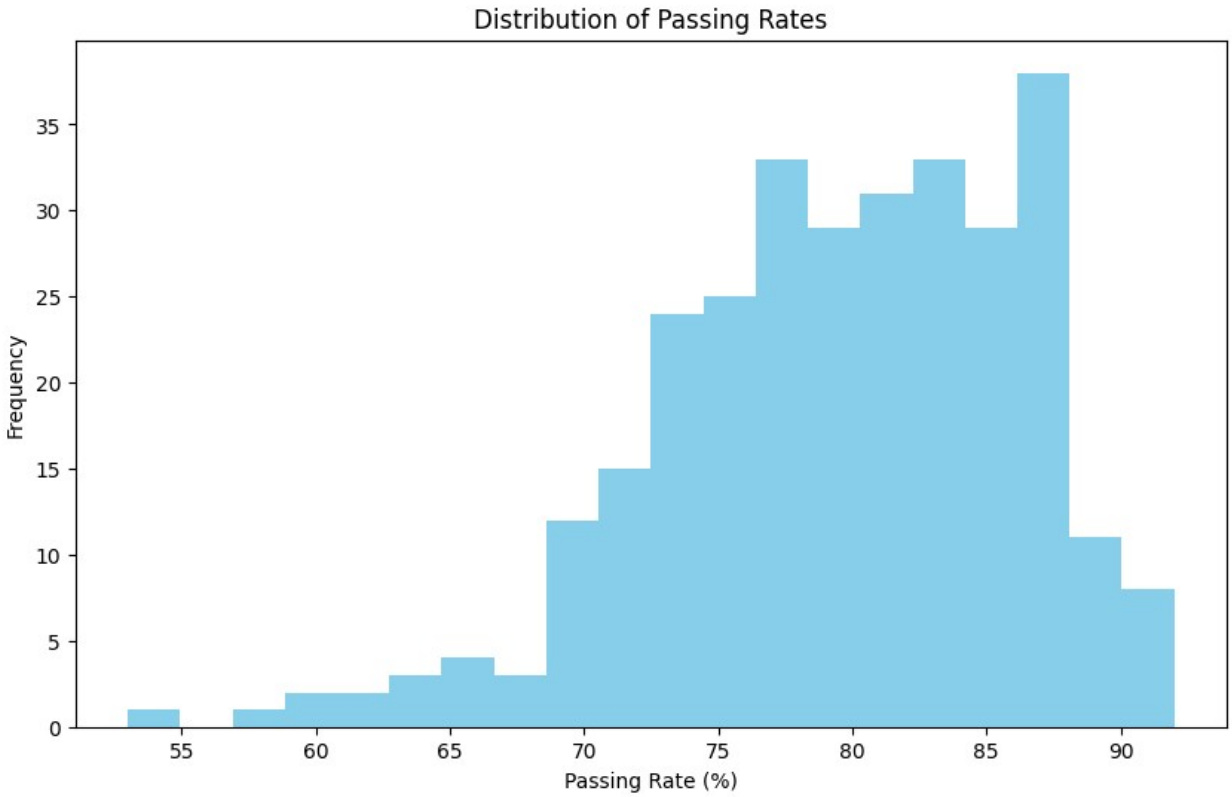
```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from scipy import stats

# Load the dataset
data = pd.read_csv("passes1.csv")

# Summary statistics
summary_stats = data.describe()
print(summary_stats)

# Visualize passing rates
plt.figure(figsize=(10, 6))
plt.hist(data['passing_quote'], bins=20, color='skyblue')
plt.xlabel('Passing Rate (%)')
plt.ylabel('Frequency')
plt.title('Distribution of Passing Rates')
plt.show()
```

	game_id	passing_quote
count	306.000000	304.000000
mean	95.000000	79.680921
std	49.138146	6.960058
min	11.000000	53.000000
25%	53.000000	75.000000
50%	95.000000	80.000000
75%	137.000000	85.000000
max	179.000000	92.000000




```
# Calculate winner's passing rate
winners_passing_rate = data.loc[data['winner'] == 1, 'passing_quote']
