

Metrics

Popularity Metric

Data:

Check-ins: Shows amount of customer check-ins

Reviews: Shows customer satisfaction

Star Ratings: Shows customer approval

Formula:

$$\text{Popularity Score} = (\text{Check-in Count Weight} * \text{Normalized Check-in Count}) + (\text{Review Count Weight} * \text{Normalized Review Count}) + (\text{Rating Weight} * \text{Star Rating})$$

Normalization would involve the scaling from 0-1 based on location or repeat check-ins (someone who may be a normal at that business).

Success Metric

Data:

Business Age: Shows how long the business has held up

Repeat Check-ins: Shows loyal customer visits

Positive Reviews Over Time: Shows sustained customer satisfaction

Formula:

$$\text{Success Score} = (\text{Age Weight} * \text{Business Age}) + (\text{Repeat Check-in Weight} * \text{Repeat Check-in Rate}) + (\text{Positive Review Weight} * \text{Positive Review Rate})$$

Business Age is considered in years, while Repeat Check-in Rate and Positive Review Rate are calculated as proportions of total check-ins and reviews respectively

Data Pre-processing and Analysis

Average Check-ins Calculation

```
SELECT zipcode, category, AVG(check_in_count) AS average_check_ins  
FROM Business  
GROUP BY zipcode, category;
```

This query calculates the average number of check-ins for businesses grouped by their zipcode and category. It provides a reference point for whether a business's customer base is more successful than the ones around it.

Repeat Check-ins Identification

```
SELECT business_id, COUNT(check_in_id) AS repeat_check_ins  
FROM CheckIns  
WHERE visit_count > 1  
GROUP BY business_id
```

This query filters and counts check-ins where customers have visited more than once showing a sign of loyalty to the business.

Schema for Analysis Results

```
CREATE TABLE BusinessMetrics (  
    business_id VARCHAR(255) PRIMARY KEY,  
    category VARCHAR(255),  
    zipcode VARCHAR(20),  
    average_check_ins NUMERIC,  
    repeat_check_ins NUMERIC,  
    positive_review_rate NUMERIC,
```

```
popularity_score NUMERIC,  
success_score NUMERIC  
);
```