

DATA ANALYST: SQL PORTFOLIO

PREPARED BY



Professional Background

I am a multi-talented professional with a diverse background in economics, education, and email copywriting. I earned a Bachelor of Science degree in Economics and honed their skills as a teacher for five years, fostering critical thinking and problem-solving in students.

With a passion for writing, I transitioned into email copywriting and has since become an expert in crafting compelling, persuasive emails that drive conversions and sales. In addition, I possess excellent skills in data entry, Microsoft Excel, Google Sheets, and Microsoft Word, enabling me to analyze and organize data effectively.

The unique blend of analytical and creative skills, combined with strong work ethic and attention to detail, makes me a valuable asset in any data analysis project. And I thrive in collaborative environments and am committed to delivering high-quality work on time and within budget.

Whether it's interpreting data trends or crafting engaging email content, I am dedicated to achieving outstanding results and exceeding expectations.



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Introduction

As a data analyst, I undertook a project for Education For All, a charity organization, at the request of the head of fundraising. The objective was to analyze donor insights and rates, with the aim of increasing the number of donors, donation frequency, and the overall value of donations within a given database. The project had a tight timeline of two weeks to be completed before the next fundraising strategy meeting for the following year.

To begin, the database was imported into an SQLite online server and managed using SQL commands. Two different datasets, namely Donation_Data and Donor_Data2, were imported and joined based on their respective IDs, allowing for seamless utilization of the data within the row table. The SQL commands employed included SELECT, FROM, JOIN, ORDER BY, WHERE, BETWEEN, AND, OR, SUM(), COUNT(), AVG(), GROUP BY, and HAVING.

Once the data was prepared, an exploratory analysis was conducted, involving calculations of averages, means, medians, minimums, and maximums. Subsequently, the business problems were addressed, leading to the identification of five root causes within the Education For All fundraising efforts, based on insights derived from the dataset. These insights, along with the visualizations created, played a crucial role in devising effective solutions to increase donors, donation frequency, and the overall value of the charity organization.

Through this project, I was able to leverage my data analysis skills to provide valuable recommendations to Education For All, aligning their fundraising strategies with their goals.

Root Cause Analysis

Root cause analysis is a systematic process used to identify the underlying causes or factors that contribute to a problem or issue. It involves digging deep into the various layers of a problem to uncover its fundamental causes rather than focusing solely on its symptoms. The goal of root cause analysis is to address the root causes directly, leading to more effective and sustainable solutions.

By conducting a root cause analysis, organizations can gain a deeper understanding of the underlying factors contributing to a problem, enabling them to develop more targeted and impactful solutions. It helps in preventing the recurrence of issues and promotes continuous improvement within processes and systems.

DEFINING THE BUSINESS PROBLEM AND ANALYTICAL QUESTIONS FOR DATA ANALYSIS

To conduct a comprehensive root cause analysis on the dataset of the charity organization Education For All, it is crucial to define the business problem and formulate a series of analytical questions. The primary objective is to enhance the organization's donor base, donation frequency, and overall value.

In order to achieve this objective, a thorough analysis of the Donation_Data and Donor_Data2 databases will be performed. The dataset includes essential information such as first name, last name, email, gender, job field, donation amount, state, donation frequency, university, and second language.

The analysis will be conducted using SQL queries to extract meaningful insights and Tableau to create visualizations that will aid the Head of Fundraising and Team in understanding the dataset's implications.

Root Cause Analysis

The following analytical questions will be explored during the root cause analysis:

- What is the total number of donors and how much did they donate?
- Who are the top 20 male and female donors, their job field, donation, state, donation frequency, university and second language?
 - (a)What is the total number of male and female donors each?
 - (b)The average donation of male and female donors each?
- What are the total donation for each donation frequency and how does it vary by State?
- Who are the male and female donor
 - (a)went to the university
 - (b) didn't go to the university and how many donated \$300 and above by donation frequency?
- What is the total donation of donors who have a second language?