losers_passing_rate = data.loc[data['winner'] == 0, 'passing_quote']

# Perform t-test
t_stat, p_value = stats.ttest_ind(winners_passing_rate,
losers_passing_rate)

# Print results
print("Winner's Passing Rate vs. Loser's Passing Rate:")
print("t-statistic:", t_stat)
print("p-value:", p_value)
```

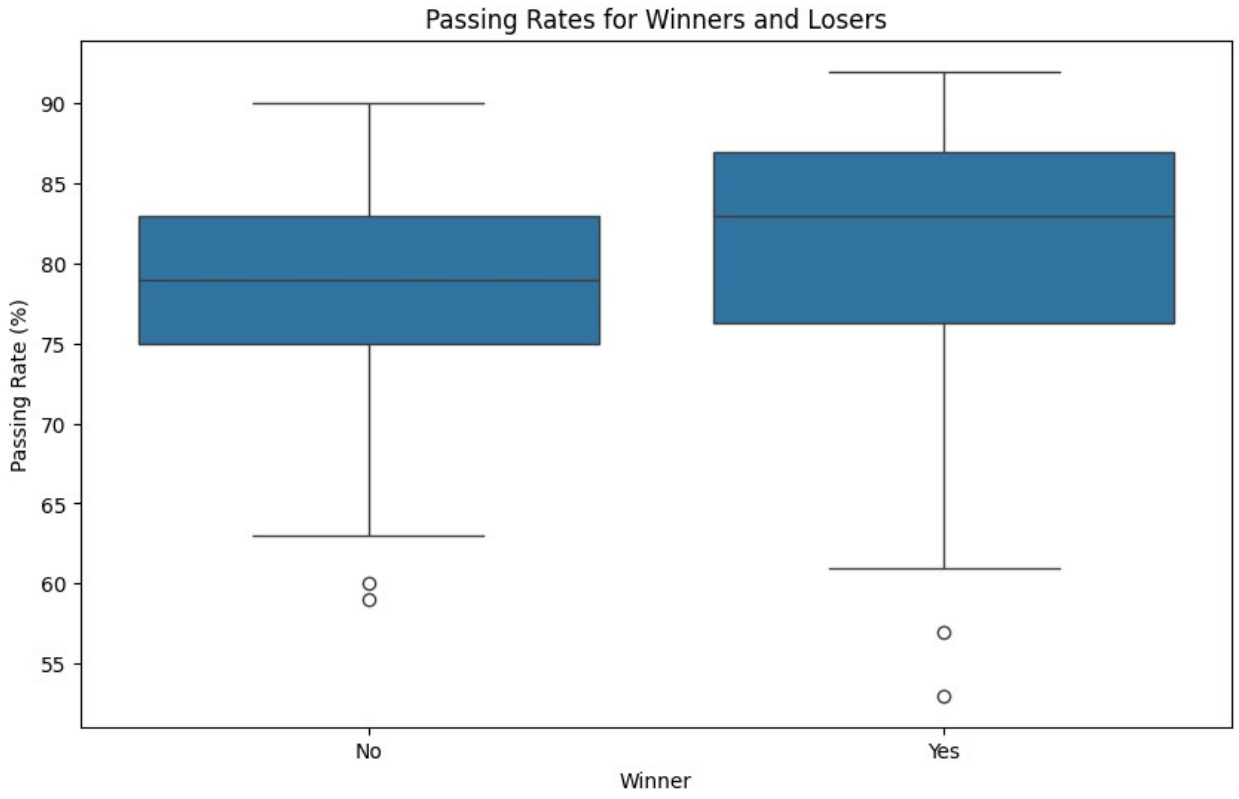
```
Winner's Passing Rate vs. Loser's Passing Rate:
t-statistic: nan
p-value: nan
```

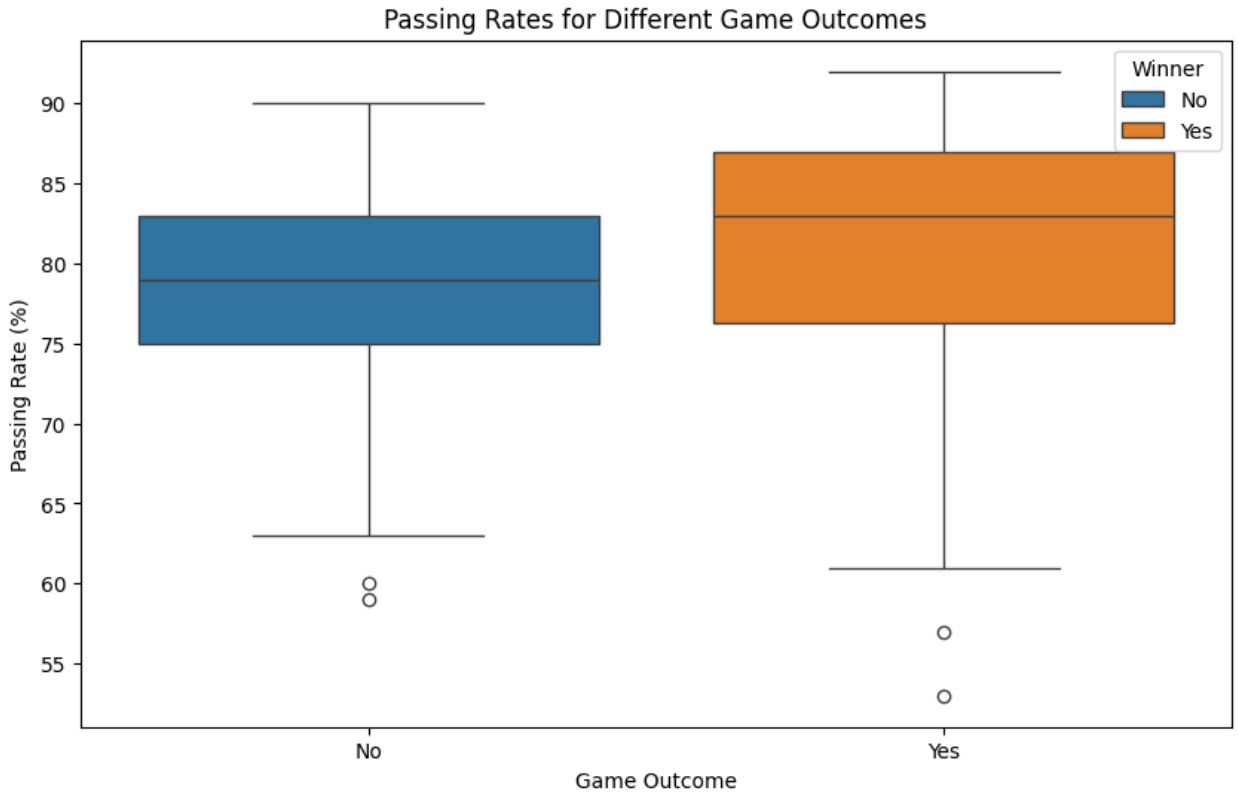
```
# Calculate difference in passing rates for games with a winner
winners_difference = data.loc[data['winner'] == 1, 'passing_quote'] -
data.loc[data['winner'] == 0, 'passing_quote']

# Calculate difference in passing rates for games ending in a draw
draws_difference = np.abs(data.loc[data['winner'] == 0,
