

**Performance Assessment for
D211: Advanced Data Acquisition
Attempt 1**

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D211: Advanced Data Acquisition
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Part 1: Data Dashboards

A1. Both Dashboard Data Sources

1. Churn data set from WGU
2. [Telecom Customer Churn Prediction data from Maven Analytics](#)

A2. Dashboard Installation Instructions

1. Move "D211_MendezD.zip" to the location 'C:\Users\Public\Downloads'
2. Right click the zip file and extract all
3. Open pgAdmin, from the desktop or from the taskbar
4. In pgAdmin's left panel, access the Churn database: Servers > Databases > Churn
5. Right click on the Churn database and select the Query Tool from the menu
6. Click the 'Open File' icon above the words 'Query Editor' and navigate to
'C:\Users\Public\Downloads\D211_MendezD_PA\D211_MendezD_PA'
Change format to 'All Files' and select 'D211_SQL.txt'
7. Once this file is loaded into the Query Tool, Execute the query using the Play button
8. After the query has been successfully executed, close pgAdmin and open Tableau
9. In Tableau, click File > Open, then navigate to
'C:\Users\Public\Downloads\D211_MendezD_PA\D211_MendezD_PA'
and select 'D211_MendezD_PA.twbx'
10. Upon opening this file you will be prompted for a case-sensitive username and password, username: postgres, password: Passw0rd!

A3. Dashboard Navigation Instructions

The dashboard can be accessed via the first tab entitled D211 Advanced Data Acquisition. Upon access, users will be met with three story points, each of which are accessible via the three grey boxes at the top of the dashboard, entitled Introduction, Customer Churn Data, and Customer Contract Data, respectively, and the data analysis takes place in the latter of the two story points.

In the first story point, Customer Churn Data, users will see a breakdown of Churn Rate by Company which is partitioned by Gender, pie charts depicting the Percent of Churn by company, as well as a map with colored dots that convey whether or not a customer has churned or not. All of these visualizations can be filtered by Source or Churn by clicking the filters on the right, and each visualization serves as a filter as well, by clicking a metric and hitting escape to clear the filter.

The second story point, Customer Contract Data, users will be met with five visualizations. This story point visualizes average tenure and churn rate across the three contract durations (month-to-month, one year, and two year) as bar charts, pie charts of contract durations broken down by gender, as well as averages of monthly charge and tenure.

A4. Provide all SQL code or other code supporting the dashboard in text format. All visualizations can be filtered in the same manner as the first story point, either by clicking the filters on the right, or by clicking anywhere on the visualization.

A4. All SQL Code

```
-- Table: public.churn_union
-- DROP TABLE public.churn_union;
CREATE TABLE public.churn_union
(
    "Table Names" character varying(8192) COLLATE pg_catalog."default",
    "Source" character varying(8192) COLLATE Pg_catalog."default",
    customer_id character varying(8192) COLLATE pg_catalog."default" NOT NULL,
    lat double precision,
    lng double precision,
    age bigint,
    marital character varying(8192) COLLATE Pg_catalog."default",
    churn character varying(8192) COLLATE pg_catalog."default",
    gender character varying(8192) COLLATE pg_catalog."default",
    tenure double precision,
    monthly_charge double precision,
    city character varying(8192) COLLATE pg_catalog."default",
    zip bigint,
    duration character varying(8192) COLLATE pg_catalog."default",
    payment_type character varying(8192) COLLATE pg_catalog."default",
    children bigint,
    CONSTRAINT churn_union_pkey PRIMARY KEY (customer_id)
)

TABLESPACE pg_default;

ALTER TABLE public.churn_union
    OWNER to postgres;

copy churn_union
FROM 'C:\Users\Public\Downloads\churn_union.csv'
DELIMITER ','
CSV HEADER;
```

Part 2: Demonstration

B. Panopto Presentation

<https://wgu.hosted.panopto.com/Panopto/Pages/Viewer.aspx?id=337c2229-1a57-431b-a95b-b2710173f83c>

Part 3: Report

C1. Purpose and Function of Dashboard

The purpose of this dashboard was to allow stakeholders of the WGU telecommunications company to compare their churn data against that of a competing telecommunications company. By providing key metrics like Churn Rate by Gender, Average Tenure, and Average Monthly Charge, the dashboard sought to provide clarity on churn across a demographic and insight into potential reasons for churn. Using this dashboard, our team would be able to continuously update it and compare our progress and growth against a competing company.

