

EXPLORATORY DATA ANALYSIS



Online Casino Gaming Revenue

Aims to understand various aspects of casino operations and customer behavior through data
Helps make data-driven decisions to enhance revenue and operational efficiency

PROJECT INTRO



This report analyses casino gaming data to uncover trends, key performance metrics, and correlations between various factors. The dataset contains 143 records with key engagement metrics such as wagers, win/loss and promotion.



Identify factors that affect the revenue



Assist casino license owner with insights



DATASET OVERVIEW

The dataset provides a comprehensive view of online casino gaming records and includes key engagement metrics. It is useful for data visualization, factor relation analysis and trend prediction. The analysis aims to guide casino license owners to make useful business decisions.



Data Source

Kaggle dataset containing N online casino gaming record
[Dataset Link](#)



Key Metrics

Total Gross Gaming Revenue, wages, Year & Month, win/loss, promotion



Fiscal Year, Month Ending

Specifies the month and year when the data was last recorded for that fiscal year.

Wagers

The total amount of money bet by players during the recorded period.

Cancelled Wagers

The total value of wagers that were canceled or voided during the period.

Licensee

The licensed casino operator responsible for the gaming activities.



Promotional Coupons or Credits Wagered (3)

The licensed casino operator responsible for the gaming activities.

Patron Winnings

The total amount of money won by players from their wagers.

Fiscal Year
Month Ending
Licensee
Wagers
Patron Winnings
Cancelled Wagers
Online Casino Gaming Win/(Loss)
Promotional Coupons or Credits Wagered (3)
Promotional Deduction (4)
Total Gross Gaming Revenue
Payment (5)

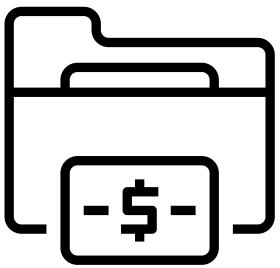
143 non-null object
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Column Descriptions





Are promotional offers increasing player engagement?



Engagement Metrics

- Total Gross Gaming Revenue – Indicates the casino's earnings from player bets.
- Wagers and cancelled wagers
- Patron Winnings / Wagers (%) – The percentage of wagered money returned as winnings to players. This can indicate player retention and satisfaction.
- Promotional Coupons or Credits Wagered – Tracks how much free money or bonuses players use, reflecting engagement with promotions.