'passing_quote'] - data.loc[data['winner'] == 0, 'passing_quote'])

# Perform t-test
```

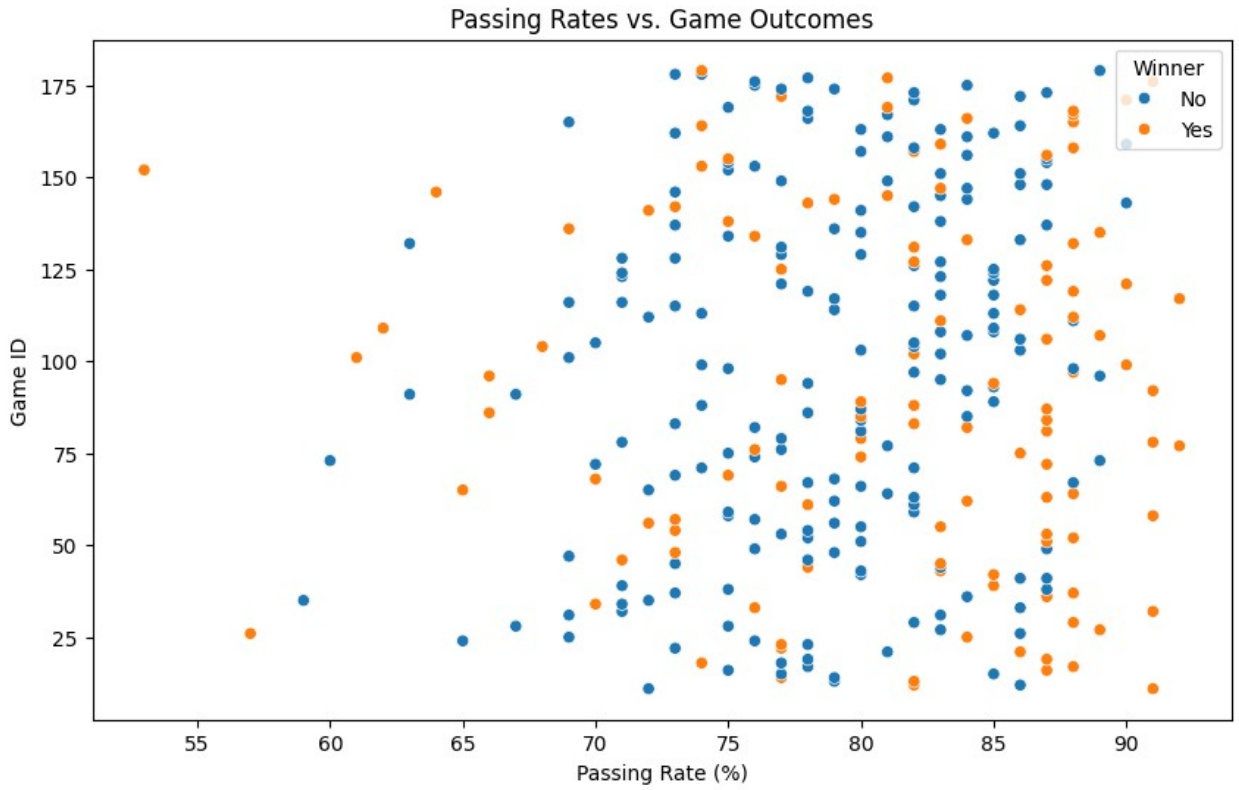
```
t_stat_diff, p_value_diff = stats.ttest_ind(winners_difference,
draws_difference)

# Print results
print("Difference in Passing Rates for Games with Winner vs. Draw:")
print("t-statistic:", t_stat_diff)
print("p-value:", p_value_diff)
```

```
Difference in Passing Rates for Games with Winner vs. Draw:
t-statistic: nan
p-value: nan
```

```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns

# Load the dataset
data = pd.read_csv("passes1.csv")

# Visualize passing rates for winners and losers
plt.figure(figsize=(10, 6))
sns.boxplot(x='winner', y='passing_quote', data=data)
plt.title("Passing Rates for Winners and Losers")
plt.xlabel("Winner")
plt.ylabel("Passing Rate (%)")