By addressing these analytical questions through data analysis and SQL queries, a thorough understanding of the root causes behind the organization's donor-related challenges will be obtained. The insights gained from this analysis will pave the way for data-driven decision-making and effective strategies to increase the number of donors, donation frequency, and overall value for the charity organization Education For All.

The Root Cause Analysis: 5 WHY's:

1. Why does the organization not have many donors? Because they don't know how to increase the number of donors.
2. Why don't they know how to increase the number of donors? Because they don't know the donation frequency of the donors.
3. Why don't they know the donation frequency of donors? Because they don't know the donation value of donors.
4. Why don't they know the donation value of donors? Because they didn't collect the data on date of birth and age group of the donors on their database.
5. Why didn't they collect information on their date of birth, age group and when they joined their organization? Because they don't know how the donors heard about the organization.

Insights

To gain insights from the dataset we are going to import them into the SQL server, then run the two different dataset namely Donation_Data and Donor_Data2 and join them on their respective ID.

To run the Donation_Data file on SQLite Online

Syntax:

```
SQLite  SQLite.1
1 SELECT *
2 FROM Donation_Data;
```

To run the Donor_Data2 on SQLite online

Syntax:

```
SQLite  SQLite.1
1 SELECT *
2 FROM Donor_Data2;
```

To Run two datasets by joining it.

Syntax:

Using **JOIN & ON**

```
SQLite  SQLite.1
1 SELECT *
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id;
```

To Run the dataset that is needed to understand the problem.

Syntax:

Using **JOIN & ON**

```
SQLite  SQLite.1
1 SELECT first_name, last_name, email, gender, job_field, donation, state, donation_frequency, university,second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id;
```

Insights

To find the exploratory analysis of the dataset:

Total Average Amount of Donations by Donors is 249.1

Syntax:

```
SELECT Avg (donation)  
FROM Donation_Data;
```

To run the Minimum Amount of Donation by Donors is 5

Syntax:

```
SELECT MIN(donation)  
FROM Donation_Data;
```

To run the maximum Amount of Donation by Donors is 500

Syntax:

```
SELECT MAX(donation)  
FROM Donation_Data;
```

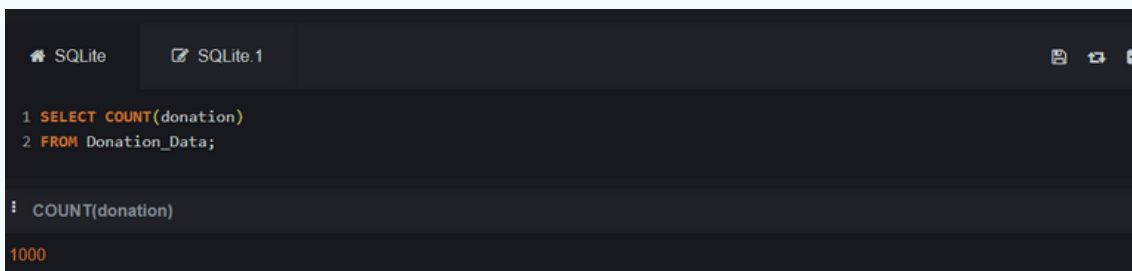

Insights

Findings of the Business Problem using SQL syntax

Findings 1:

What is the total number of donors and how much did they donate?

