PAC DONORS

SQL PROJECT

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Professional Background

With over three years of versatile experience in both office and freelance settings, I have honed my skills as a data analyst. My impactful tenure at Guinness Nigeria was marked by the optimization of supply chain operations through strategic data analysis, resulting in a notable reduction in processing time.

As a National Youth Service Corps (NYSC) graduate, I served as a Data Entry personnel, utilizing Microsoft Excel to navigate extensive datasets and presenting insights through clear Excel tables and PowerPoint presentations. Transitioning to the role of IT Assistant at Delta Broadcasting Service (DBS) Warri, I further strengthened my data management skills over six months.

My commitment to continuous learning is evident in my proficiency in SQL, MS Excel, and Python. Additionally, I bring expertise in visualization tools such as Tableau and Power BI, with ongoing efforts to enhance my skills in R language. Practical applications include the creation of interactive dashboards using Power BI and experimentation with R language in controlled environments.

Notably, my analytical approach focuses on tangible outcomes and quantifiable achievements. At Guinness Nigeria, my data-driven strategies had a direct and positive impact on supply chain efficiency. Eager to contribute this expertise to a remote data analyst role, I am poised to deliver results through a combination of technical proficiency and strategic problem-solving.

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Introduction

This dataset reflects donation data for large donations to PAC. Large donations considered by the Centre for Responsive Politics as any donation over $200. It represents donations by individuals and organisations to PAC for each election cycle.
In the United States, a political action committee (PAC) is a tax-exempt 527 organization that pools campaign contributions from members and donates those funds to campaigns for or against candidates, ballot initiatives, or legislation.

The Business problem is to improve the total amount of funds made from donations to PAC.

I used the dataset pac_donors_all to analyze and answer the business problem.

I applied SQL commands to analyse data: JOIN, ORDER BY, AS, WHERE, AND, OR, SUM(), COUNT(), GROUP BY, HAVING.

Also, I used Root Cause Analysis to understand the problem and ask right questions.

As a result, I have found out crucial insights of provided data sets, prepared visualisations, and report for my team.

Root Cause Analysis

The main business problem is that we need to improve the total amount of funds made from donations by PAC.

To better understand the business problem, I need to analyze the existing database of donation to PAC. I will also present some crucial numbers and visualization of the datasets. So, I decided to ask some questions.

- How many donations do we currently have in our database?
- What is the total amount raised from donations?
- What timeframe does this dataset cover?
- What was the highest donation made?
- What was the lowest donation received?
- Who were the top 10 donations made by contributors?

Also, I decided to apply Root Cause Analysis to the problem to figure out the underlying issues in order to identify appropriate solutions.

1. Why aren't there enough funds from the donations?
   Ans. This is because varying donations from donors. Even though we have donors donating large amounts of money we also have many donating low.

2. Why does donation vary?
   Ans. This is due to the fact we have donors from different backgrounds such as occupation and associations.

3. Why do donors tend to donate small value donations?
   Ans. The American Federation of State/Cnty/Munic Employees donated the least out of all parent association.

4. Why does the American Federation of State/Cnty/Munic Employees donate the least value donations?
   Ans. They donated at a time (mostly between 2009 – 2012) when the donations we received were at the lowest.

5. Why did we receive the lowest donations between 2009 – 2012 election cycles?
   Ans. There was an increase in donations in each new election cycle. This maybe dues to inflation or any other factor.

Insights from the Analysis

I made use of the relational database pac_donors_all to answer the problem.

POSTGRESQl Database Management System was used to find out main insights.

CRIME_DATA includes such data:
- id
- contributor
- address
- occupation
- date_1
- amount
- parent
- sub_pac
- election_cycle

A Pac_donors table was created using Postgresql for all electoral cycles.

```
CREATE TABLE PAC_Donors_2020(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date_1 DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);

CREATE TABLE PAC_Donors_2018(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date_1 DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);

CREATE TABLE PAC_Donors_2016(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date_1 DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);

CREATE TABLE PAC_Donors_2014(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date_1 DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);

CREATE TABLE PAC_Donors_2012(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date_1 DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);

CREATE TABLE PAC_Donors_2010(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date_1 DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);

