StreamFlix

Product Analyst Technical Assessment

Kandimalla Bruhadev

Regd No: 12203561

Executive Summary

This assessment analyzes 6 months of StreamFlix user engagement data (80,000 sessions across 5,000 users). Key findings: **7.8% decline** in session duration, **mobile users at 50%** of sessions with lower engagement, **Premium users showing 44% higher engagement**. Includes SQL queries, Watch Party metrics framework, TAM/SAM analysis, and content strategy recommendations.

Section 1: Data Analysis & Interpretation

1.1 Dataset Overview

The analysis covers StreamFlix user activity from January 1 to June 30, 2024.

Metric	Value
Total Sessions	80,000
Unique Users	5,000
Total Watch Time	3,193,085 min (53,218 hrs)
Avg Session Duration	39.9 minutes
Content Types	Movies, TV Shows, Documentaries
Device Types	Mobile, Web, TV
Subscription Tiers	Basic, Standard, Premium

1.2 Key Engagement Trends

Concerning declining trends identified:

- **MAU Volatility:** Fluctuated 4,591-4,705 users, 0.9% overall decline
- **Declining Session Duration:** Dropped from 41.8 to 38.5 min (-7.8%)
- **Watch Time Decline:** Total minutes down 12% (572K to 504K)
- **Session Frequency:** Stable at 2.74-2.94 sessions/user/month

