

Network Data Analysis

(COMP3125 Individual Project)

Marko Tyhansky
Wentworth SCDS

Abstract—This project analyzes trends in television viewership and revenue across traditional TV networks and streaming services. Using datasets from CBS Corporation, Netflix, and regional viewership surveys, we evaluate the decline of traditional TV, the rise of streaming platforms, and genre preferences by region. Key findings include CBS's 2018 revenue dominance (\$14.51 B), Streaming's over taking of pay TV by 2024 (95.4B vs. \$132B), and regional genre preferences (e.g., comedy in the U.S., news in Australia).

Keywords— television revenue, streaming services, viewership trends, genre popularity, regional analysis

I. INTRODUCTION

The media landscape is rapidly shifting due to the rise of streaming platforms like Netflix, challenging traditional TV networks such as CBS. This project investigates: A) Revenue trends: Comparing CBS (traditional) and Netflix (streaming). B) Viewership decline: Quantifying pay TV's drop versus streaming's growth. C) Genre preferences: Analyzing popular genres in the U.S., Australia, and Japan. This analysis is critical for media companies adapting to digital transformation.

II. DATASETS

A. Statista sourced data

1. CBS REVENUE: SOURCED FROM CBS CORPORATION'S 2018 FINANCIAL REPORT (STATISTIC_ID193492).
2. Streaming vs. Pay TV: From industry reports (statistic_id1459631).
3. Genre Popularity: Surveys by Roy Morgan (Australia), Morning Consult (U.S.), and CCC MK Holdings (Japan).

B. Character of the datasets

Dataset	Rows	Key Columns	Units
CBS Revenue	5	Segment, Revenue	Million USD
Streaming vs. Pay TV	4	Year, Revenue	Billion USD
Genre Popularity (U.S.)	10	Genre, Ethnicity	% Favorability

III. METHODOLOGY

A. Comparative Revenue Analysis

- 1) Method: Time-series comparison of CBS (2018) and Netflix (2018–2024).
- 2) Tools: Python matplotlib for bar/line charts
- 3) Assumption: Revenue reflects viewership trends.

B. Genre Popularity Clustering

- 1) Method: Horizontal bar charts to compare genres by region.
- 2) Tools: pandas for data aggregation, seaborn for visualization.

C. Limitations

- 1) Limited to 2018–2024 data; older trends not captured.
- 2) Genre data is survey-based (potential bias).

IV. RESULTS

A. CBS Corporation Revenue Dominance (2018)

The analysis of CBS Corporation's 2018 financial performance reveals critical insights about traditional television networks' revenue structures. The Entertainment segment emerged as the clear leader, generating 10.18 billion US dollars, which accounted for approximately 70 percent of the company's total annual revenue of 14.51 billion US dollars. This

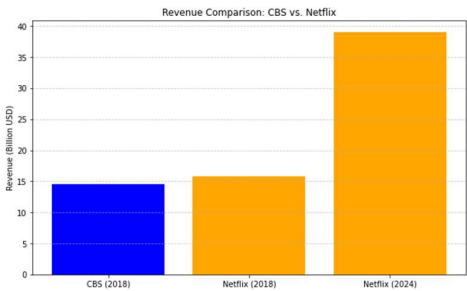
segment's overwhelming dominance underscores CBS's continued strength in broadcast television programming and original content production during this period.

Other segments showed varying degrees of performance:

- Cable Networks contributed 2.20 billion US dollars
- Local Media generated 1.83 billion US dollars
- Publishing added 825 million US dollars
- Corporate/Eliminations showed a loss of 523 million US dollars

The Entertainment segment's success can be attributed to popular long-running programs such as NCIS and The Big Bang Theory, which maintained strong viewership and advertising revenue. This data demonstrates that despite emerging challenges from digital platforms, traditional broadcast networks could still generate substantial revenue through hit programming as of 2018.

