

# Matiks Data Analysis Project - Summary

## Project Overview

This project implements a comprehensive data analytics dashboard for Matiks, focusing on user behavior and revenue analysis. The dashboard includes various analytical views that provide insights into user engagement, revenue patterns, segmentation, churn analysis, and cohort retention.

## Key Components

### 1. Dashboard Structure

- **Overview Page:** Displays key metrics and KPIs at a glance
- **User Metrics:** Analyzes Daily Active Users (DAU), Weekly Active Users (WAU), and Monthly Active Users (MAU)
- **Revenue Analysis:** Tracks revenue patterns over time and by user segments
- **User Segments:** Categorizes users based on behavior and revenue contribution
- **Churn Analysis:** Identifies at-risk users and analyzes churn patterns
- **Cohort Analysis:** Tracks retention rates across different user cohorts
- **User Clusters:** Uses machine learning to identify natural user segments

### 2. Data Processing

The project includes robust data processing scripts that:

- Generate sample data for testing
- Calculate user metrics (DAU, WAU, MAU)
- Process revenue data and calculate key revenue metrics
- Segment users based on activity and revenue
- Calculate churn rates and identify at-risk users
- Create cohort retention tables
- Apply K-means clustering to identify natural user segments

### 3. Technical Implementation

- **Frontend:** Streamlit for interactive dashboard
- **Data Analysis:** Pandas, NumPy for data processing
- **Visualization:** Plotly for interactive charts
- **Machine Learning:** Scikit-learn for clustering

## 4. Key Challenges Addressed

- Handling missing or inconsistent data
- Creating a responsive and user-friendly interface
- Implementing robust error handling
- Optimizing data processing for performance
- Ensuring visualization clarity with appropriate chart types
- Providing actionable insights based on the data

## 5. Dark Mode Implementation

- Implemented a dark theme with white text for better visibility
- Customized all UI components to work well with the dark theme
- Ensured consistent styling across all dashboard pages

# Dashboard Pages Details

## User Metrics Page

- Tracks user activity over time (DAU, WAU, MAU)
- Calculates engagement rates and visualizes trends
- Identifies peak usage periods and patterns

## Revenue Analysis Page

- Analyzes revenue patterns over time
- Segments revenue by user groups
- Visualizes revenue distribution (Lorenz curve)
- Identifies top spenders and revenue opportunities

## User Segments Page

- Categorizes users by activity levels and revenue contribution
- Analyzes segment-specific behaviors
- Provides recommendations for each segment

## Churn Analysis Page

- Calculates churn rates overall and by segment
- Identifies factors contributing to churn

- Highlights at-risk users for targeted retention

## **Cohort Analysis Page**

- Tracks retention rates across different user cohorts
- Visualizes retention through heatmaps and curves
- Identifies best and worst performing cohorts

## **User Clusters Page**

- Applies K-means clustering to identify natural user segments
- Visualizes cluster characteristics with radar charts
- Provides comparison tools for understanding differences between clusters