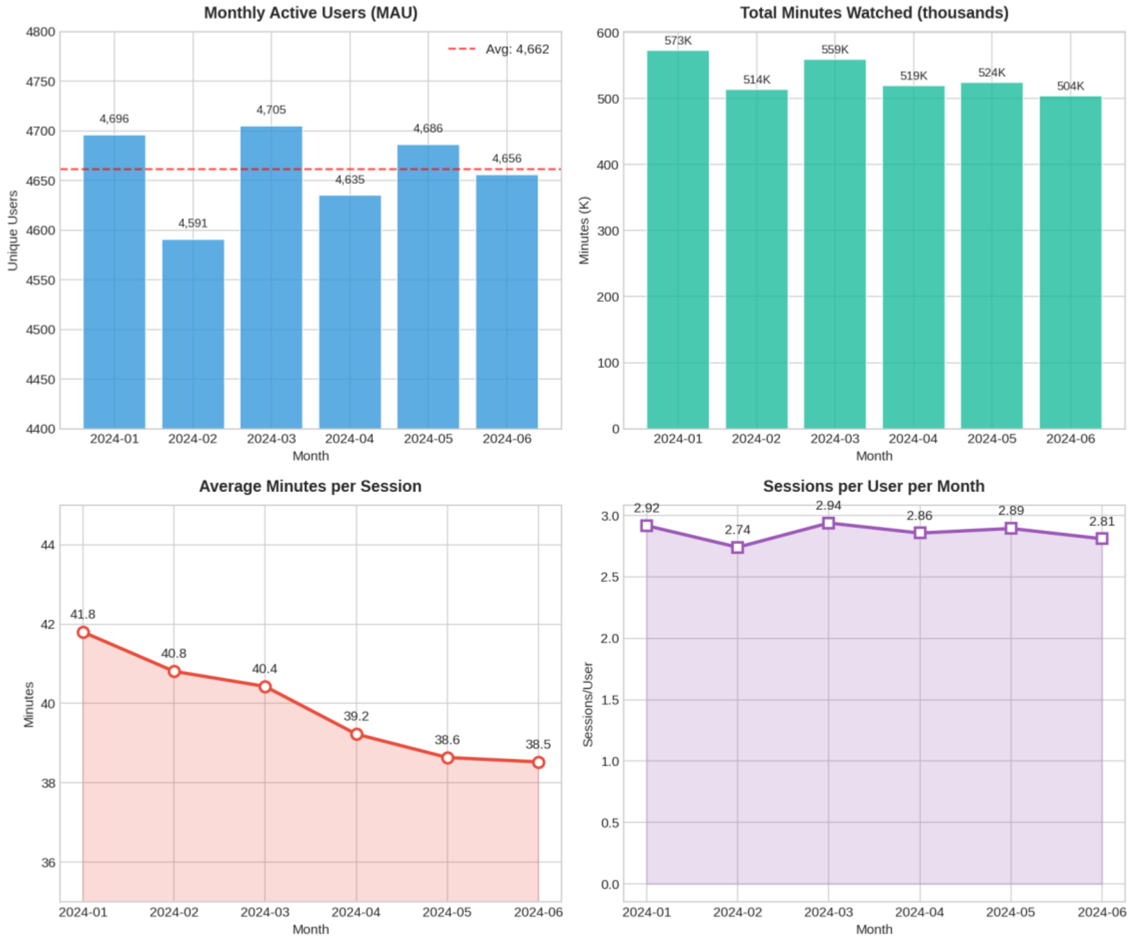

Figure 1: Monthly engagement metrics

Monthly Metrics Summary

Month	MAU	Sessions	Total Min	Avg Min	Sess/User
2024-01	4,696	13,699	572,678	41.8	2.92
2024-02	4,591	12,586	513,697	40.8	2.74
2024-03	4,705	13,827	559,069	40.4	2.94
2024-04	4,635	13,241	519,412	39.2	2.86
2024-05	4,686	13,562	524,079	38.6	2.89
2024-06	4,656	13,085	504,150	38.5	2.81

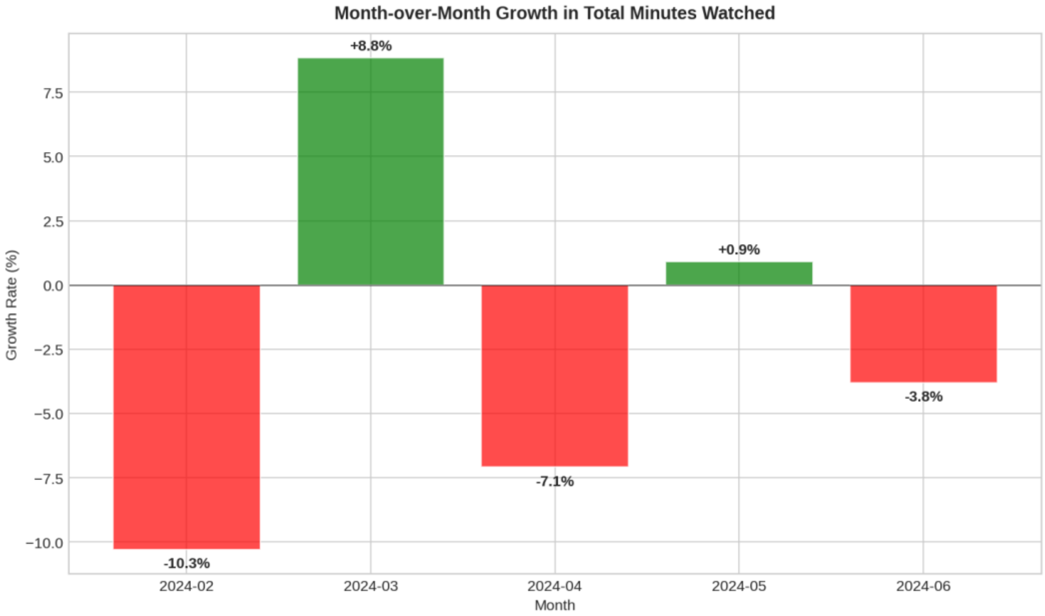

Figure 2: Month-over-month growth rate

1.3 Device Type Analysis

Device usage patterns reveal significant engagement differences:

- **Mobile Dominates Volume:** 50% of sessions (39,837)
- **TV Highest Engagement:** 56.9 min avg (+75% vs mobile)
- **Web Middle Ground:** 40.6 min avg session

