User Adoption Analysis – Report

Objective:
Identify which factors predict user adoption, defined as a user logging in on **three separate days within a single seven-day period**.

Below are the steps and methodology:

1. **Data Understanding:**
    - **takehome_users.csv:** 12,000 user profiles including signup details and marketing status.
    - **takehome_user_engagement.csv:** 208,000+ records of user logins with timestamps.
2. **Labeling Adopted Users:**
    - A user was flagged as *adopted* if they logged in on 3 unique days within any rolling 7-day window.
    - **Result**: 1,656 users (13.8%) met this criteria.
3. **Feature Engineering:**
    - Extracted features like:
        - days_since_creation
        - invited (binary: whether invited by another user)
        - One-hot encoded creation_source
    - Converted session times and account creation times to datetime objects.
4. **Modeling Approach:**
    - Trained a **Logistic Regression** model to predict adoption.
      Split data into train/test with stratification.

Findings:

Feature	Impact on Adoption
opted_in_to_mailing_list	Strong positive predictor
enabled_for_marketing_drip	Negative correlation (may indicate passivity)
creation_source	Google Auth users showed higher adoption
days_since_creation	Longer account age correlated with adoption

invited	Slightly higher chance of adoption

Model Performance:
Accuracy: 96.9%, F1-score (Adopted): 88.4%

Areas for Further Investigation:

- Analyze login frequency patterns and total login counts.
- Explore organization-level dynamics (e.g., adoption clusters within orgs).
- Incorporate time-to-first-login or activity bursts post-signup.

Conclusion:

Marketing opt-in and signup methods are significant predictors of user adoption. The presence of an inviter and prolonged engagement period also positively influences adoption likelihood.