



WFYI – Data Visualization using PowerBI

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Team Introduction



Members

Izzy Austin – Junior, Computer Science
Nick Donnelly – Senior, Actuarial Science
Nolan Knight – Senior, Computer Science
Maddie Neely – Senior, Data Science
Maddy Bloom – Senior, Psychology
Erin Penner – Senior, Computer Science
Nic Reilly – Senior, Computer Science

Client Background and Information



WFYI is a nonprofit organization providing central Indiana with NPR radio and PBS television, while also focusing on the local community. They're known for their quality programming and being a partner in education, health, public affairs and the arts since 1970. Their mission is "trusted journalism, inspiring stories and lifelong learning".

WFYI came to us because they are switching to a new data tracking system, and all previous data stored in their old system was going to be removed. Their plan was to export the old data to .csv files and import it into an economically efficient data interpretation system. After preliminary research, we came to the conclusion that the software Power BI would be the most cost efficient and dynamic tool to present the data in proportions that the company preferred.

Client Tour

Touring WFYI gave our team a good insight into the amazing work that the company does for the community as well as an insight into the daily operations of the broadcasting network.



Results

Report 1:

Desired Report Outputs:

- Amount of hosts accessing the stream
- Total number of GBs sent
- Total seconds spent listening

Outputs:

- Data shown for a given date/time range
- Show based on a day, week, or month



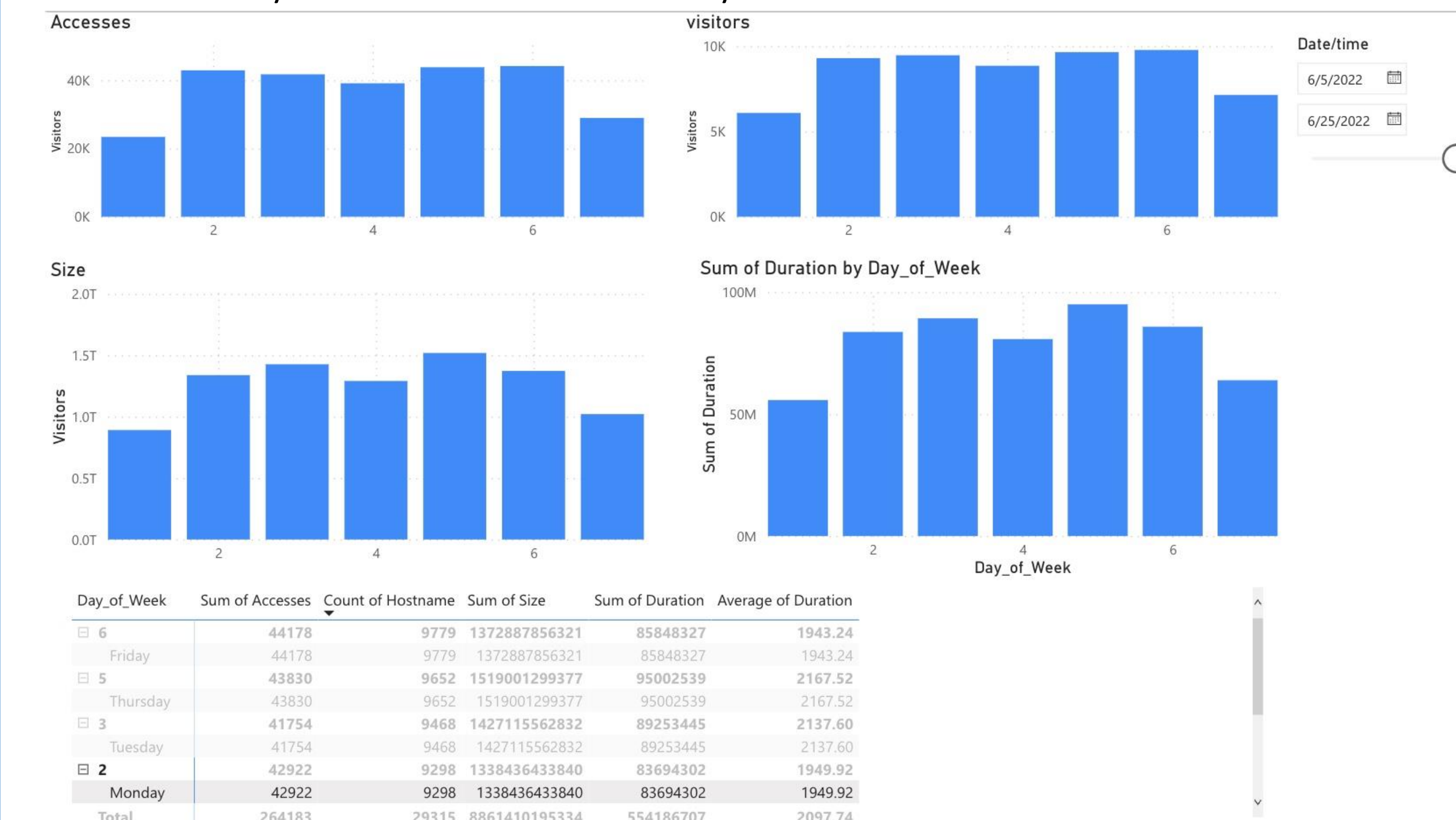
Report 2:

Desired Report Outputs:

- Count of unique visitors in a given date range and interval
 - Average Duration spent listening during given date range and interval
- Outputs:

- Can be shown in table or graph

- Should show day of week as well as hour of day



Objectives

- Research appropriate data visualization tools and storage methods
- Create a report that lets the user pick a date range and a reporting interval for grouping the data within the selected date range.
- Create a report that groups data by the day and hour for a given date range and outputs a single summary table for the days of the week and the 24 hours within those days.
- Produce instruction manuals to allow WFYI staff to generate more in depth reports to their own specifications.

Challenges

- The large data files given to the team provided initial challenges on how to organize and filter the information. The files combined led to a master file containing non-duplicated rows of size (2.4 GB).
- The data provided to us contained duplicated data. This was discovered after matching our data reports to the clients previous reporting system. This caused a setback as it was discovered late in the fourth sprint.
- This larger data set made it harder for the team to navigate through different data aspects, as well as finding issues within the data to remove. Learning how to use R was crucial in our deciphering of the data.
- Our client requested midway through the project to add to the master file. Adding new data resulted in a change to the static data set. This was not possible on our shared web browser. Therefore, the data had to be reconfigured on a desktop application and transferred. This was a time consuming process and set the progress of the reports back. This set back was also due to the recreation of the reports as the new data set required the reports to be rebuilt to fit the new data file.

Conclusion/Reflection

During our time working with Chris and WFYI, we learned how much work goes into choosing the right application to use for a given project and we learned how to navigate and use a new application. We got to use our analytical skills to create visually appealing graphs that worked with functional requirements provided from our client. Working in our group, we gained valuable teamwork and communication skills. This allowed us to exponentially increase our collaboration with one another and make significant progress in our work as the semester progressed. Lastly, this project gave us the opportunity to work through challenges presented to us. One of the largest challenges we had was uploading data multiple times, as it was a highly inefficient process. However, we were able to overcome these obstacles and provide a formidable product for our client.

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