Total Number of Donors

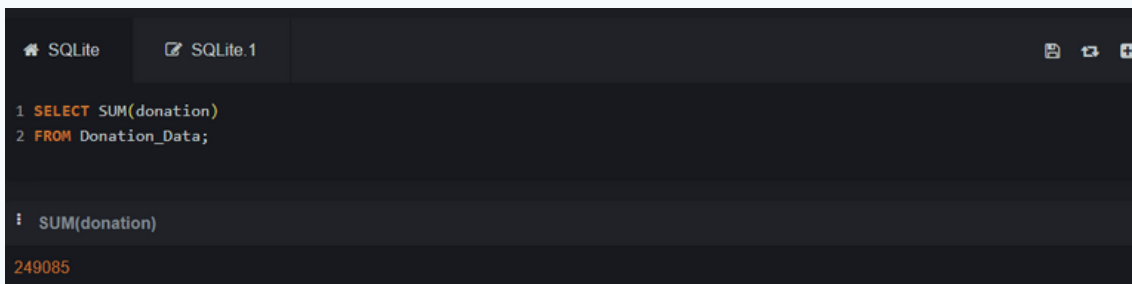


A screenshot of a SQLite query editor interface. The top bar shows 'SQLite' and 'SQLite.1'. The query area contains the following SQL code:

```
1 SELECT COUNT(donation)
2 FROM Donation_Data;
```

The results pane shows a single row with the value '1000'.

Amount Donated by all the Donors



A screenshot of a SQLite query editor interface. The top bar shows 'SQLite' and 'SQLite.1'. The query area contains the following SQL code:

```
1 SELECT SUM(donation)
2 FROM Donation_Data;
```

The results pane shows a single row with the value '249085'.

Insights

Findings of the Business Problem using SQL syntax

Findings 2:

Who are the top 20 male and female donors, their job field, donation, state, donation frequency, university and second language?

(a) What is the total number of male and female donors each?

(b) The average donation of male and female donors each?

Top 20 Male and Female Donor

```
1 SELECT first_name, last_name, email, job_field, gender, donation, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE gender = 'Male'
6 OR gender = 'Female'
7 ORDER BY donation DESC
8 LIMIT 20;
```

Total number of Male and Female Donor each

```
1 SELECT COUNT (gender)
2 FROM Donation_Data
3 WHERE gender = 'Male';

COUNT(gender)

492
```

```
1 SELECT COUNT (gender)
2 FROM Donation_Data
3 WHERE gender = 'Female';

COUNT(gender)

508
```

Average Donation of Male And Female each

```
1 SELECT ROUND (AVG (donation))
2 FROM Donation_Data
3 WHERE gender = 'Male';

ROUND (AVG (donation))

259
```

```
1 SELECT ROUND (AVG (donation))
2 FROM Donation_Data
3 WHERE gender = 'Female';

ROUND (AVG (donation))

239
```

Insights

Findings of the Business Problem using SQL syntax

Findings 3:

What is the total donation for each donation frequency and how does it vary by State?

Donation frequency Once

```
1 SELECT SUM(donation)
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE donation_frequency = 'Once';
```

```
1 SUM(donation)
```

64586

Donation Frequency Weekly

```
1 SELECT SUM(donation)
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE donation_frequency = 'Weekly';
```

```
1 SUM(donation)
```

59152

Donation Frequency Monthly

```
1 SELECT SUM(donation)
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE donation_frequency = 'Monthly';
```

```
1 SUM(donation)
```

59680

Donation Frequency Yearly

```
1 SELECT SUM(donation)
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE donation_frequency = 'Yearly';
```

```
1 SUM(donation)
```

65667

Variation By State

```
1 SELECT first_name, last_name, email, gender, job_field, donation, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 GROUP BY state HAVING 500
6 ORDER BY donation_frequency DESC;
```

Insights

Findings of the Business Problem using SQL syntax

Findings 4:

Who are the male and female donor:

(a) went to the university?

(b) didn't go to the university and how many donated \$300 and above by donation frequency?