```

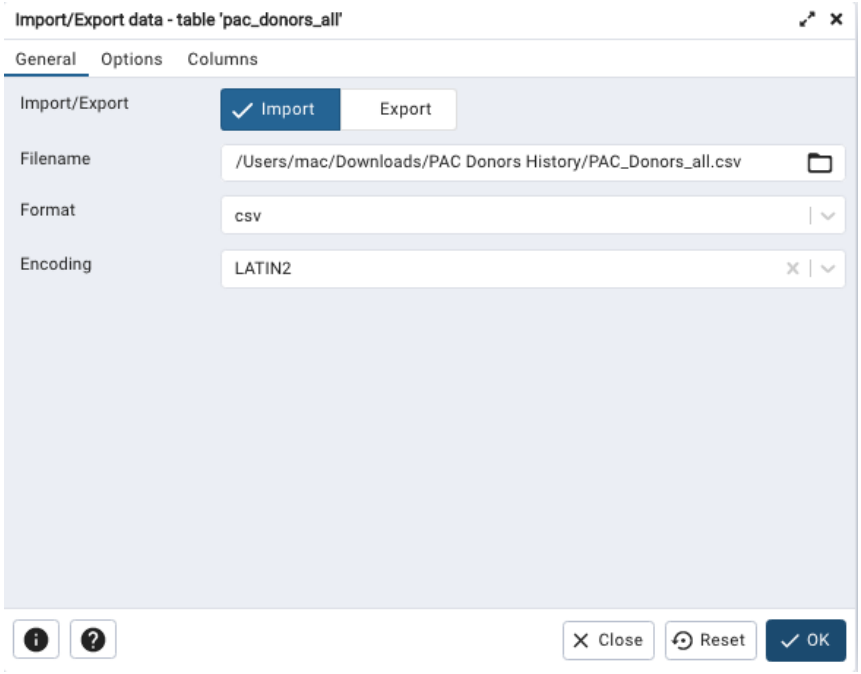
Union All was used to Join all tables after they were created

```
SELECT id, contributor, address, occupation, date_1, amount, parent, sub_pac, election_cycle
FROM pac_donors_2020

UNION ALL

SELECT id, contributor, address, occupation, date_1, amount, parent, sub_pac, election_cycle
FROM pac_donors_2018

UNION ALL

SELECT id, contributor, address, occupation, date_1, amount, parent, sub_pac, election_cycle
FROM pac_donors_2016

UNION ALL

SELECT id, contributor, address, occupation, date_1, amount, parent, sub_pac, election_cycle
FROM pac_donors_2014

UNION ALL

SELECT id, contributor, address, occupation, date_1, amount, parent, sub_pac, election_cycle
FROM pac_donors_2012

UNION ALL

SELECT id, contributor, address, occupation, date_1, amount, parent, sub_pac, election_cycle
FROM pac_donors_2010;
```

A Pac_donors_all table was created for the union of all electoral cycle tables.

```
CREATE TABLE PAC_Donors_all(
    id SERIAL,
    Contributor TEXT,
    Address VARCHAR(100),
    Occupation VARCHAR(100),
    Date DATE,
    Amount MONEY,
    Parent VARCHAR(100),
    sub_pac VARCHAR(100),
    election_cycle INT
);
```

The Pac_donors_all was then imported into the created table with the "LATIN2" Encoding



SELECT statement was used to fetch data from a database.

```
140  SELECT * FROM pac_donors_all;
```

To find the recorded number of donations with the COUNT() Function, I used a command like this:

```
142  SELECT COUNT(amount)
143  FROM pac_donors_all;
```

To find the total amount donated across all electoral cycles, I used the SUM() function:

```
145  SELECT SUM(amount)
146  FROM pac_donors_all;
```

To get the timeframe of the dataset, I used the MIN() and MAX():

```
156  SELECT MAX(date)
157  FROM pac_donors_all;
158
159  SELECT MIN(date)
160  FROM pac_donors_all;
```

To the largest donation made, I used MAX():

```
149  SELECT MAX(amount)
150  FROM pac_donors_all;
```

To the lowest donation made, I used MAX():

```
152  SELECT MIN(amount)
153  FROM pac_donors_all;
```

Top 10 donations:

```
163  SELECT contributor, amount, parent, election_cycle
164  FROM pac_donors_all
165  ORDER BY amount DESC
166  LIMIT 10;
```