plt.show()

# Visualize passing rates for different game outcomes
plt.figure(figsize=(10, 6))
sns.boxplot(x='winner', y='passing_quote', data=data, hue='winner')
plt.title("Passing Rates for Different Game Outcomes")
plt.xlabel("Game Outcome")
plt.ylabel("Passing Rate (%)")
plt.legend(title='Winner', loc='upper right')
plt.show()

# Scatter plot of passing rates vs. game outcomes
plt.figure(figsize=(10, 6))
sns.scatterplot(x='passing_quote', y='game_id', hue='winner',
data=data)
plt.title("Passing Rates vs. Game Outcomes")
plt.xlabel("Passing Rate (%)")
plt.ylabel("Game ID")
plt.legend(title='Winner', loc='upper right')
plt.show()
```


Passing Rates for Winners and Losers
Passing Rate (%)
90
85
80
75
70
65
60
55
No
Yes
Winner

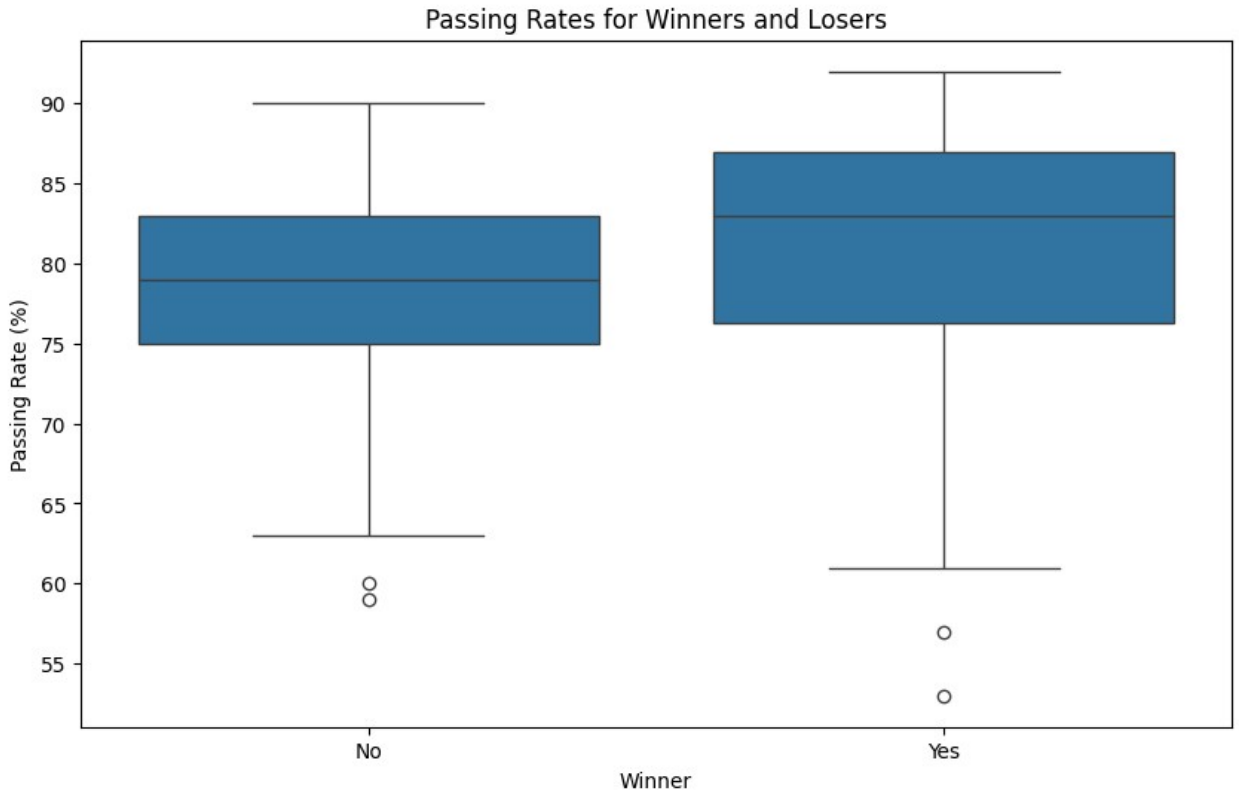