Statistical Summary

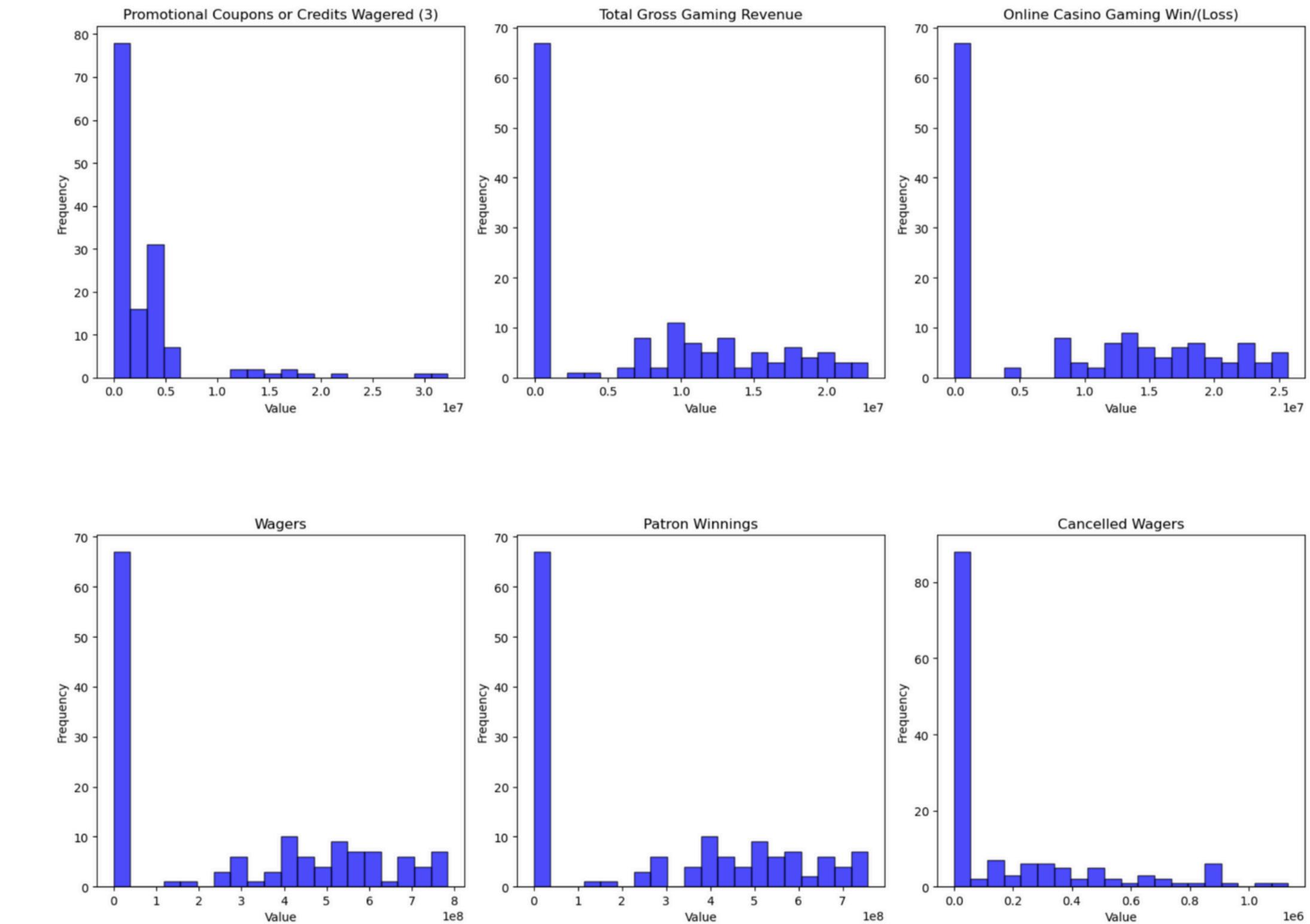
Metric	Mean
Wagers	2.742207e+08
Patron Winnings	2.655218e+08
Cancelled Wagers	1.783408e+05
Promotional Coupons or Credits Wagered (3)	2.909760e+06
Total Gross Gaming Revenue	7.050150e+06
Online Casino Gaming Win/(Loss)	8.520509e+06