University Male Donor

```
1 SELECT first_name, last_name, email, gender, job_field, donation, state, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE gender = 'Male'
6 AND university != 'NULL'
7 AND donation > 300
8 ORDER BY donation_frequency DESC;
```

Non University Male Donor

```
1 SELECT first_name, last_name, email, gender, job_field, donation, state, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE gender = 'Male'
6 AND university IS NULL
7 AND donation > 300
8 ORDER BY donation_frequency DESC;
```

University Female Donor

```
1 SELECT first_name, last_name, email, gender, job_field, donation, state, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE gender = 'Female'
6 AND university != 'NULL'
7 AND donation > 300
8 ORDER BY donation_frequency DESC;
```

Non University Female Donor

```
1 SELECT first_name, last_name, email, gender, job_field, donation, state, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE gender = 'Female'
6 AND university IS NULL
7 AND donation > 300
8 ORDER BY donation_frequency DESC;
```

Insights

Findings of the Business Problem using SQL syntax

Findings 5:

What is the donation and donation frequency of donors who have a second language?

Null - Second Language Donor Donation Between 300 & 500

```
1 SELECT first_name, last_name, email, gender, job_field, donation, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE donation BETWEEN 300 AND 500
6 AND second_language IS NULL
7 ORDER BY donation_frequency DESC;
```

Second Language Donor Donation Between 300 & 500

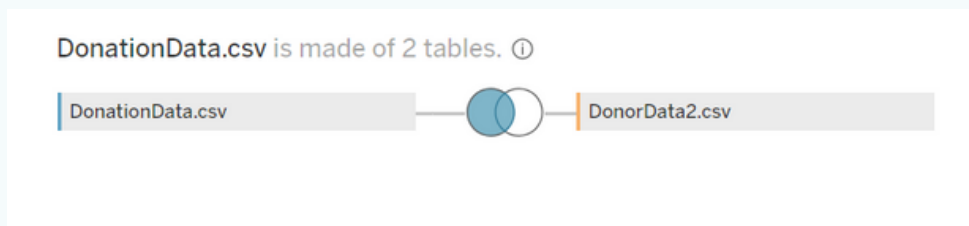
```
1 SELECT first_name, last_name, email, gender, job_field, donation, donation_frequency, university, second_language
2 FROM Donation_Data
3 JOIN Donor_Data2
4 ON Donation_Data.id = Donor_Data2.id
5 WHERE donation BETWEEN 300 AND 500
6 AND second_language != 'Null'
7 ORDER BY donation_frequency DESC;
```


Insights

Tableau Visualizations.

The dataset, Donation_Data csv file was first uploaded on tableau while Donor_Data2 was uploaded and joined to it at the Inner Join. But to be able to work both dataset, the Donor_Data2 was joined at the Left Join .

Fig 1:



Findings 1:

Fig 2:

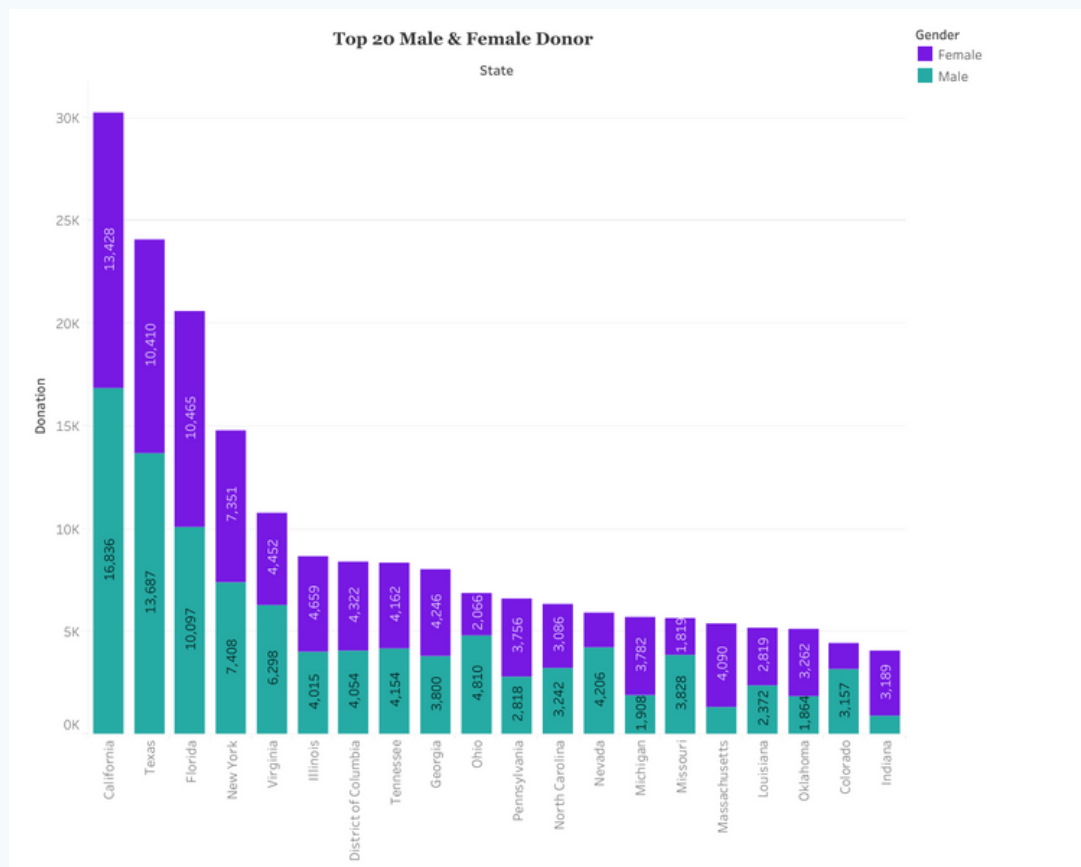


Findings

Tableau Visualizations From the SQL Findings

Findings 2:

Fig 3:

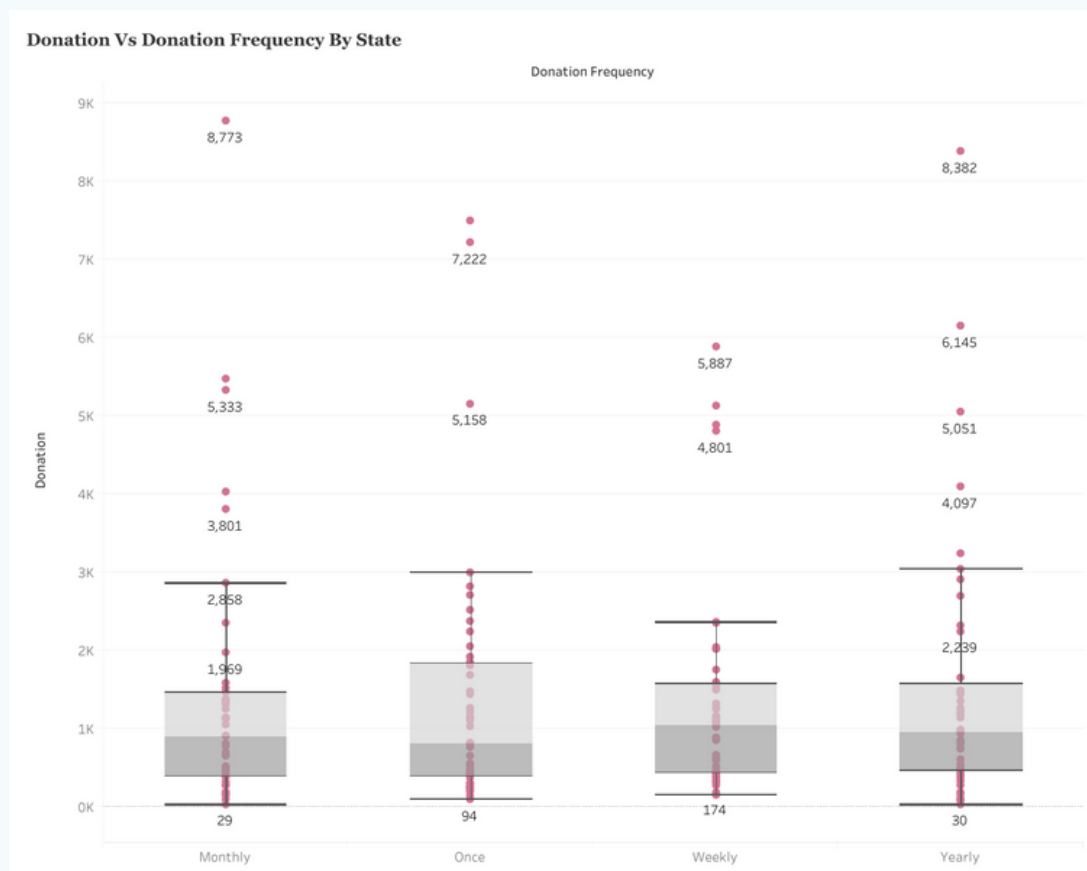


Findings

Tableau Visualizations From the SQL Findings

Findings 3:

Fig 4:

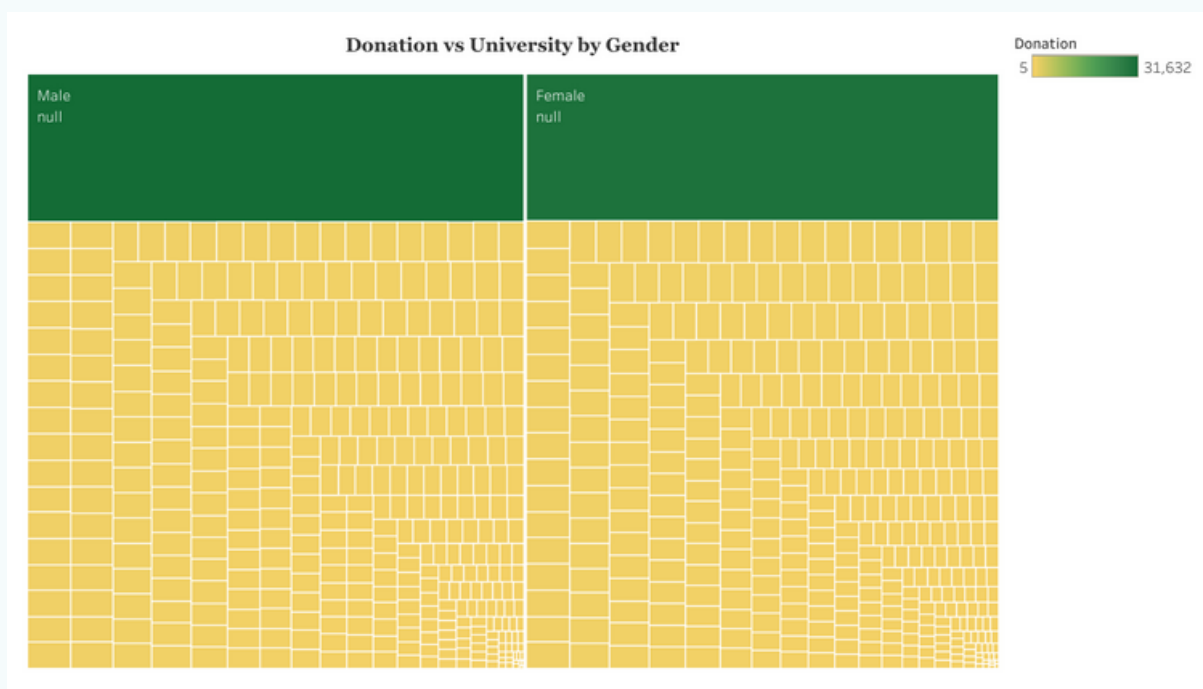


Findings

Tableau Visualizations From the SQL Findings

Findings 4:

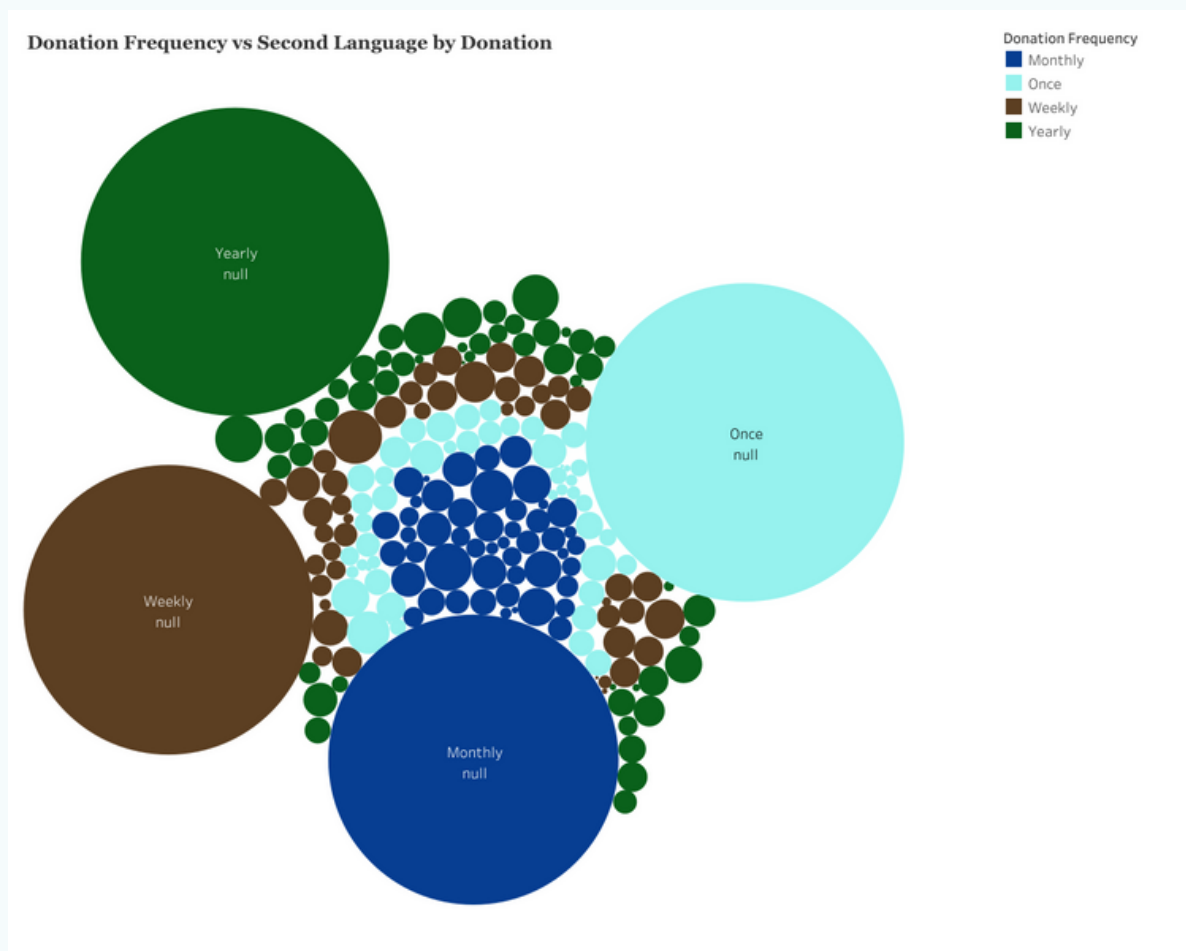
Fig 5:



Findings

Tableau Visualizations From the SQL Findings

Findings 5:
Fig 6



Findings and Recommendations

The head of fundraising at Education for All, a charity organization, has tasked the fundraising team with analyzing the donation data to identify strategies for increasing the number of donors, donation frequency, and the value of donations. With an upcoming fundraising event on the horizon, the team has a pressing need to provide data-driven insights to inform their fundraising strategy and drive increased donations.

