# Direct Marketing Campaign Analysis

## 1. Project Overview

This project analyzes a direct marketing campaign conducted by a Portuguese banking institution. The campaign involved telephone outreach to promote term deposit subscriptions. The goal was to extract actionable insights from the dataset to optimize future marketing efforts.

## 2. Methodology

We utilized BigQuery SQL for exploratory data analysis (EDA), focusing on campaign performance, client demographics, contact methods, and financial indicators.  
The SQL analysis was complemented by Power BI for visual representation of trends and outcomes.

## 3. Key Insights

- The overall subscription rate was relatively low, indicating room for improvement in targeting.  
- Call duration showed a strong correlation with conversions; longer calls often led to successful subscriptions.  
- Clients aged 30–49 were the most likely to subscribe.  
- Cellular contact outperformed telephone significantly in driving subscriptions.  
- Subscription rates varied by month, suggesting seasonal effects.  
- 'Unknown' values in job, education, and previous outcome should be addressed for better segmentation.

## 4. Recommendations

- Focus on targeting clients aged 30–49 with tertiary education.  
- Emphasize the use of cellular contact methods for future campaigns.  
- Optimize call durations to balance client interest and operational efficiency.  
- Review and clean data entry processes to reduce 'unknown' field usage.  
- Avoid over-contacting clients; success peaks within 2–3 campaign calls.

## 5. Power BI Dashboard

An interactive Power BI dashboard was developed to display:  
- Subscription conversion funnel  
- Call duration vs conversion rate  
- Age group and job role performance  
- Contact method effectiveness  
- Monthly campaign trends

--Final Project: Direct Marketing Campaign Analysis SQL Queries--

SELECT \*

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

LIMIT 1000;

-- 2. Total Records

SELECT COUNT(\*) AS total\_records

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`;

-- 3. Unique Value Counts

SELECT

  COUNT(DISTINCT job) AS job\_types,

  COUNT(DISTINCT education) AS education\_levels,

  COUNT(DISTINCT marital) AS marital\_status\_types

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`;

-- 4. Count Unknown Values

SELECT

  SUM(CASE WHEN job = 'unknown' THEN 1 ELSE 0 END) AS unknown\_job,

  SUM(CASE WHEN education = 'unknown' THEN 1 ELSE 0 END) AS unknown\_education,

  SUM(CASE WHEN poutcome = 'unknown' THEN 1 ELSE 0 END) AS unknown\_poutcome

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`;

-- 5. Conversion Rate

SELECT

  y,

  COUNT(\*) AS count,

  ROUND(COUNT(\*) \* 100.0 / SUM(COUNT(\*)) OVER (), 2) AS percentage

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY y;

-- 6. Subscription Rate by Age Group

SELECT

  CASE

    WHEN age < 30 THEN '<30'

    WHEN age BETWEEN 30 AND 39 THEN '30-39'

    WHEN age BETWEEN 40 AND 49 THEN '40-49'

    WHEN age BETWEEN 50 AND 59 THEN '50-59'

    ELSE '60+'

  END AS age\_group,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY age\_group, y

ORDER BY age\_group, y;

-- 7. Subscription by Marital Status

SELECT

  marital,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY marital, y

ORDER BY marital, y;

-- 8. Call Duration vs Subscription

SELECT

  ROUND(duration / 60.0, 2) AS call\_duration\_minutes,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

WHERE duration < 3600

GROUP BY call\_duration\_minutes, y

ORDER BY call\_duration\_minutes;

-- 9. Subscription by Account Balance Range

SELECT

  CASE

    WHEN balance < 0 THEN 'Negative'

    WHEN balance BETWEEN 0 AND 500 THEN '0–500'

    WHEN balance BETWEEN 501 AND 1500 THEN '501–1500'

    WHEN balance > 1500 THEN '1500+'

  END AS balance\_range,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY balance\_range, y

ORDER BY balance\_range, y;

-- 10. Contact Method Effectiveness

SELECT

  contact,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY contact, y

ORDER BY contact, y;

-- 11. Previous Outcome Analysis

SELECT

  poutcome,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY poutcome, y

ORDER BY poutcome, y;

-- 12. Monthly Trend Analysis

SELECT

  month,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY month, y

ORDER BY month, y;

-- 13. Loan & Housing Status

SELECT

  housing,

  loan,

  y,

  COUNT(\*) AS count

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY housing, loan, y

ORDER BY housing, loan, y;

-- 14. Campaign Performance

SELECT

  campaign,

  COUNT(\*) AS total\_clients,

  COUNTIF(y = TRUE) AS total\_subscribed,

  COUNTIF(y = FALSE) AS total\_not\_subscribed,

  ROUND(COUNTIF(y = TRUE) \* 100.0 / COUNT(\*), 2) AS conversion\_rate\_percentage

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

GROUP BY campaign

ORDER BY campaign;

--15.  Top 10 Jobs by Cellular Contact

SELECT

  job,

  COUNT(\*) AS cellular\_contacts

FROM `regal-scholar-458120-j4.Bank\_Marketing.Bank\_Marketing`

WHERE contact = 'cellular'

GROUP BY job

ORDER BY cellular\_contacts DESC

LIMIT 10;