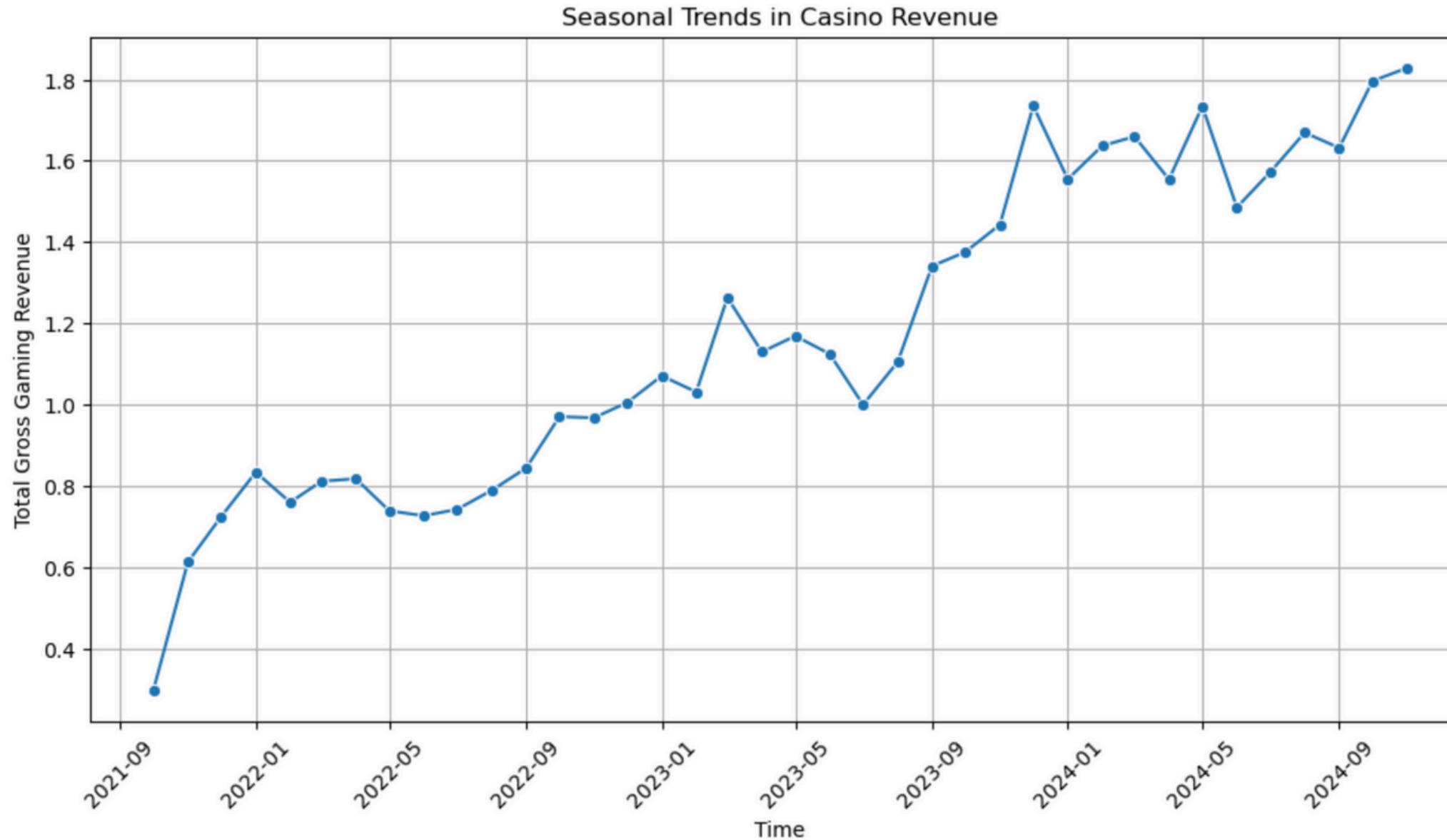
The statistical summary provides an overview of key online casino gaming metrics. The mean wagers amount to approximately 274.22 million, while patron winnings average 265.52 million. Cancelled wagers have a mean of 178.34K, and promotional coupons or credits wagered stand at 2.91 million. The total gross gaming revenue is around 7.05 million, while the online casino gaming win/(loss) averages 8.52 million. These figures offer insight into the typical financial activity within the dataset.

Univariate Analysis

Univariate analysis involves examining the distribution of individual metrics. The key engagement metrics are visualized by histograms which helps identify the range and frequency of each metric, providing insight into overall engagement patterns.