I used the GROUP BY function to find the number of donors under each parent association and also the total amount donated. Also, I used the AS command to give an alias to COUNT(*) and SUM(). The ORDER BY query was used to organize the data:

```
175  SELECT parent, COUNT(*) AS Yearly_donors, Sum(amount) AS Total_Donation
176  FROM pac_donors_all
177  GROUP BY parent
178  ORDER BY COUNT(*) DESC;
```

To know the donations made by contributors from the American Federation of State/Cnty/Munic Employees parent association, I used a command like this:

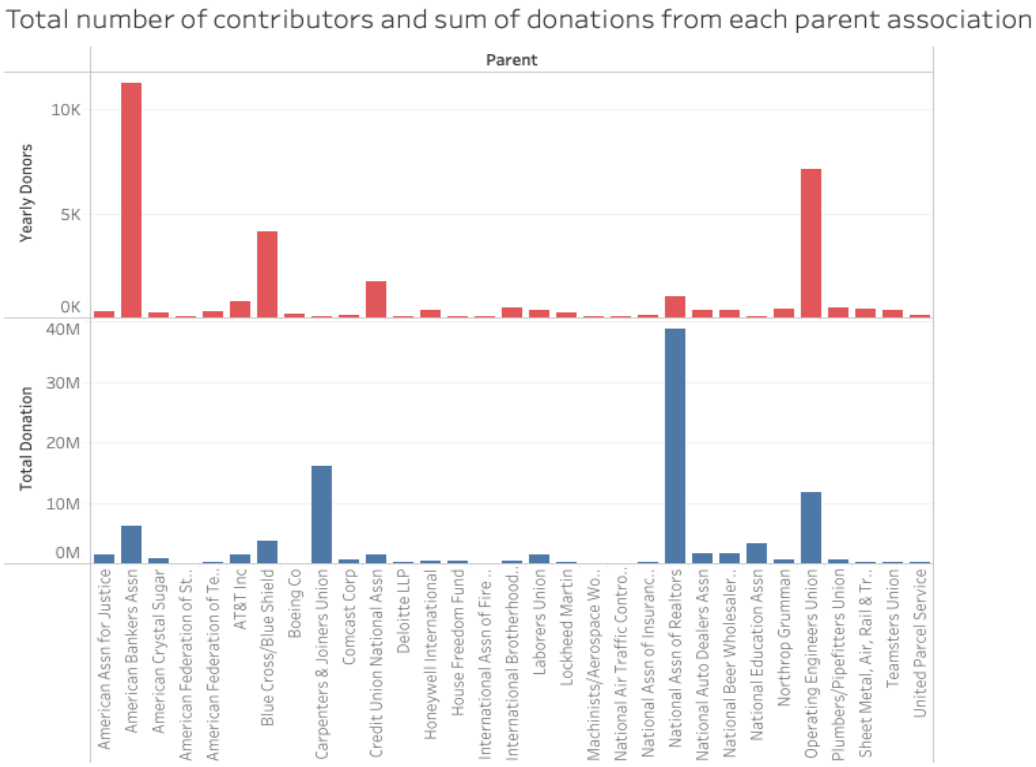
```
180  SELECT contributor, amount, parent, election_cycle
181  FROM pac_donors_all
182  WHERE parent = 'American Federation of State/Cnty/Munic Employees'
183  ORDER BY amount;
```

I used the GROUP BY function to find the number of donations each year and also the total amount donated. Also, I used the AS command to give an alias to COUNT(*) and SUM(). The ORDER BY query was used to organize the data:

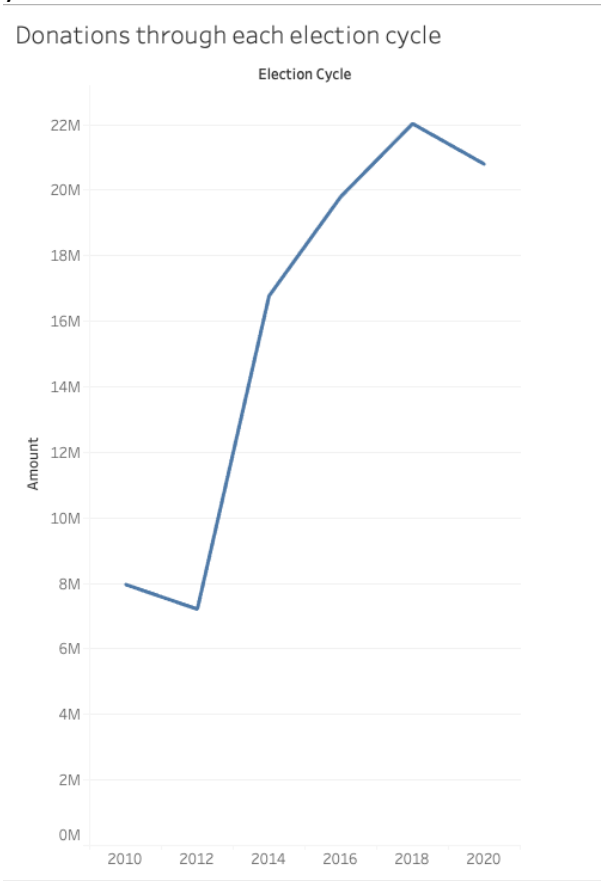
```
170  SELECT election_cycle, COUNT(*) AS Yearly_donors, Sum(amount) AS Total_Donation
171  FROM pac_donors_all
172  GROUP BY election_cycle
173  ORDER BY election_cycle DESC;
```

Tableaus was used as a very powerful tool for data analysis and Visualization for better understanding of the data.

This Tableau clearly shows the total number and sum of donations from every parent association.



The visualization below shows the donations made by contributors through each election year.



Findings and Recommendations

Here are the results of the data set analysis:

- The total number of donations made in the database is 31,934.
- The dataset covers 12 years of donations in 6 electoral cycles from 02/01/2009 to 30/09/2020.
- $94,603,782 was the total amount raised from donations.
- The largest donation made was $9,401,487
- The lowest donation made was $200

The top 10 donations made by contributors.

contributor	amount	parent	election_cycle
NATIONAL ASSOCIATION OF REALTO,	$9,401,487.00	National Assn of Realtors	2018
ASSOCIATION OF REALTORS, NATIONAL	$5,000,000.00	National Assn of Realtors	2016
ASSOCIATION OF REALTORS, NATIONAL	$3,881,731.00	National Assn of Realtors	2014
ASSOCIATION OF REALTORS, NATIONAL	$2,500,000.00	National Assn of Realtors	2014
NATIONAL EDUCATION ASSOCIATION	$2,400,000.00	National Education Assn	2010
ASSOCIATION OF REALTORS, NATIONAL	$1,900,000.00	National Assn of Realtors	2016
ASSOCIATION OF REALTORS, NATIONAL	$1,672,588.00	National Assn of Realtors	2016
ASSOCIATION OF REALTORS, NATIONAL	$1,609,776.00	National Assn of Realtors	2012
ASSOCIATION OF REALTORS, NATIONAL	$1,500,000.00	National Assn of Realtors	2014
INTERNATIONAL UNION OF OPERATING ENGINEERS	$1,200,000.00	Operating Engineers Union	2020

We can see from the above that the largest contribution we receive is from the National Assn of Realtors.

The total number of contributors and sum of donations from each electoral cycle.

election_cycle	yearly_donors	total_donation
2020	5303	$20,798,459.00
2018	5887	$22,033,614.00
2016	5679	$19,809,866.00
2014	5750	$16,777,542.00
2012	4960	$7,215,864.00
2010	4355	$7,968,437.00

Thus, we can notice the increase from 2012 to 2018 electoral cycles.

The total number of contributors and sum of donations from each parent association.

parent	yearly_donors	total_donation
American Bankers Assn	11247	$6,276,989.00
Operating Engineers Union	7134	$11,737,718.00
Blue Cross/Blue Shield	4160	$3,679,214.00
Credit Union National Assn	1721	$1,430,011.00
National Assn of Realtors	1012	$38,761,889.00
AT&T Inc	780	$1,411,577.00
Plumbers/Pipefitters Union	507	$557,088.00
International Brotherhood of Electrical Workers	503	$360,966.00
Sheet Metal, Air, Rail & Transportation Union	423	$137,159.00
Northrop Grumman	420	$647,284.00
Laborers Union	385	$1,366,217.00
Teamsters Union	382	$280,253.00
Honeywell International	354	$496,630.00
National Auto Dealers Assn	350	$1,661,005.00
National Beer Wholesalers Assn	350	$1,750,000.00
American Federation of Teachers	293	$114,310.00
American Assn for Justice	280	$1,400,000.00
Lockheed Martin	248	$249,775.00
American Crystal Sugar	210	$879,516.00
Boeing Co	164	$82,924.00
Comcast Corp	140	$692,500.00
National Assn of Insurance & Financial Advisors	140	$217,121.00
United Parcel Service	140	$162,650.00
Carpenters & Joiners Union	86	$16,057,116.00
American Federation of State/Cnty/Munic Employees	78	$20,000.00
National Education Assn	74	$3,400,125.00
International Assn of Fire Fighters	73	$46,827.00
National Air Traffic Controllers Assn	70	$42,543.00