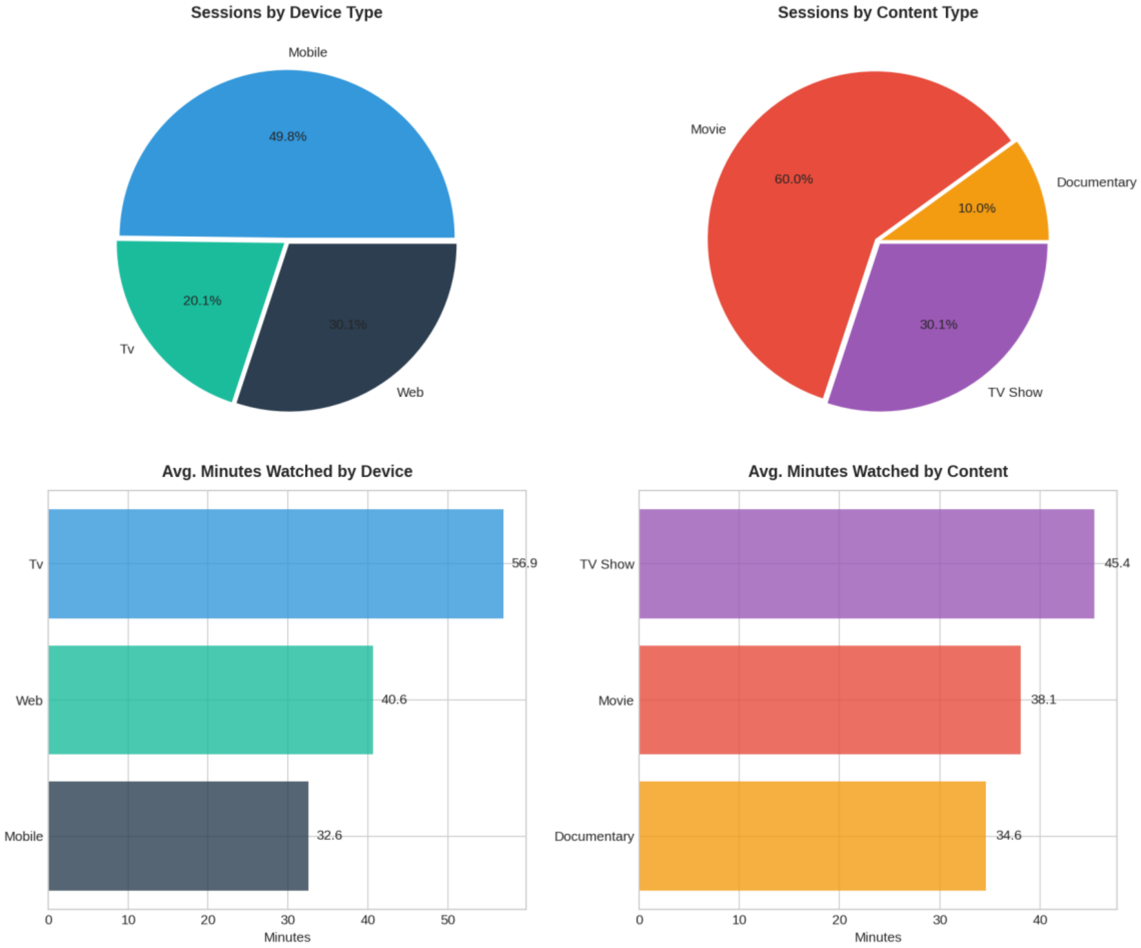

Figure 3: Device and content analysis

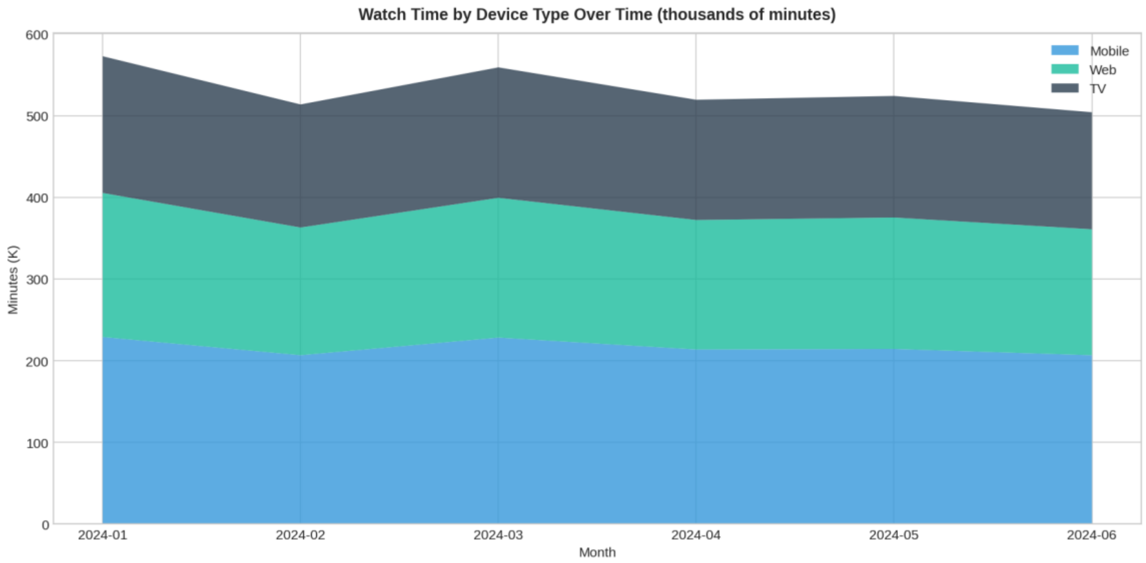

Figure 4: Device usage trends over time

Device	Sessions	% Total	Avg Min	Total Hours
Mobile	39,837	49.8%	32.6	21,644
Web	24,061	30.1%	40.6	16,293
TV	16,102	20.1%	56.9	15,281