Seasonal Trends



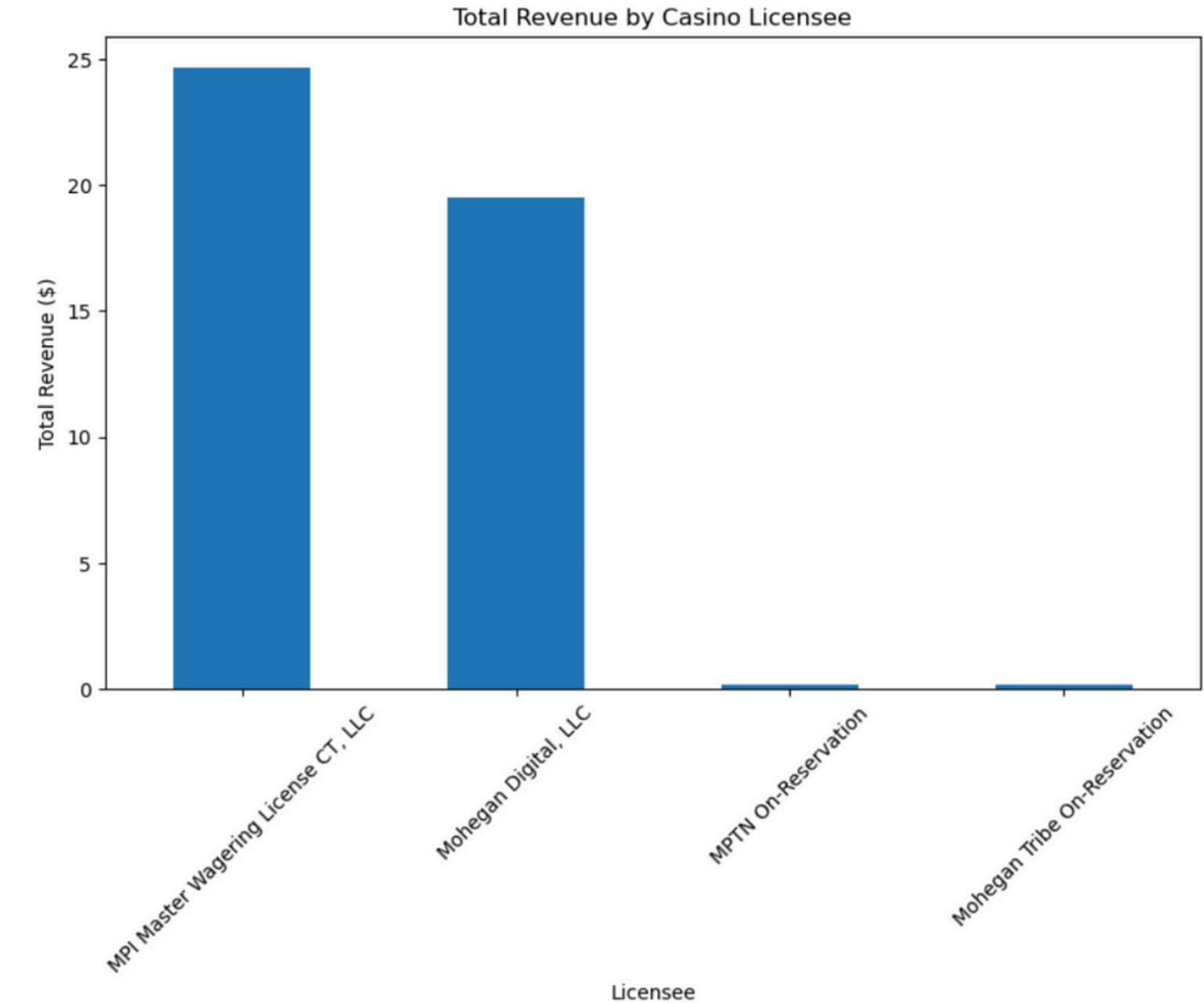
The graph shows an upward trend in total gross gaming revenue from September 2021 to September 2024. The overall revenue has steadily increased, despite some fluctuations. This suggests that the casino industry is growing, possibly due to increased customer interest, successful marketing strategies, or favorable economic conditions.

Notably, there are seasonal peaks and dips, with revenue surging around certain periods (e.g., early 2024). This may indicate that specific months or seasons (e.g., holiday periods, major sporting events, or tourism seasons) drive higher revenue.

Licensee-based Analysis



Licensee performance directly impacts the operational success and financial health of a casino, making it crucial for both licensees and regulatory bodies to monitor and ensure compliance with standards that promote positive revenue outcomes. While underperformance might be due to high promotional deductions, low player engagement etc.