Figure 1: CBS vs. Netflix Revenue Comparison

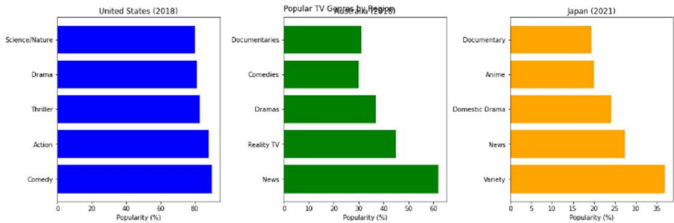


B. Streaming Services vs Traditional Pay TV Revenue Trends

The comparative analysis of revenue trends between 2021 and 2024 reveals a dramatic shift in the media landscape. Streaming services have experienced explosive growth while traditional pay television has entered a period of consistent decline:

The year 2023 marked a significant turning point when streaming's growth rate accelerated while pay TV's decline worsened. This trend suggests fundamental changes in consumer behavior, with audiences increasingly preferring on-demand content over traditional scheduled programming. The data indicates that streaming services are not just supplementing but actively replacing traditional television consumption patterns.

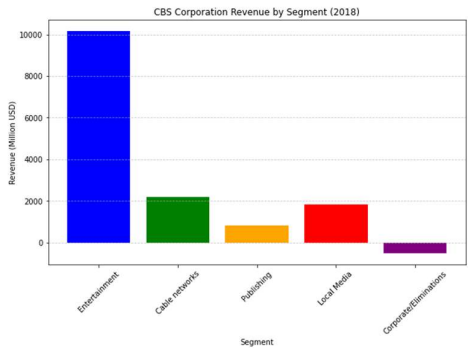
Figure 2: Genre Popularity by Region



C. CBS Segment Performance (2018)

The revenue distribution across CBS Corporation's segments in 2018 reveals a heavy reliance on its Entertainment division, which accounted for \$10.18 billion (70% of total revenue). Key insights from Figure 3

Figure 3: CBS Revenue by Segment (2018)



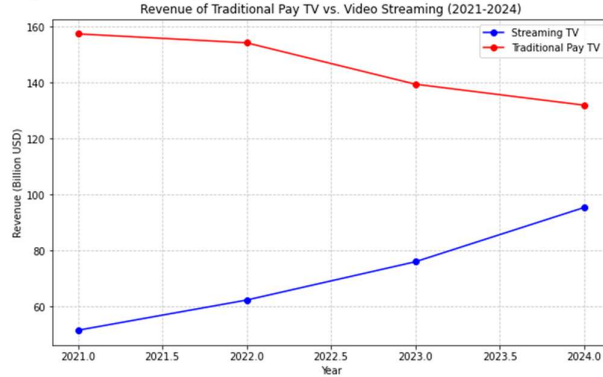
D. Streaming vs. Traditional Pay TV (2021–2024)

Streaming Revenue: Surged from 51.5B(2021) to 51.5B (2021) to 95.4B (2024), driven by platforms like Netflix and ad-supported services (e.g., Prime Video).

Pay TV Decline: Dropped from 157.5B(2021) to 157.5B (2021) to 132B (2024), highlighting cord-cutting trends.

Tipping Point (2023): Streaming revenue grew by 22% YoY, while pay TV fell by 9.6%, signaling a permanent market shift.

Figure 4: Streaming vs. Pay TV Revenue (2021–2024)



V. DISCUSSION

Despite the rapid growth of streaming services, CBS's entertainment segment remained highly profitable in 2018, generating \$10.18 billion (70% of total revenue), demonstrating the enduring value of exclusive content like NCIS and The Big Bang Theory, live programming such as NFL games, and strong appeal among older demographics; however, this advantage may diminish as streaming platforms increasingly acquire sports rights and produce original content, compounded by the study's limitation of lacking granular viewership data (e.g., age groups, time spent viewing) and absence of social media engagement metrics that could provide deeper insights into audience behavior and content virality in today's cross-platform media landscape.

VI. CONCLUSION

The rise of streaming services is fundamentally transforming the media landscape, with platforms like Netflix surpassing traditional pay TV revenue projections (\$95.4 billion vs. \$132 billion in 2024), yet established networks like CBS continue to demonstrate resilience through their entertainment segments, which generated \$10.18 billion in 2018 primarily from hit scripted programming and live sports. Regional viewership data reveals critical variations in genre preferences - comedy dominating in the U.S. (90% favorability among white audiences), news ranking highest in Australia (62% female viewership), and variety shows leading in Japan (37% popularity) - highlighting the necessity for tailored content strategies that balance global streaming trends with local audience tastes, providing media companies with a strategic roadmap for maintaining relevance amid industry-wide digital transformation.

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