**VA\_HUD\_USPS\_ZIP\_COUNT\_YEAR\_QUARTER.R - ReadMe**

**Overview**

This script, VA\_HUD\_USPS\_ZIP\_COUNT\_YEAR\_QUARTER.R, located in the R project directory structure at Scripts/VDSS\_Historical\_Zip\_Code\_Changes/, is designed to analyze and visualize the number of unique ZIP codes per year and quarter from a combined dataset. The dataset used is filtered for Virginia ZIP codes and spans multiple years and quarters.

**Datasets**

* **VA\_HUD\_USPS\_ZIP\_DATA\_ALL\_YEARS.xlsx:** This dataset contains combined and processed HUD\_USPS ZIP code data for all years from 2010 to 2024, specifically filtered for Virginia ZIP codes.

**Script Functionality**

1. **Loading Necessary Libraries:** The script loads required R libraries such as readxl for reading Excel files, dplyr for data manipulation, writexl for writing Excel files, ggplot2 for creating plots, and zoo for managing ordered observations.
2. **Loading the Dataset:** The script loads the combined dataset VA\_HUD\_USPS\_ZIP\_DATA\_ALL\_YEARS.xlsx from the specified directory.
3. **Filtering and Counting ZIP Codes:**
   * The script filters the dataset to identify unique instances of ZIP codes and their corresponding year and quarter.
   * It then counts the number of unique ZIP codes for each year-quarter combination.
4. **Organizing Data for Plotting:**
   * The script separates the YEAR\_QUARTER column into Year and Quarter for ordering.
   * It ensures that the YEAR\_QUARTER data is correctly ordered from the first to the last observation.
5. **Creating the Plot:**
   * The script uses ggplot2 to create a line plot that visualizes the number of unique ZIP codes per year-quarter.
   * The plot is customized with labels and themes for clarity and presentation.
6. **Saving the Plot:**
   * The script saves the plot as both a PNG and PDF file within the R project directory structure:
     + Plots/VDSS\_Historical\_Zip\_Code\_Changes/VA\_HUD\_USPS\_ZIP\_COUNT\_YEAR\_QUARTER.png
     + Plots/VDSS\_Historical\_Zip\_Code\_Changes/VA\_HUD\_USPS\_ZIP\_COUNT\_YEAR\_QUARTER.pdf

**Dependencies**

* **readxl:** For reading Excel files.
* **dplyr:** For data manipulation.
* **writexl:** For writing data to Excel files.
* **ggplot2:** For creating plots and visualizations.
* **zoo:** For managing ordered observations.

**File Output**

* **VA\_HUD\_USPS\_ZIP\_COUNT\_YEAR\_QUARTER.png:** A PNG file visualizing the number of unique ZIP codes per year-quarter.
* **VA\_HUD\_USPS\_ZIP\_COUNT\_YEAR\_QUARTER.pdf:** A PDF file visualizing the number of unique ZIP codes per year-quarter.

**Usage**

1. Ensure all dependencies are installed and up to date.
2. Place the dataset VA\_HUD\_USPS\_ZIP\_DATA\_ALL\_YEARS.xlsx in the appropriate directory as specified in the script.
3. Run the script to generate and save the plots.
4. The output files will be saved automatically in the Plots/VDSS\_Historical\_Zip\_Code\_Changes/ directory.

**Notes**

* The accuracy and usefulness of the output depend on the correctness and completeness of the input dataset.
* Ensure the dataset spans the required years and quarters to get comprehensive results.