Consistently Underperforming Casinos

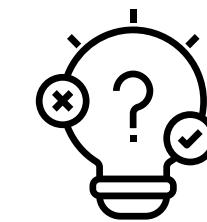
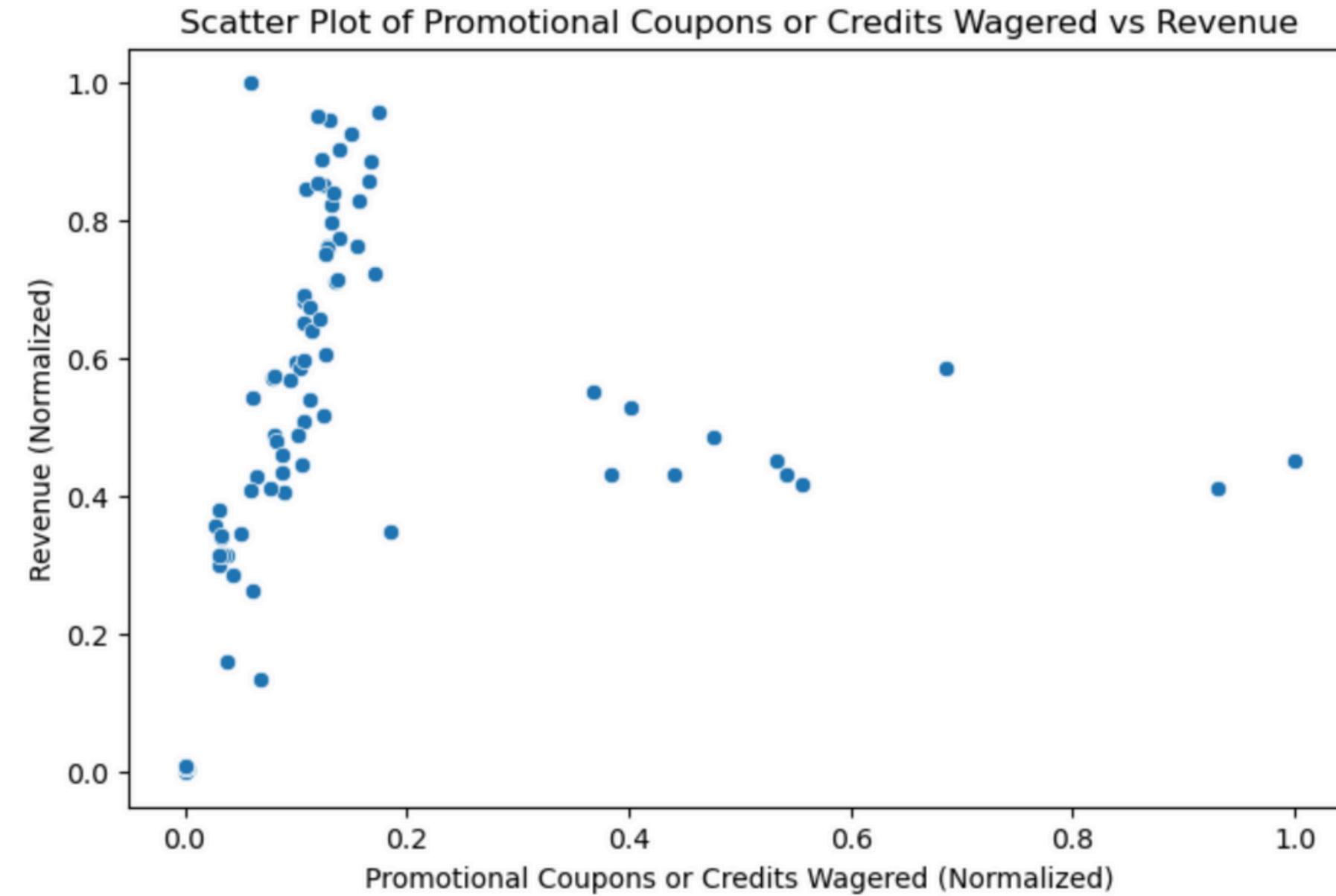
MPTN On-Reservation 20
Mohegan Tribe On-Reservation 16



PROMOTION!

Do promotional credits & deductions lead to higher overall revenue?

The correlation coefficient of 0.4408 indicates a moderate positive relationship between Promotion and Revenue. While higher promotional spending is somewhat associated with higher revenues, the relationship is not strongly linear. The scatter plot suggests clusters of high revenue with low promotional spending, implying that beyond a certain point, increasing promotions does not proportionally increase revenue.



