A:DATA DASHBOARDS

Public dashboard [here](#)

A1:DATASETS AND DASHBOARD FILE

1. WGU's churn csv file churn_clean.csv can be located with this link(https://access.wgu.edu/ASP3/aap/content/f9tjr8djg83jd8c3sdf8.zip)

2. My external data from Kaggle is the second highest upvoted post when "customer churn" is searched. Link to data([CUSTOMER CHURN PREDICTION 📈 (kaggle.com)](#))

A2:DASHBOARD INSTALLATION

1. Place all files into 'C:\Users\Public\Documents' (d211.twbx, data_cleaning.odt, SQL_file, WA_Fn-UseC_-Telco-Customer-Churn.csv).
2. Open pgAdmin application.
3. In the left sidebar click Servers>Databases>Churn.
4. Right click on 'Churn' then click on 'Query Tool'.
5. On the top toolbar, right below 'Properties', click on the folder icon.
6. In the search bar navigate to C:\Users\Public\Documents\ (or copy and paste it).
7. Click and open the 'data_cleaning.odt' file.
8. Execute this file by clicking the play icon or press F5 on your keyboard.
9. From the file explorer (C:\Users\Public\Documents) double click on d211.twbx to open this file in Tableau.
10. Since the data for the .twbx file was not extracted, it will need to connect to the postgres database, there will be a pop up asking for username and password, enter the following into their respective place:
    - Username: postgres
    - Password: Passw0rd!

A3:DASHBOARD NAVIGATION

Access the Dashboard:

- Open the provided Tableau dashboard link in a web browser.

Understand the Layout:

- The dashboard consists of multiple visuals displayed in a grid format:

- ○ Left Side (Pie Chart): "Customers by Gender" shows the distribution of customers by gender (8,513 Female, 8,299 Male, 231 Prefer not to answer).
- ○ Top Middle (Text Table): "Tenure by Gender (AVG)" presents the average tenure of customers based on gender (Female: 33.814 months, Male: 33.485 months, Prefer not to answer: 32.610 months).
- ○ Below the Text Table (Bar Chart): "Average Charge by Payment Method" displays the average charge based on different payment methods:
  - ■ Bank Transfer (Auto): 129.63
  - ■ Credit Card (Auto): 128.40
  - ■ Electronic Check: 132.70
  - ■ Mailed Check: 119.32
- ○ Right of the Text Table & Bar Chart (Vertical Bar Graph): "Tenure by Churn (AVG)" illustrates the tenure of customers who have churned ('Yes') and those who have not churned ('No'):
  - ■ 'No' Churn: 88.06% of customers with an average tenure of 40.31 months.
  - ■ 'Yes' Churn: 11.94% of customers with an average tenure of 15.14 months.
- ○ Far Right (Packed Bubbles): Displays the total number of responses from WGU Telecom (10,000) and Other (7,043).

Interacting with the Dashboard:

- Hover over any section of the charts to see detailed data pop-ups for each segment.
- Click on any part of a visual (e.g., clicking on "Female" in the pie chart) to filter the data across the entire dashboard. The other charts will adjust to show data relevant to the selected filter (e.g., if "Female" is clicked, the other visuals will display metrics specific to female customers).
- To reset the filters, click again on the same section, or find a reset button (typically a small 'X' or refresh icon in Tableau dashboards).

Analyze the Data:

- Use the "Customers by Gender" pie chart to quickly see the gender distribution of customers.
- View the average tenure by gender in the "Tenure by Gender (AVG)" table to compare how long customers stay based on their gender.
- Analyze the average charges based on payment method in the bar chart to determine which payment method correlates with the highest average charge.
- Explore the "Tenure by Churn" graph to understand how churn impacts customer tenure.
- Look at the packed bubbles to compare the total responses between WGU Telecom and Other providers.

Make Data-Driven Decisions:

- By interacting with each visual, you can observe trends, such as how gender impacts customer tenure, how churn affects retention, or which payment method leads to higher average charges.

A4:SQL CODE

See attached file data_cleaning.odt.

B:PANOPTO PRESENTATION

See Attached

C1:DASHBOARD ALIGNMENT

The purpose of the dashboard is to provide stakeholders with clear insights into customer churn, including factors such as contract type, payment methods, tenure, and demographics. This aligns with stakeholders' needs by enabling them to identify patterns, predict churn, and make data-driven decisions to improve customer retention. The dashboard's interactive nature allows stakeholders to explore specific data points, helping them focus on key areas that directly impact business outcomes, such as identifying high-risk churn groups and optimizing services accordingly.

