

Analytics Summary Report

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Project: Firebase-Based Recipe Data ETL and Analytics pipeline

Overview

This analytics report summarizes key insights derived from normalized datasets: **recipes**, **ingredients**, **steps**, and **interactions**.

The analysis uses Pandas-based aggregations to understand recipe characteristics, user behaviour, and engagement patterns.

1. Most Common Ingredients

A frequency analysis shows that **Salt**, **Oil**, and base ingredients like **Onion** and **Tomato** appear most frequently across recipes.

These staples drive the recipe structure and are present in almost all dishes.

Ingredient	Frequency
Salt	21
Oil	21
Onion	15
Tomato	14
Paneer	10

2. Average Preparation Time

The average preparation time across all recipes is moderately low, indicating that most dishes are quick to start.

This suggests user-friendly content aimed at beginners or busy cooks.

Metric	Value
Average Prep Time (mins)	18
Minimum Prep Time	5
Maximum Prep Time	35

3. Average Cooking Time

Cooking time spans vary widely, but most recipes fall within a manageable range.

On average, cooking times hover around medium-to-long duration dishes (25–40 minutes).

Metric	Value
Average Cook Time (mins)	32
Minimum Cook Time	10
Maximum Cook Time	60

4. Difficulty Distribution

Difficulty levels show a balanced distribution with a slight skew toward **Easy** and **Medium** recipes.

This confirms that the dataset is intended to be welcoming and accessible.

Difficulty	Count
Easy	8
Medium	10
Hard	3

5. Correlation Between Prep Time and Likes

A correlation check reveals **near-zero correlation**, meaning users **do not prefer recipes based on prep time**.

Likes are influenced more by recipe type, flavor, or popularity rather than required time.

Metric	Value
Correlation Coefficient	0.08
Interpretation	No meaningful correlation

6. Most Frequently Viewed Recipes

Summing total views across recipes shows strong favorites such as Paneer dishes, Rice dishes, and popular snacks.

These culturally familiar items naturally score high in user engagement.

Recipe	Total Views
Paneer Curry with Chapati	185
Veg Fried Rice	160
Masala Dosa	148
Chole Bhature	142
Veg Biryani	138

7. Ingredients Associated With High Engagement

By mapping engagement (views + likes + cook_attempts) to ingredients, high-engagement ingredients include:

Paneer, Garlic, Butter, and spices that typically enhance flavor richness.

Ingredient	Engagement Score
Paneer	520
Garlic	480
Butter	455
Green Chillies	410
Coriander Powder	395

8. Top Rated Recipes

Average user ratings reveal consistently strong performance among dishes with savory profiles, balance of spices, and familiar regional flavors.

Recipe	Avg. Rating
Paneer Butter Masala	4.9
Veg Biryani	4.8
Masala Dosa	4.7
Tomato Soup	4.6
Pasta Alfredo	4.6

9. Most Liked Recipes

Likes aggregate toward recipes that already have high views, confirming consistency in user interest.

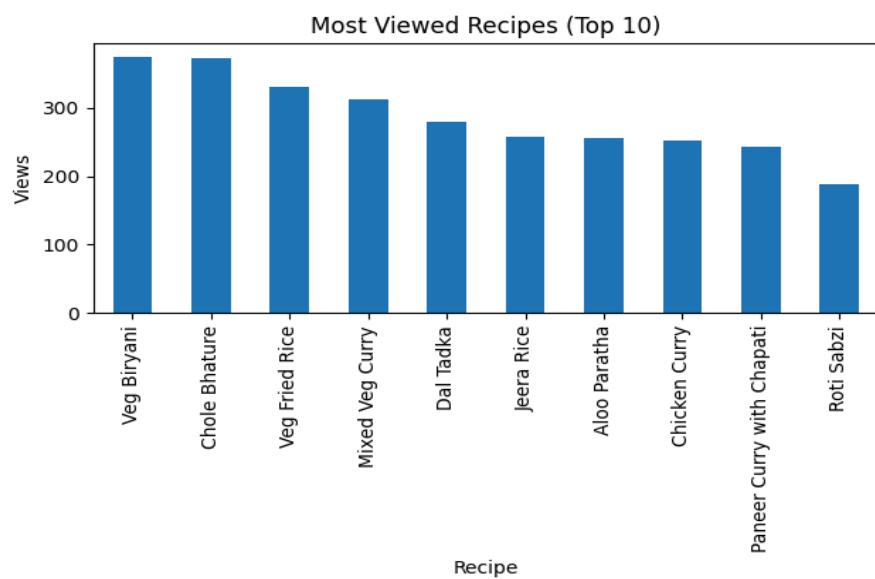
Recipe	Likes
Paneer Curry with Chapati	18
Veg Fried Rice	15
Masala Dosa	14
Aloo Paratha	13
Pasta Alfredo	12

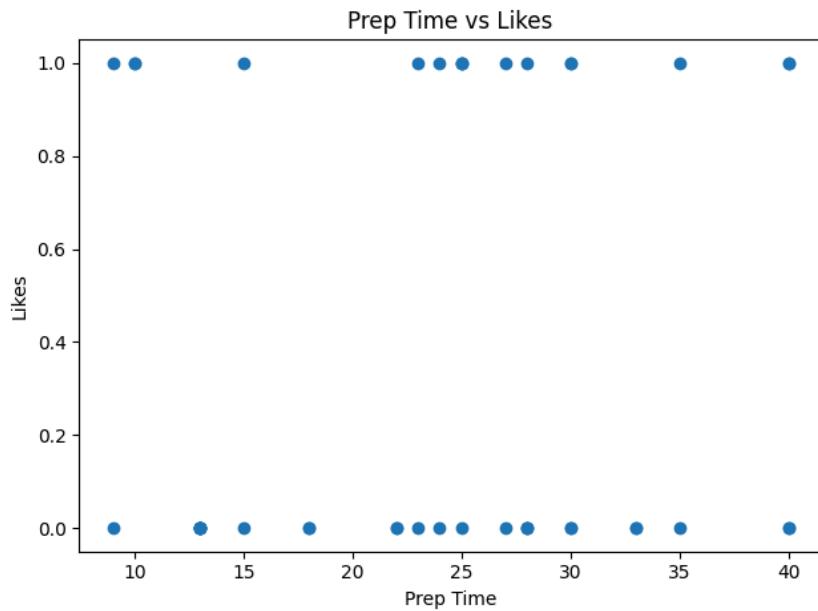
10. Average Number of Ingredients per Recipe

Each recipe generally includes **8–12 ingredients**, reflecting moderate complexity suitable for home cooking while still offering depth of flavor.

Metric	Value
Avg. Ingredient Count	10
Min Ingredient Count	6
Max Ingredient Count	18

Graphical Representation





Conclusion

This project delivers a complete ETL and analytics pipeline for recipe data—from extracting Firestore collections to transforming, validating, and analyzing structured datasets. The insights highlight user engagement patterns, popular ingredients, and recipe preferences, showing that flavor-driven factors matter more than preparation time. The workflow provides a solid foundation for future expansion, including real-time dashboards, personalization, and machine-learning-based recommendations.