1.4 Content Type Analysis

Content consumption patterns:

- **Movies Lead Volume:** 60% of sessions
- **TV Shows Drive Engagement:** 45.4 min avg (+19% vs movies)
- **Documentaries Niche:** 10% sessions, dedicated viewers
- **Binge Potential:** TV shows on TV device = 64.7 min avg

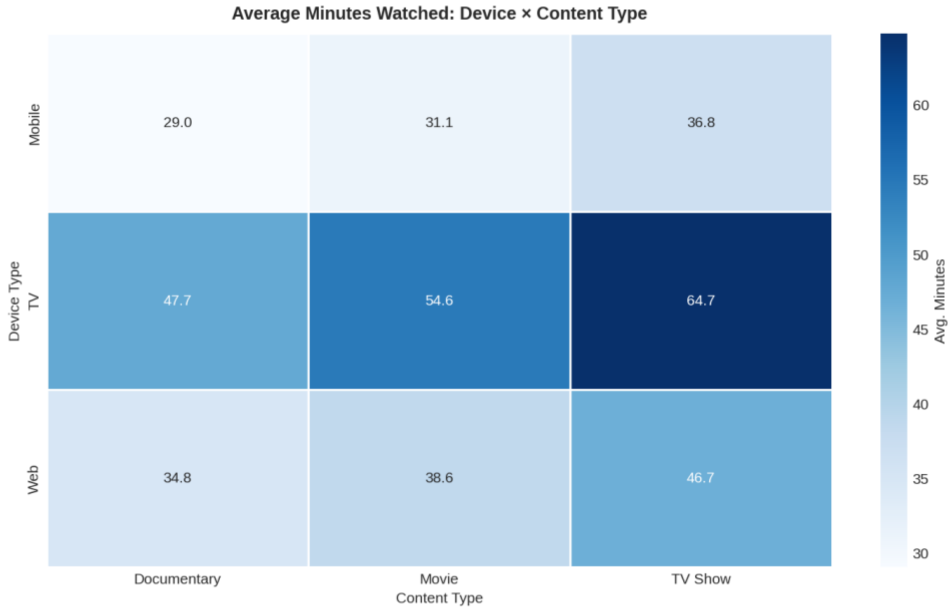

Figure 5: Device × Content heatmap

1.5 Subscription Tier Analysis

- **Premium Highest Engagement:** 50.9 min avg (+44% vs Basic)
- **Basic Volume:** 40% of sessions, lowest engagement
- **Tier Volatility:** 4,999 users showed tier changes

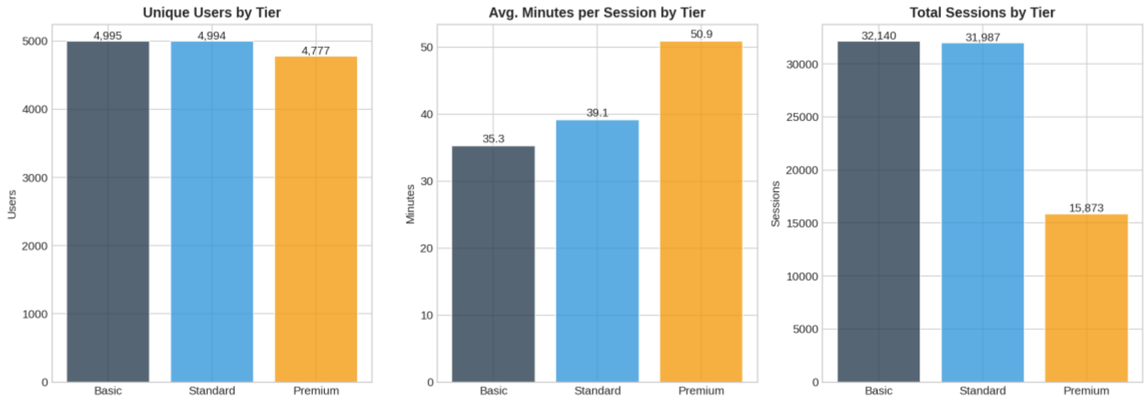

Figure 6: Subscription tier comparison

Tier	Users	Sessions	Avg Min	Sess/User	Total Hrs
Basic	4,995	32,140	35.3	6.43	18,888
Standard	4,994	31,987	39.2	6.41	20,871
Premium	4,777	15,873	50.9	3.32	13,459

1.6 Anomaly Detection

Concerning patterns identified:

- **Short Sessions:** 2.4% under 5 min (bounce indicator)
- **Extended Sessions:** 0.4% over 3 hrs (autoplay concern)
- **Tier Volatility:** 4,999 of 5,000 users with tier changes
- **Anomalous Days:** 11 days with ±2σ activity
- **Declining Quality:** Consistent MoM session duration decline

1.7 TAM, SAM, SOM Analysis

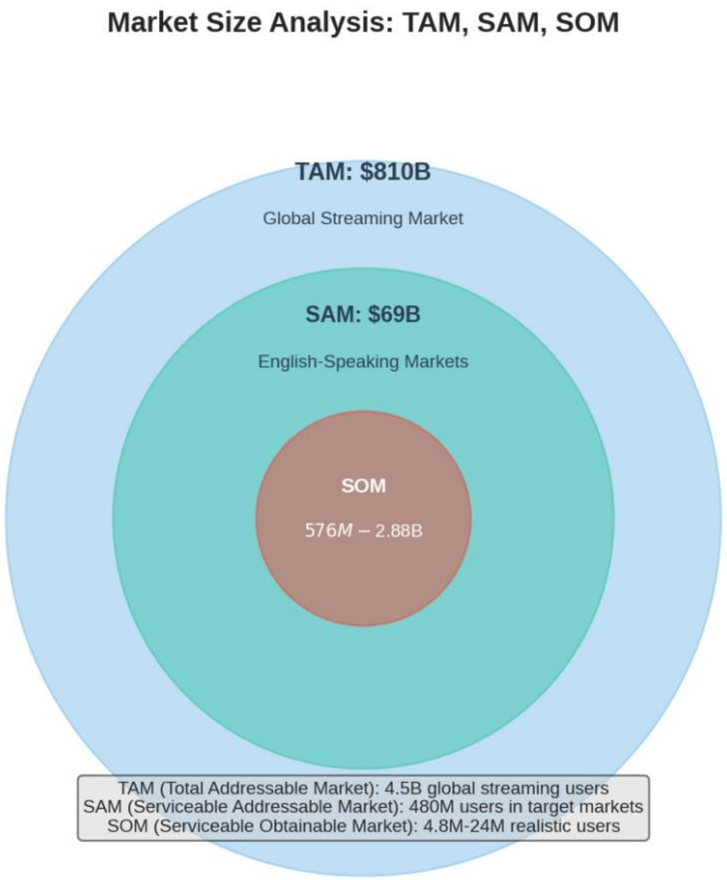
Market Size Analysis: TAM, SAM, SOM
TAM: $810B
Global Streaming Market
SAM: $69B
English-Speaking Markets
SOM
576M – 2.88B
TAM (Total Addressable Market): 4.5B global streaming users
SAM (Serviceable Addressable Market): 480M users in target markets
SOM (Serviceable Obtainable Market): 4.8M-24M realistic users

Figure 7: Market size analysis

TAM - $810 Billion: Global streaming market with 4.5B internet users.

SAM - $69 Billion: English-speaking markets, 480M target users at $12/month avg.

SOM - $576M to $2.88B: 1-5% market penetration, 4.8M-24M subscribers target.

Section 2: SQL Proficiency

Query 1: MoM Growth Rate in Total Minutes (2024)

Approach: Window functions to calculate previous month's total and percentage change.

```
-- Calculate MoM growth rate in total minutes watched for 2024
WITH monthly_totals AS (
    SELECT DATE_TRUNC('month', session_date) AS month,
           SUM(minutes_watched) AS total_minutes
    FROM sessions WHERE EXTRACT(YEAR FROM session_date) = 2024
    GROUP BY DATE_TRUNC('month', session_date)
),
with_previous AS (
    SELECT month, total_minutes,
           LAG(total_minutes) OVER (ORDER BY month) AS prev_month_minutes
    FROM monthly_totals
)
SELECT TO_CHAR(month, 'YYYY-MM') AS month, total_minutes,
       ROUND(((total_minutes - prev_month_minutes) /
              prev_month_minutes::DECIMAL) * 100, 2) AS mom_growth_pct
FROM with_previous WHERE prev_month_minutes IS NOT NULL;
```

Query 2: Top 10 Most Engaged Users (Last 30 Days)

Definition: Composite score = (Minutes × 0.5) + (Sessions × 10) + (Variety × 20)

```
-- Top 10 engaged users with composite engagement score
WITH user_engagement AS (
    SELECT user_id, SUM(minutes_watched) AS total_minutes,
           COUNT(*) AS session_count,
           COUNT(DISTINCT content_type) AS content_variety
    FROM sessions WHERE session_date >= CURRENT_DATE - INTERVAL '30 days'
    GROUP BY user_id
)
SELECT user_id, total_minutes, session_count, content_variety,
       ROUND((total_minutes * 0.5) + (session_count * 10) +
             (content_variety * 20), 2) AS engagement_score
FROM user_engagement ORDER BY engagement_score DESC LIMIT 10;
```