C2:BUSINESS INTELLIGENCE TOOL

The business intelligence tool chosen for this analysis was Tableau, and it was selected for several key reasons. First, Tableau's user-friendly interface makes it easy for stakeholders to interact with and explore the data without needing advanced technical skills. Its powerful data visualization capabilities allow for the creation of dynamic and insightful dashboards that provide clear, actionable insights into customer churn and related factors. Additionally, Tableau supports real-time data visualization, enabling stakeholders to make timely decisions based on the most current data available. The tool also integrates seamlessly with a variety of data sources, including PgAdmin (PostgreSQL), which was used for the database management and data preparation. This integration allowed for a smooth workflow, with PgAdmin handling the data modeling and processing, and Tableau managing the visualization, creating a cohesive system to support the entire data lifecycle. Together, these tools ensured the analysis was thorough, accessible, and aligned with the project goals.

C3:DATA CLEANING

The data cleaning and preparation process involved several key steps to ensure the dataset was consistent and ready for analysis:

1. Data Import: The first step was importing customer churn data from a CSV file into the competitor table using the COPY command. This allowed the raw data to be loaded into the PostgreSQL database for further processing.
2. Standardization of Values: The next step involved updating fields such as contract types and payment methods. These values were standardized by converting text values (e.g., "Month-to-month" or "Bank transfer") into numeric codes using the UPDATE statement with CASE conditions. This ensures consistency across the dataset, making it easier to analyze.
3. Column Renaming: Multiple columns were renamed to ensure clarity and consistency. For example, columns like PhoneService were renamed to phone, and Partner was renamed to married. This step streamlined the data structure and made the column names more intuitive.
4. Data Type Conversion: Specific fields, like contract_id and payment_id, were converted from text to numeric data types using the ALTER COLUMN command. This ensured that numeric analysis could be performed on these fields, which is critical for calculations in the dashboard.
5. Adding New Fields: A company field was added to both the customer and competitor tables to distinguish between the two data sources. This step allowed for more detailed analysis and comparisons when merging the datasets.
6. Data Merging: Finally, data from the customer and competitor tables was combined using a UNION ALL query into a new table called combined_df. This unified dataset brought together all relevant information for analysis, ensuring that the dashboard had access to a single, consistent source of data.

C4:DASHBOARD CREATION

To create the dashboard, the following steps were taken:

1. Data Preparation: The data was first cleaned and structured in pgAdmin using SQL scripts. Key fields were standardized, columns were renamed for clarity, and data from the customer and competitor tables were merged into a unified dataset called combined_df.
2. Data Import to Tableau: The prepared data was imported into Tableau from the PostgreSQL database. This allowed the cleaned dataset to be used for visual analysis.
3. Designing Visuals: Various visual elements were created to address stakeholder needs, including:
   ○ A pie chart to display customer distribution by gender.
   ○ A bar chart showing average monthly charges by payment method.
   ○ A vertical bar chart illustrating the relationship between tenure and churn.
   ○ Text tables summarizing tenure by gender.
   ○ Packed bubbles to visualize total customer counts by company.
4. Interactivity: Filters and interactive elements were added, enabling stakeholders to explore the data by drilling down into specific categories, such as gender, payment method, and churn status.

5. Dashboard Assembly: The visual elements were organized into a cohesive layout, making it easy for stakeholders to analyze key metrics and trends. The interactive nature of the dashboard allows users to click and filter data across all charts dynamically.
6. Final Adjustments: Lastly, formatting and design refinements were made to ensure the dashboard was user-friendly, visually appealing, and aligned with stakeholder objectives.

C5:DATA ANALYSIS RESULTS

The results of the data analysis provided key insights into customer behavior and churn patterns, directly supporting the purpose of the dashboard. Here are the primary findings and their impact:

1. The analysis showed that customers using electronic checks had higher average monthly charges compared to those using automatic payment methods like bank transfer or credit card. This insight helps stakeholders understand which payment methods correlate with higher revenue but might also contribute to churn due to higher charges.
2. The dashboard allowed stakeholders to compare gender and tenure trends, with male and female customers having similar average tenure.
3. A key finding was that customers who churned had significantly shorter tenures compared to those who stayed, which underscores the importance of improving early customer experiences to reduce churn.

These findings aligned with the function of the dashboard by providing stakeholders with actionable insights. The visualized data allowed for better decision-making in areas such as customer retention strategies, pricing models, and targeted marketing efforts.

C6:ANALYSIS LIMITATIONS

The data analysis had a few limitations that could affect the depth and accuracy of insights:

1. The dataset primarily focused on demographic and service-related variables such as gender, contract type, and payment methods. However, it lacked more granular behavioral data, such as customer engagement or service satisfaction, which could provide deeper insights into churn drivers.
2. The analysis was based on static data, providing a snapshot of customer behavior. Changes over time, such as trends in churn rates or the effect of new services, were not captured, limiting the ability to track shifts in customer behavior.
3. The data did not account for external factors such as market competition, economic conditions, or company-wide initiatives, which could influence customer churn and behavior outside of the variables analyzed.