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- # 📊 Market Trends in the Google Play Store: A Data-Driven Exploration of Top App Categories, Ratings & Reviews

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- ## 📌 Executive Summary

- This report presents a comprehensive exploratory data analysis (EDA) of over 10,000 mobile applications on the Google Play Store. The goal is to uncover key market trends, understand user engagement through ratings and reviews, and identify patterns that distinguish top-performing apps. The analysis involves extensive data cleaning, transformation, and visual insights. This document summarizes the key findings and strategic recommendations derived from the data.

- ## 📌 Dataset Overview

- - **Total Rows:** 10,000+
 - **Total Columns:** 13
 - **Source:** Kaggle
 - **Key Features:** App Name, Category, Rating, Reviews, Installs, Size, Price, Type, Age Group, Last Updated.

- ## 📌 Data Cleaning & Preprocessing

- - Missing values in Rating, Type, and Age Group were filled using median or mode.
 - Invalid entries (like "Varies with device", "Unrated", "0") were replaced or removed.
 - Textual numeric data (e.g., Reviews with 'M'/'K', Installs with '+', and Prices with '\$') were converted to proper integers or floats.
 - Columns like Current Ver were dropped due to inconsistency.
 - Categorical columns were converted into appropriate types for analysis.

- **Exploratory Data Analysis (EDA)**

- **Top Categories by App Count**

- ◦ Most apps belong to the **"FAMILY"**, **"GAME"**, and **"TOOLS"** categories.
- ◦ These categories represent the highest competition and diversity.

- **Ratings Distribution**

- ◦ Majority of apps have ratings between **3.5 to 4.5**.
- ◦ Apps with poor ratings (<3) are relatively rare.

- **Free vs Paid Apps**

- ◦ Over **90%** of the apps on Google Play Store are **free**.
- ◦ Paid apps tend to cluster in productivity, personalization, and educational categories.

- **Installs vs Ratings**

- ◦ A positive relationship exists between installs and ratings.
- ◦ Highly installed apps generally have high ratings (user trust and quality).

- **Price Distribution**

- ◦ Most paid apps are priced under **\$10**, with some exceptions up to \$400.
- ◦ Price alone does not guarantee higher installs or ratings.

- **Category-wise Ratings & Price**

- ◦ Game-related categories have **lower average ratings** but **higher installs**.
- ◦ Educational and productivity apps show **higher ratings** but fewer installs.

- **Update Trends**

- ◦ The majority of apps are actively maintained with updates post-2017.
- ◦ Regular updates may influence better ratings and user retention.
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- **Key Insights**

- ◦ **Free apps dominate** the Play Store, but quality and engagement vary widely.
- ◦ **High installs correlate with high ratings**, suggesting strong user feedback loops.
- ◦ **Paid apps are niche-focused** and often serve business or specialized purposes.
- ◦ **Content ratings (age groups)** are mostly "Everyone", but segmenting by age could identify underserved groups.
- ◦ **App size** doesn't significantly affect ratings, but extreme sizes (too large) may hinder installs.

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- **Conclusion & Recommendations**

- - Developers should focus on **user satisfaction** (ratings, reviews) to gain visibility.
 - **Frequent updates** signal app maintenance and can lead to better user engagement.
 - Pricing strategies must be aligned with **target user segments and value provided**.
 - New entrants should consider targeting **underdeveloped categories** with high ratings but fewer apps.

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