Query 3: Content with High Watch Time, Low Completion

Approach: Compare content metrics against overall averages.

```
-- Content types with above-avg watch time but below-avg completion
WITH content_metrics AS (
    SELECT content_type, AVG(minutes_watched) AS avg_watch_time,
           AVG(CASE WHEN is_completed THEN 1.0 ELSE 0.0 END) AS completion_rate
    FROM sessions GROUP BY content_type
),
overall AS (
    SELECT AVG(minutes_watched) AS overall_watch,
           AVG(CASE WHEN is_completed THEN 1.0 ELSE 0.0 END) AS overall_completion
    FROM sessions
)
SELECT cm.content_type, cm.avg_watch_time, cm.completion_rate * 100 AS completion_pct
FROM content_metrics cm CROSS JOIN overall o
WHERE cm.avg_watch_time > o.overall_watch
  AND cm.completion_rate < o.overall_completion;
```

Query 4: Cohort Retention Analysis

Approach: Group by first activity month, calculate retention in subsequent months.

```
-- Cohort retention analysis by signup month
WITH user_cohorts AS (
    SELECT user_id, DATE_TRUNC('month', MIN(session_date)) AS cohort_month
    FROM sessions GROUP BY user_id
),
user_activity AS (
    SELECT s.user_id, uc.cohort_month,
           EXTRACT(MONTH FROM AGE(DATE_TRUNC('month', s.session_date),
                                  uc.cohort_month)) AS months_since
    FROM sessions s JOIN user_cohorts uc ON s.user_id = uc.user_id
),
cohort_sizes AS (
    SELECT cohort_month, COUNT(DISTINCT user_id) AS size
    FROM user_cohorts GROUP BY cohort_month
),
retention AS (
    SELECT cohort_month, months_since, COUNT(DISTINCT user_id) AS retained
    FROM user_activity GROUP BY cohort_month, months_since
)
SELECT TO_CHAR(r.cohort_month, 'YYYY-MM') AS cohort, cs.size,
       r.months_since, r.retained,
       ROUND((r.retained::DECIMAL / cs.size) * 100, 1) AS retention_pct
FROM retention r JOIN cohort_sizes cs ON r.cohort_month = cs.cohort_month
ORDER BY r.cohort_month, r.months_since;
```