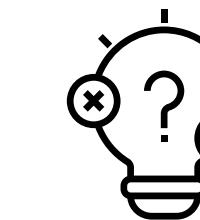
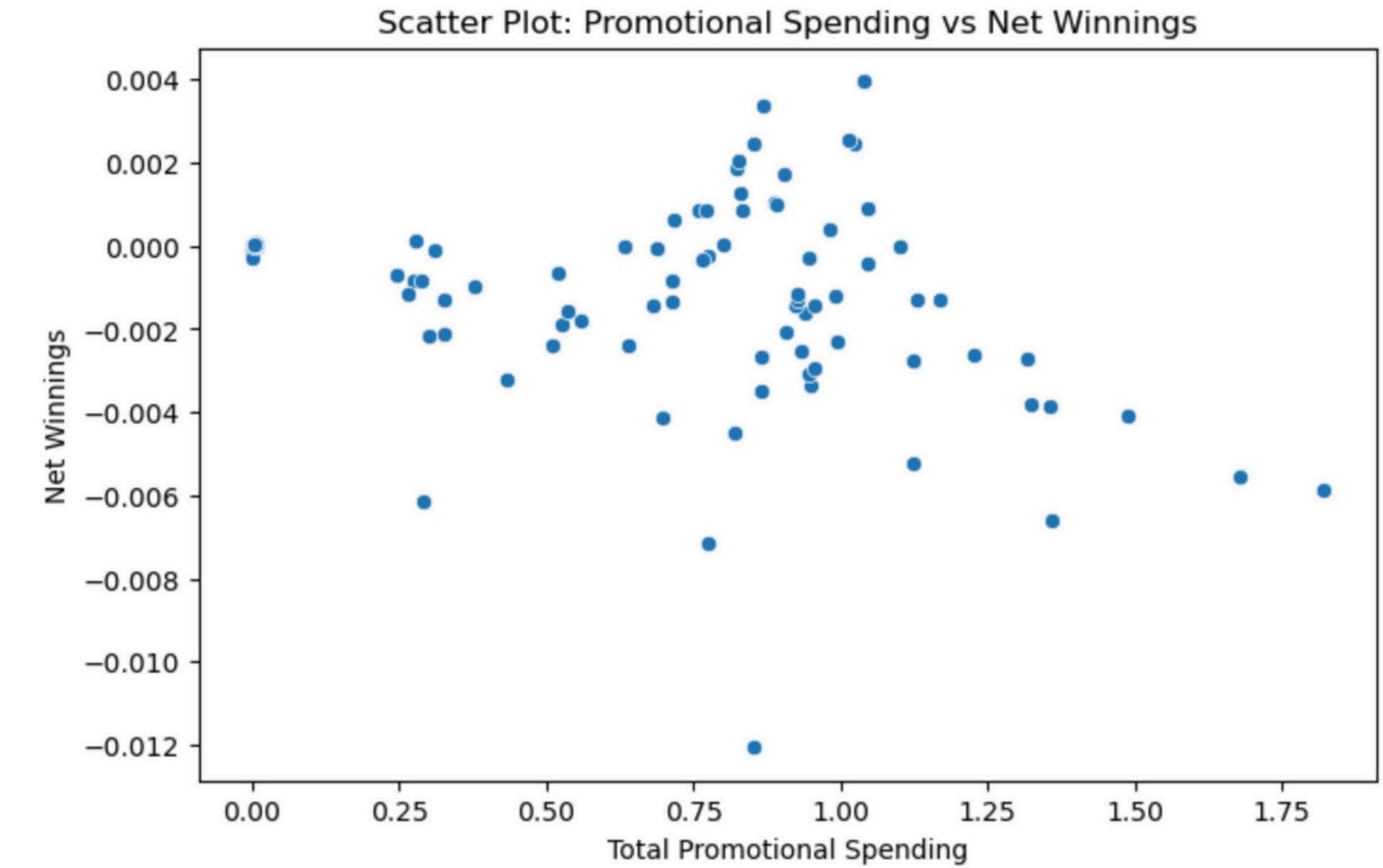
Hypothesis Test

Pearson's correlation coefficient: 0.4408
P-value: 0.0000
Reject the null hypothesis



Correlation between promotional spending and net winnings

The correlation coefficient (-0.4016) indicates a moderate negative correlation between promotional spending and net winnings. As promotional spending increases, net winnings tend to decrease. Net winnings fluctuate around zero, the scatter plot suggests that higher promotional spending does not necessarily lead to increased profitability.



