the CMS Medicare Part D API**

1.  Introduction and Motivations

   Antidepressants are the most commonly prescribed psychiatric medication in the United States. Understanding how antidepressant prescribing frequency variations reveals access to mental health care, treatment adoption, and geographic variation in prescribing behavior across the nation.

   The Centers for Medicare and Medicaid Services (CMS) Medicare Part D Prescribers - By Provider and Drug API (2023) is a publicly accessible and national-level dataset that provides detailed information on prescription count and prescriber characteristics. The scope is intentionally narrowed to focus on the most prevalent type of Selective Serotonin Reuptake Inhibitor (SSRI) psychotropic medication used to treat depression or other mental health conditions within the United States.

2.  Data Source
    a.  CMS Medicare Part D Prescribers - By Provider and Drug (2023)
    b.  Public Available API:
        https://data.cms.gov/provider-summary-by-type-of-service/medicare-part-d-prescribers/medicare-part-d-prescribers-by-provider-and-drug/api-docs

3.  Antidepressants from Selective Serotonin Reuptake Inhibitor (SSRI) for Analysis
    a.  Sertraline (Zoloft)
    b.  Fluoxetine (Prozac)
    c.  Escitalopram (Lexapro)
    d.  Praroxetine (Praxil)
    e.  Citalopram (Celexa)

4.  Research Question
    a.  Which U.S. states have the highest prescribing frequency for each selected antidepressant in 2023?

5.  Methods

    5.1 Data Retrieval
    a.  Parse JSON responses into Panda DataFrames
    b.  Query 2023 dataset by Brnd_Name and Gnrc_Name filters

    5.2 Data Cleaning and Preparation
    a.  Filter rows to only the selected Antidepressants
    b.  Group brand names to generic equivalents
    c.  Standardize data values

    5.3 Analyses and Comparisons
    a.  Aggregate prescription counts by state and antidepressant prescriptions
    b.  Rank states from highest to lowest prescribing frequency
    c.  Compare across all selected antidepressants

6.  Visualizations
    a.  Vertical bar charts showing top 5 states with antidepressant prescriptions
    b.  Horizontal bar charts displaying type of SSRI prescribed per top ranked state
    c.  Visualization created using Matplotlib