Documentation Week 1 - Liv

Presentation Link
🔲 STAT 390: Presentation 1

Dashboard/Code Link

[Dashboard](#)

[CAR Dashboard](#)

What I Did

Our team is developing a Power BI dashboard to analyze Legal Aid's phone system and identify inefficiencies in how clients navigate automated menus. The goal is to reduce caller frustration and support data-driven decisions for simplifying call flows.

My key contributions included:

- New Metric Ideation: Helped design and define Submenu Efficiency (average number of steps before failure).
- Power BI Support: Helped group members import data and start exploratory visuals.
- Data Cleaning/EDA (All Calls Dataset):
  - Edwin and I worked on the following:
  - Converted the Called number column to Text, since it contained special characters (#) that caused Power BI import errors.
  - Removed all records with Duration = 0 to prevent skewed averages.
  - Standardized Contact Session ID as a consistent session identifier, since External Caller ID varied between calls.
- Exploratory Analysis (CAR Dataset):
  - I worked on the following on my own:
  - Created a variable to count how many menus are navigated.
    - Using COUNTIF formula in Excel
  - Clustered Column Charts:
    - Count of Calls by Average Number of Submenus Navigated
    - Average Number of Submenus Navigated by Activity Type

How This Helped the Project

- Columns Used:
  - From All Calls Dataset: Duration, Redirect reason, Call outcome, User type, Answer indicator.
  - From CAR Dataset: Contact Session ID, Activity Name, Menus Navigated (new).

- Insights Derived:
  - "Deflection" and "Unconditional" redirect reasons have the longest average durations, suggesting possible routing inefficiencies.
  - "FollowMe" and "NoAnswer" are most frequent redirect reasons but have shorter durations, indicating quick hangups or missed calls.
  - Automated systems (like VirtualLine and AutomatedAttendantVideo) tend to have shorter call times, likely due to quick routing or early disconnections.
  - These findings helped guide metric design (Submenu Efficiency and Redirection Performance) which quantify caller effort and system success.
  - A better understanding of the average amount of submenus navigated.
  - Which activities are creating the most complication in having to navigate many submenus.
- Questions for Cynthia:
  - In the Redirect Reason column, what does an "N/A" value represent?
    - Does it mean the call was never redirected, or that the redirect data wasn't captured for that session?
  - When a call ends in a ClosedQueueMenu, does Webex record that as a "failed" or "closed" outcome in the data, or is that outcome only visible in the CAR dataset?
  - For Duration, does that value reflect the entire call length (including ringing and menu navigation), or only the time once the call is answered or queued?

Issues Faced & Resolutions

Issue	Cause	Fix
Data Type Errors	Called number contained symbols like #, breaking Power BI import	Converted to Text in Power Query
Zero-Duration Calls	Invalid data rows	Filtered out during import
Unstable Caller IDs	External Caller ID changed per call	Used Contact Session ID for unique session tracking

Power BI Web Limitations	Couldn't change column data types or apply transformations online	Switched to Power BI Desktop (on Edwin's PC) for full functionality

Next Steps

- Expand EDA using both All Calls and CAR datasets to analyze:
  - Call outcomes, duration distributions, and submenu usage.
- Refine metrics:
  - Submenu Efficiency – average steps before a failed call.
    - Create a graph showing average submenus navigated to and if there are any connections between the amount of submenus navigated to with other variables.
  - Redirection Performance – % of redirected calls successfully connected.
- Add new metrics:
  - Closed Queue Exposure Rate – % of calls ending in Closed Queue.
  - Navigation Time Wasted – avg. time spent before reaching a dead end.
- Build final dashboard model with improved filters and visual interactivity.

Summary

This phase focused on cleaning data, exploring redirection trends, and defining new performance metrics to measure system efficiency. This was mostly a more basic dive into the data and figuring out Power BI, but the findings provide a foundation for deeper analysis in Presentation 2, by connecting caller navigation patterns to specific bottlenecks in Legal Aid's phone system.