To tackle this challenge, I took the initiative to conduct a comprehensive analysis using SQL and created a visualization dashboard using Tableau. By collecting and synthesizing the donation data, I gained valuable insights that can guide efforts to enhance donor engagement and optimize fundraising outcomes.

Findings:

Upon conducting an analysis of the donation data using SQL and visualizing the results in Tableau, several key findings emerged. The dataset provided insights on how Education for All can increase the number of donors, donation frequency, and the value of donations. The following are the main findings from the analysis:

1. Demographic Insights:

- The dataset contains 1000 donors, with a mix of male and female donors.
- Donation frequency varies among donors, including once, daily, weekly, monthly, and yearly.
- Donors come from diverse job fields, and not all of them have a university education.
- A significant portion of donors have a second language.

2. Average Donation and Total Amount:

- The average amount donated by all donors is \$249.1, with a minimum of \$5 and a maximum of \$500.
- The total number of donors in the dataset is 1000, and the total amount donated by all donors is \$249,085.

Findings and Recommendations

3. Gender Analysis:

- The dataset includes 492 male donors and 508 female donors.
- On average, male donors contribute approximately \$259, while female donors contribute around \$239.
- Despite having a larger number of female donors, male donors collectively donated a higher total amount (\$127,628) compared to female donors (\$121,457).

4. State Analysis:

- Michigan and New York have the highest single donations of \$500 for male donors, while Virginia and Delaware have the highest single donations of \$499 for female donors.
- California leads in total donations, with \$16,836 for male donors and \$13,428 for female donors. Other significant states include Texas, Florida, Ohio, Pennsylvania, Colorado, and Indiana.

5. Donation Frequency:

- Donation frequencies include once, weekly, monthly, and yearly.
- Yearly donation frequency shows the highest total amount of donations, followed by monthly, weekly, and once.
- California is the top state for all donation frequencies, indicating consistent donor contributions from that region.

6. University Analysis:

- Some data entries in the university field are null.
- Donors who attended university and donated above \$300 have a total donation of \$62,268 for males and \$55,444 for females.
- Donors with null university values donated between \$20,636 and \$18,240 for males and females, respectively.

Findings and Recommendations

7. Second Language Analysis:

- Donors with a second language who donated between \$300 and \$500 had a total donation of \$35,766.
- Donors without a second language made larger contributions, with a total donation of \$121,122.
- The visualization shows the distribution of donations for both groups across different donation frequencies.

Recommendations:

Based on the findings, the following recommendations can help Education for All enhance their fundraising efforts:

1. Targeted Marketing Campaigns: Implement personalized marketing campaigns tailored to specific donor segments to attract new donors.
2. Recurring Donation Programs: Encourage donors to contribute more frequently by implementing recurring donation programs and emphasizing the impact of ongoing support.
3. Community Building: Foster a sense of community among donors to enhance engagement and increase donation frequency.
4. Donor Recognition: Offer exclusive benefits or recognition to recurring donors to incentivize ongoing support.
5. Cultivation Strategies: Implement targeted cultivation efforts to demonstrate the impact of donations and encourage larger contributions.
6. Corporate Partnerships: Explore partnerships with corporate entities and matching gift programs to maximize the value of individual donations.

By implementing these recommendations based on data-driven insights, Education for All can strengthen their fundraising strategy, increase donor engagement, and achieve their mission of providing education for all

Conclusion

In conclusion, the analysis of Education for All's donation data has provided valuable insights to increase the number of donors, donation frequency, and the value of donations. Key findings include the diversity of donors, average donation amount of \$249.1, and the influence of demographics on donation behavior.

To enhance fundraising efforts, targeted marketing campaigns, donor relationship cultivation, and personalized outreach strategies are recommended. By leveraging data-driven insights, Education for All can optimize their fundraising strategy and make a greater impact in providing education for all.