C2. Justification of Tools

The tools used to perform this analysis were Tableau Prep, pgAdmin, and Tableau. Tableau Prep was shown to be very powerful in its ability to quickly clean the competitor data, and boasts the added functionality of saving data cleaning flows for repeated use. This could prove beneficial to maintain and continuously update the dashboard. Once the data was cleaned, Tableau Prep allowed for the union of the two data sets, and to ultimately export the unioned data for use in pgAdmin. pgAdmin was chosen for its ability to connect to the PostgreSQL database, into which the unioned data was imported. From there, Tableau was used for its functionality of accessing the PostgreSQL databases in order to produce the final product. Tableau was used for its simplicity and ability to quickly generate informative visualizations from data accessed via database connections.

C3. Data Preparation

The data preparation was completed in Tableau Prep using the following steps in the flow:

1. Fields were renamed to match fields in the WGU churn data set
 - a. From [Customer_ID] to [customer_id]
 - b. From [Gender] to [gender]
 - c. From [Marital] to [marital]
 - d. From [Longitude] to [lng]
 - e. From [Latitude] to [lat]
 - f. From [Zip code] to [zip]
 - g. From [City] to [city]
 - h. From [Tenure in months] to [tenure]
 - i. From [Monthly Charge] to [monthly_charge]
 - j. From [Contract] to [duration]
 - k. From [Payment Method] to [payment_type]
 - l. From [Customer Status] to [churn]
 - m. From [Number of dependents] to [children]
2. Fields that were not in the WGU churn data set were removed
 - a. Internet Service
 - b. Paperless Billing
 - c. Streaming Movies
 - d. Streaming TV

- e. Premium Tech Support
 - f. Avg Monthly GB Download
 - g. Multiple Lines
 - h. Number of Referrals
 - i. Offer
 - j. Phone Service
 - k. Churn Reason
 - l. Churn Category
 - m. Total Revenue
 - n. Total Long Distance Charges
 - o. Total Extra Data Charges
 - p. Unlimited Data
 - q. Total Charges
 - r. Avg Monthly Long Distance Charges
 - s. Internet Type
 - t. Online Security
 - u. Online Backup
 - v. Device Protection Plan
 - w. Streaming Music
 - x. Total Refunds
3. Re-Encoded Customer Status (Churn) Responses
 - a. From [Joined] to [No]
 - b. From [Stayed] to [No]
 - c. From [Churned] to [Yes]
 4. Added a 'Source' Field to indicate where the data originated
 5. Joined WGU 'churn' database tables, 'contract', 'customer', 'location', and 'payment'
 6. Removed id fields after the join
 7. Unioned the WGU data and the competitor data
 8. Exported data as churn_union.csv
 9. Once the data was inside pgAdmin, SQL was used to specify 'customer_id' as the primary key

C4. Steps to Create Dashboard

1. Churn Map worksheet
 - a. AVG(Lng) for columns, AVG(Lat) for rows, Churn for color, Zip for detail, Source for filter
2. Churn Rate by Company worksheet
 - a. Created a calculated field, Churn Rate
 - b. Source and Gender for rows, Churn Rate for text, Source for filter
3. Percent of Churn pie chart worksheet
 - a. Source for Column, Churn for color, CNT(Churn) for angle, Source for filter
4. Contract Duration by Gender worksheet
 - a. Duration for columns, Gender for color, CNT(Gender) for angle, Source for filter
5. Avg Tenure table worksheet

- a. Duration for Rows, AVG(Tenure) for text, Source for filter
- 6. Avg Monthly Charge table worksheet
 - a. Duration for Rows, AVG(Monthly Charge) for text, Source for filter
- 7. Average Tenure vs Duration bar chart worksheet
 - a. Duration for columns, AVG(Tenure) for rows, Gender for color, AVG(Tenure) for text, Source for filter
- 8. Churn Rate vs Duration bar chart worksheet
 - a. Duration for columns, Churn Rate for rows, Duration for color, Source for filter
- 9. These eight worksheets were organized in dashboards to produce the story

C5. Results of the Analysis

The results of the analysis showed that the percent churn of the WGU telecom company was comparable to that of the competitor. However, it showed that male WGU customers had a slightly higher rate of churn than the other WGU demographics, and higher than either male or female customers in the competitor data. Further, the analysis showed that both organizations had a higher incidence of churn with the month-to-month subscribers, suggesting that this demographic could be targeted with incentives or special offers to promote retention. The analysis provided good insight into who is likely to churn based on their contract duration, which has the potential to be useful in the decision making of management.

C6. Limitations of the Analysis

A major limitation of the analysis is that the data within the churn database on the LabsOnDemand system was severely lacking. The LOD data had significantly less fields than the data that was previously available, which made it harder to draw comparisons and gain insight.

D. Acknowledgement of Web Sources

No third-party code was used to support this analysis.

E. Acknowledgement of Sources

No third-party references were necessary for this analysis.