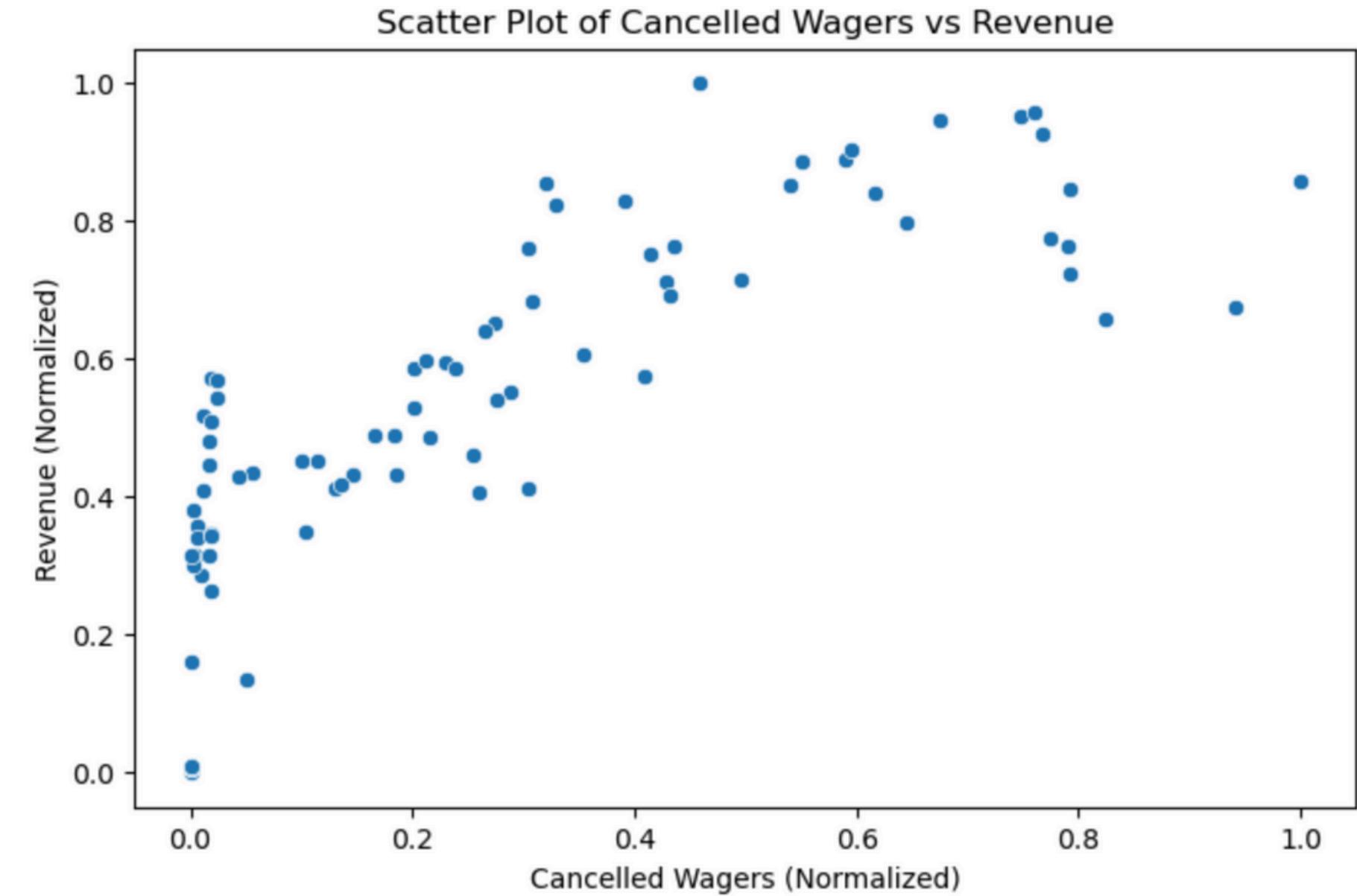
Hypothesis Test

Pearson's correlation coefficient: -0.4016
P-value: 0.0000
Reject the null hypothesis



How do cancelled wagers impact revenue?

The correlation coefficient (0.8327) indicates a strong positive relationship. As the number of cancelled wagers increases, revenue tends to increase as well. The scatter plot suggests that after a certain point, revenue does not increase as consistently with cancelled wagers (some points at high cancelled wagers have lower revenue). An increase in cancelled wagers might indicate higher engagement or risk-taking behavior by players, which could drive revenue.



Key Insights And Recommendations

- Leverage the months where revenue peaks. During slower months, casinos can offer promotions, such as discounted hotel stays, bonus chips to attract more visitors.
- Identifying and replicating successful strategies from top licenses can enhance profitability.
- Strategies such as loyalty rewards, premium features should be considered to drive revenue rather than indiscriminately providing promotions.
- Imposing mild restrictions on frequent cancellations.

LEVERAGE PEAK
REVENUE
PERIODS

TARGETED
PROMOTIONAL
STRATEGY

FOCUS ON HIGH-
PERFORMING
LICENSES

OPTIMIZE
CANCELLATION
POLICIES