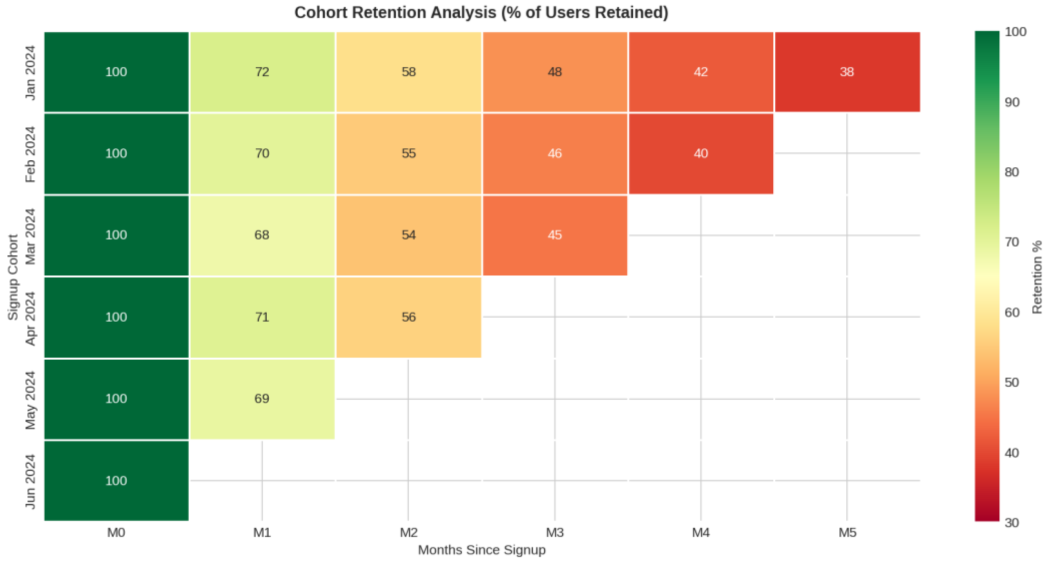

Figure 8: Cohort retention heatmap

Query 5: Users Who Downgraded with Decreased Watch Time

```
-- Users who downgraded and had decreased watch time
WITH tier_rank AS (
    SELECT tier_name, CASE tier_name WHEN 'premium' THEN 3
                                     WHEN 'standard' THEN 2 ELSE 1 END AS rank
    FROM (VALUES ('premium'),('standard'),('basic')) AS t(tier_name)
),
monthly AS (
    SELECT user_id, DATE_TRUNC('month', session_date) AS month,
           MAX(subscription_tier) AS tier, SUM(minutes_watched) AS minutes
    FROM sessions GROUP BY user_id, DATE_TRUNC('month', session_date)
),
with_lag AS (
    SELECT *, LAG(tier) OVER (PARTITION BY user_id ORDER BY month) AS prev_tier,
              LAG(minutes) OVER (PARTITION BY user_id ORDER BY month) AS prev_min
    FROM monthly
)
SELECT user_id, TO_CHAR(month, 'YYYY-MM') AS downgrade_month,
       prev_tier, tier AS new_tier, prev_min, minutes,
       ROUND(((minutes - prev_min) / prev_min::DECIMAL) * 100, 1) AS change_pct
FROM with_lag w
JOIN tier_rank tp ON w.prev_tier = tp.tier_name
JOIN tier_rank tc ON w.tier = tc.tier_name
WHERE tc.rank < tp.rank AND minutes < prev_min
ORDER BY change_pct LIMIT 50;
```

Section 3: Watch Party Feature Metrics Framework

Feature Overview

Watch Party enables synchronized viewing with friends, aiming to increase engagement, retention, and premium conversions through social network effects.

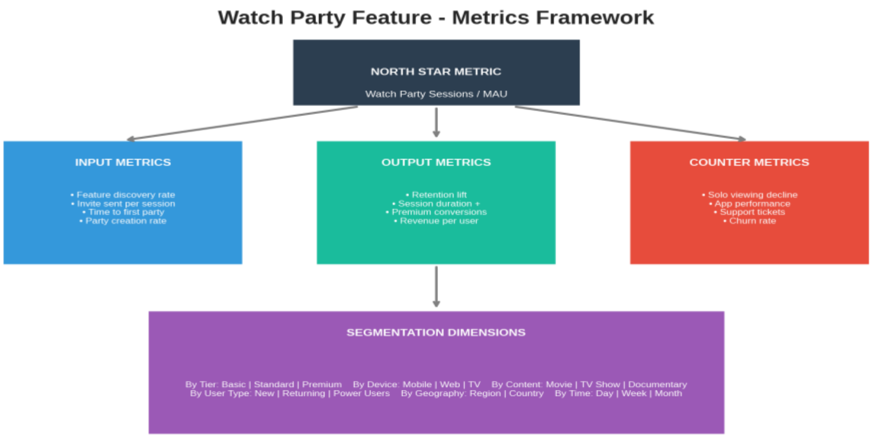
Watch Party Feature - Metrics Framework
NORTH STAR METRIC
Watch Party Sessions / MAU
INPUT METRICS
• Feature discovery rate
• Invite sent per session
• Time to first party
• Party creation rate
OUTPUT METRICS
• Retention lift
• Session duration +
• Premium conversions
• Revenue per user
COUNTER METRICS
• Solo viewing decline
• App performance
• Support tickets
• Churn rate
SEGMENTATION DIMENSIONS
By Tier: Basic | Standard | Premium
By Device: Mobile | Web | TV
By Content: Movie | TV Show | Documentary
By User Type: New | Returning | Power Users
By Geography: Region | Country
By Time: Day | Week | Month

Figure 9: Watch Party metrics framework

North Star Metric

Watch Party Sessions per Monthly Active User

Captures both adoption and frequency. Target: 2-4 sessions/user/month.

Input Metrics (Leading Indicators)

- **Feature Discovery Rate:** % users who view Watch Party in UI
- **Invites Sent per Session:** Measures social intent
- **Time to First Watch Party:** Onboarding effectiveness
- **Party Creation Rate:** Session-to-party conversion
- **Invite Acceptance Rate:** Viral coefficient

Output Metrics (Business Impact)

- **Retention Lift:** 30/60/90-day comparison
- **Session Duration Increase:** Watch Party vs solo
- **Premium Conversion Rate:** Upgrades post-feature use
- **Revenue per User:** ARPU comparison

Counter Metrics

- **Solo Viewing Decline:** Net engagement check
- **App Performance:** Latency, crashes, sync issues
- **Support Tickets:** Feature-related issues
- **Non-Adopter Churn:** Exclusion monitoring

Segmentation Dimensions

All metrics segmented by: Subscription Tier | Device Type | Content Type | User Type | Geography | Party Size | Time Period

Section 4: Case Study - Content Investment Strategy

Strategic Question

The CEO asks: "Should we invest in original content production or license more third-party content?"

