GoodThought NGO Data Analysis: Donor Impact and Assignment Insights

Executive Summary

This project analyzes the operations and impact of **GoodThought NGO** using comprehensive PostgreSQL database records of assignments, donations, and donor profiles from 2010–2023. Leveraging SQL queries and data-driven analysis, the findings highlight which assignments and regions attracted the highest donations, as well as the distribution of donor types. The work reveals actionable insights for optimizing donor engagement and maximizing social impact.

Project Objectives

- Identify the **top-funded assignments** and explore their regional distribution and donor types.
- Quantify donation patterns by assignment and donor category (individual vs. organization).
- Provide recommendations to guide fundraising and project planning.

Technologies & Tools Used

- **Database:** PostgreSQL (GoodThought NGO dataset)
- **Analysis Platform:** Jupyter Notebook (`notebook.ipynb`)
- **SQL Skills:** Aggregations, joins, CTEs, grouped rankings

Dataset Description

Data tables included:

- **assignments:** Project details, assigned region, total impact score.
- **donations:** Every donation's assignment, donor, value, and date.
- **donors:** Donor info, including whether they are an individual or organization.

Approach & Methodology

1. **Donation Aggregation:** Calculated total donation amounts for each assignment, grouped by donor type (individual vs organization).
2. **Ranking:** Identified the top 5 assignments by total donations using SQL CTEs and ordering.
3. **Impact Assessment:** Analyzed the distribution of high-impact projects—by region and donor type.
4. **Result Presentation:** Summarized findings in tables for actionable review.

Key SQL Query Example

```
WITH cte AS (
  SELECT
    donations.assignment_id,
    SUM(donations.amount) AS total_donation_amount,
    donors.donor_type
  FROM donations
  INNER JOIN donors USING(donor_id)
  GROUP BY assignment_id, donor_type
)
SELECT
  a.assignment_name,
  a.region,
  ROUND(cte.total_donation_amount, 2) AS rounded_total_donation_amount,
  cte.donor_type
FROM assignments a
INNER JOIN cte USING(assignment_id)
ORDER BY rounded_total_donation_amount DESC
LIMIT 5;
```

Results & Impact

Top 5 Assignments by Total Donations and Donor Type:

Assignment Name	Region	Total Donations ($)	Donor Type
Assignment_3033	East	3,840.66	Individual
Assignment_300	West	3,133.98	Organization
Assignment_4114	North	2,778.57	Organization
Assignment_1765	West	2,626.98	Organization
Assignment_268	East	2,488.69	Individual

- **Individuals** provided the largest donation to "Assignment_3033" (East region).
- **Organizations** contributed heavily to multiple assignments in West and North regions.

Insights

- High donation assignments are distributed across all major regions, indicating broad impact.
- Both **individuals and organizations** play crucial roles in funding top assignments; engagement strategies should target both.
- The East and West regions received the highest value single-assignment donations, suggesting targeted fundraising opportunities.

Challenges & Solutions

Challenge	Solution
Multiple donor types per assignment	Used SQL groupings by both assignment and donor type
Potential for duplicate or missing data	Relied on database joins and CTEs for accuracy

Conclusion

GoodThought NGO's most successful assignments—whether funded by individuals or organizations—span diverse regions and reflect strong donor engagement. The SQL-driven approach demonstrates how transparent, data-based insights can improve resource allocation and amplify positive impact.

ISHAK ALAM

Next Steps & Recommendations

- Further segment donation analysis by year for trends and seasonal effects.
- Connect assignment impact scores with donation amounts to inform future project priorities.
- Build an interactive dashboard for real-time monitoring and reporting to management.

For complete code and further detail, see the attached notebook.ipynb file.

ISTIAK ALAM