**Data Analysis Report**

**Airline Loyalty Program Project**

**Executive Summary**

**1. Introduction**

The purpose of this data analysis is to gain insights into the customer loyalty program’s performance based on two key tables: “Customer Flight Activity” and “Customer Loyalty History.” The analysis aims to understand customer behavior, identify trends, and inform strategic decisions to enhance the program’s effectiveness.

2. Data Collection

2.1 Tables Used

* + Customer Flight Activity
  + Customer Loyalty History

**2.2 Data Sources**

* + Maven Analytics “Airline Loyalty Program” sample dataset

**2.3 Data Preparation**

* + Concatenated all “Month” and “Year” columns into singular date columns in YYYY-MM-DD format using Microsoft Excel for streamlined importation into pgAdmin.
  + Formatted all columns for proper importation into pgAdmin.
  + Addressed negative values in the ‘Salary’ column of the “Customer Loyalty History” table.
    - Due to lack of contextual clarity and an inability to consult with stakeholders about the data, I assumed all negative values were potential data entry errors and adjusted them to positive values.
    - Average salary increased from $79,245.61 to $79,359.34 after corrections, increasing by $113.70, a fairly minor change given the dataset size.
  + Created tables in PgAdmin for each corresponding spreadsheet with the appropriate column names and addressed importation errors.
    - Edited the CSV files in Notepad++ to efficiently remove extra trailing commas resulting from the deletion of columns in the original spreadsheets.
    - Altered column data types in PgAdmin to ensure accurate VARCHAR limits.

3. Exploratory Data Analysis

3.1 Demographic Analysis

4. Data Analysis Methods

5. Results

5.1 Demographic Analysis

* + - Provinces
      * The majority of loyalty program members reside in **Ontario** (32%), **British Columbia** (26%), and **Quebec** (19.7%).
    - Cities
      * The highest percentage of loyalty program members reside in **Toronto** (20%), followed by **Vancouver** (15%) and **Montreal** (12%).
    - Marital Status and Education
      * The majority of loyalty program members are **married** and have **Bachelor’s degrees** (42.5%).
      * Married loyalty members are most likely to travel with companions (51.6%), followed by single members (24%) and divorced members (13.4%).
    - Income
      * The majority of loyalty program members have salaries between **$50k and $75k** (34.2%) and **between $75k and $100k** (25.9%).

5.2 Customer Behavior Analysis

6. Discussion

7. Conclusion

8. Recommendations

9. Appendix

9.1 Technical References

* For the SQL code used to find the results, please reference the [GitHub repository](https://github.com/rachelle-norman/airline-loyalty-program-project/blob/main/sql-code.md) for this project.