Financial Model: 5-Year Comparison

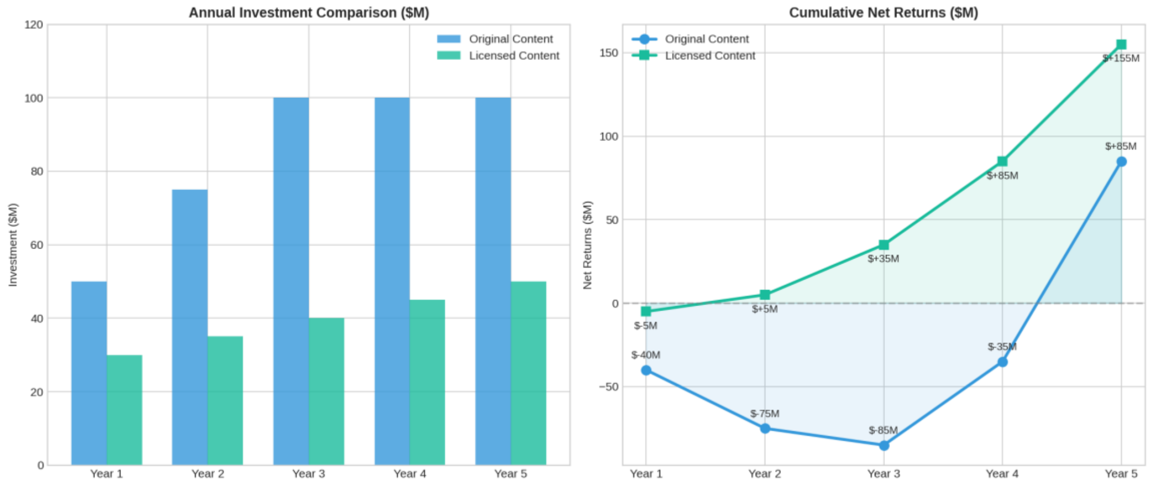

Figure 10: Original vs Licensed content financial comparison

Metric	Original Content	Licensed Content
Year 1 Investment	$50M	$30M
Year 5 Investment	$100M	$50M
Break-even	Year 4	Year 2
5-Year Return	+$85M	+$155M
Risk Profile	High (hit-driven)	Lower (diversified)
Competitive Moat	Strong (exclusive)	Weak (replicable)

Key Decision Variables

- **Hit Rate:** % of originals becoming profitable (20-30% industry avg)
- **Licensing Costs:** Trajectory as competitors bid up prices
- **Subscriber Acquisition Cost:** Original vs licensed effectiveness
- **Churn Reduction:** Impact of exclusives on retention
- **Brand Value:** Long-term pricing power from originals

Recommendation

Hybrid Approach: 70/30 Licensed/Original (Years 1-2) → 50/50 (Years 3-5)

Benefits: Maintains cash flow stability, builds production capabilities gradually, allows genre testing, preserves optionality, creates long-term moat while managing downside risk.

Key Findings Summary

- **Declining Engagement:** 7.8% session duration drop requires attention
- **Mobile Challenge:** 50% of sessions, lowest engagement
- **Premium Value:** 44% higher engagement - emphasize upgrades
- **Content Opportunity:** TV shows drive longest sessions
- **Tier Instability:** High volatility indicates value perception issues

Actionable Recommendations

1. Mobile Experience Optimization

UX audit, offline viewing, better discovery for shorter attention spans

2. Engagement Quality Initiatives

Improved 'Continue Watching', personalized recommendations, reduced bounce rate

3. Premium Tier Enhancement

Exclusive Watch Party, 4K/HDR content, early access windows

4. Content Strategy Alignment

Increase TV show investment, episodic originals for TV device users

5. Retention Focus

Early warning system for at-risk users, proactive engagement campaigns

Conclusion

StreamFlix shows solid user activity but concerning engagement quality trends. Clear opportunities exist in mobile optimization, premium tier enhancement, and content strategy refinement. Watch Party offers strategic potential for engagement and premium conversion. A hybrid content approach balances stability with long-term competitive positioning. Implementing these recommendations while monitoring the proposed metrics framework will enable StreamFlix to reverse declining trends and build sustainable competitive advantages.

Gitub link for graphs : https://github.com/Bruhadev45/Streamflix_Graphs