Machinists/Aerospace Workers Union	70	$82,469.00
House Freedom Fund	70	$353,000.00
Deloitte LLP	70	$248,906.00

We can observe the difference in donations between all parent association. American Bankers Assn has the highest number of contributors while the National Assn of Realtors contribute the largest sum of donations. Also, we can notice that there are four parent associations with the same number of contributors as the association with the least donations while the American Federation of State/Cnty/Munic Employees contribute the lowest sum of donations.

All contributions from the American Federation of State/Cnty/Munic Employees

contributor	amount	parent	election_cycle
BURGER-ARROYO, JUDITH	$200.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$200.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$200.00	American Federation of State/Cnty/Munic Employees	2010
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BURGER-ARROYO, JUDITH	$200.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$200.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$200.00	American Federation of State/Cnty/Munic Employees	2010
ROBERTS, LILLIAN	$220.00	American Federation of State/Cnty/Munic Employees	2012
ROBERTS, LILLIAN	$220.00	American Federation of State/Cnty/Munic Employees	2012
ROBERTS, LILLIAN	$220.00	American Federation of State/Cnty/Munic Employees	2012
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ROBERTS, LILLIAN	$220.00	American Federation of State/Cnty/Munic Employees	2010
RODRIQUEZ, EDWARD	$225.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$230.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$230.00	American Federation of State/Cnty/Munic Employees	2012
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BURGER-ARROYO, JUDITH	$230.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$230.00	American Federation of State/Cnty/Munic Employees	2012
ROBERTS, LILLIAN	$275.00	American Federation of State/Cnty/Munic Employees	2010
ROBERTS, LILLIAN	$275.00	American Federation of State/Cnty/Munic Employees	2010
ROBERTS, LILLIAN	$275.00	American Federation of State/Cnty/Munic Employees	2010
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ROBERTS, LILLIAN	$275.00	American Federation of State/Cnty/Munic Employees	2010
ROBERTS, LILLIAN	$275.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$300.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$300.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$300.00	American Federation of State/Cnty/Munic Employees	2010
BURGER-ARROYO, JUDITH	$345.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$345.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$400.00	American Federation of State/Cnty/Munic Employees	2010
ROBERTS, LILLIAN	$440.00	American Federation of State/Cnty/Munic Employees	2012
BURGER-ARROYO, JUDITH	$460.00	American Federation of State/Cnty/Munic Employees	2012
HYSLOP, JOHN	$1,350.00	American Federation of State/Cnty/Munic Employees	2020

Here, we can notice the American Federation of State/Cnty/Munic Employees contribute the lowest sum and they mostly contributed in the electoral cycles of 2010 and 2012 where we had the least total donations.

Conclusion

I have analysed the dataset Pac_donors_all to help improve the total amount of funds made from donations by PAC.

Hence, we can notice that the contributors are very dissimilar people. They have different occupations and parent associations.

However, there are some crucial points that we need to count and try to improve the total amount of funds made from donations.

To begin with, I discerned that there are varying donations from each contributor. It varies from millions to $200. Thus, we need to focus more on getting donations contributors that make high value donations like National Assn of Realtors.

Furthermore, I noticed that American Federation of State/Cnty/Munic Employees contribute mostly low value donations even though they are not the one of the associations with the least number of contributors. We'll need to find ways to encourage them to make more high value donations.

Moreover, I observed there was a slight decline in sum of donations made in the 2020 election cycle. There was no information in the data as to why this happened, but I recommend it should be well investigated to improve upon the next election cycle.

In conclusion, we must concentrate on improving on all these root causes to better improve on the funds made from contributions.