Passing Rates for Different Game Outcomes
Winner
No
Yes
Passing Rate (%)
90
85
80
75
70
65
60
55
No
Yes
Game Outcome

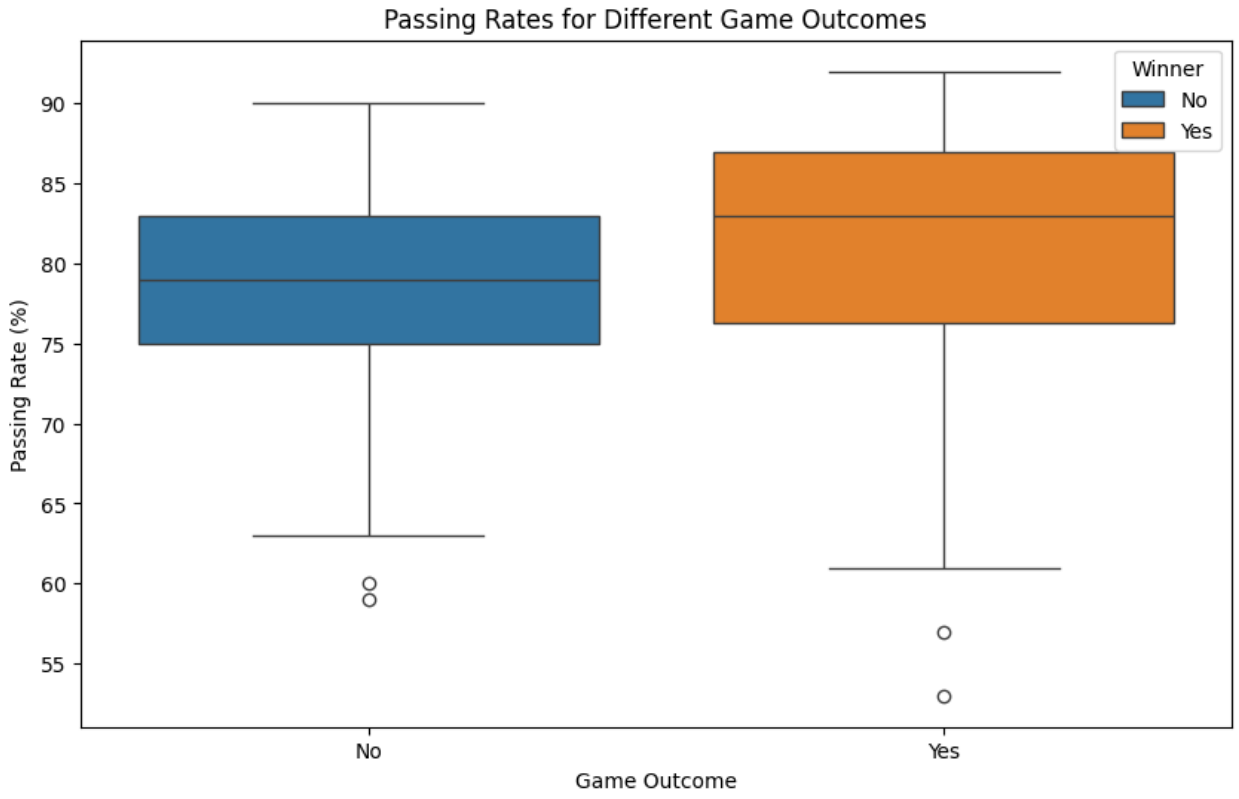



```python
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
from scipy import stats

# Load the dataset
data = pd.read_csv("passes1.csv")

# Display the first few rows of the dataset
print("First few rows of the dataset:")
print(data.head())

# Summary statistics
summary_stats = data.describe()
print("\nSummary statistics:")
print(summary_stats)

# Visualize passing rates for winners and losers
plt.figure(figsize=(10, 6))
sns.boxplot(x='winner', y='passing_quote', data=data)
plt.title("Passing Rates for Winners and Losers")
plt.xlabel("Winner")
plt.ylabel("Passing Rate (%)")
plt.show()
```

```python
# Visualize passing rates for different game outcomes
plt.figure(figsize=(10, 6))
sns.boxplot(x='winner', y='passing_quote', data=data, hue='winner')
plt.title("Passing Rates for Different Game Outcomes")
plt.xlabel("Game Outcome")
plt.ylabel("Passing Rate (%)")
plt.legend(title='Winner', loc='upper right')
plt.show()
```

```
First few rows of the dataset:
   game_id  passing_quote winner
0       11           72.0     No
1       11           91.0    Yes
2       12           82.0    Yes
3       12           86.0     No
4       13           82.0    Yes

Summary statistics:
          game_id  passing_quote
count  306.000000     304.000000
mean    95.000000      79.680921
std     49.138146       6.960058
min     11.000000      53.000000
25%     53.000000      75.000000
50%     95.000000      80.000000
75%    137.000000      85.000000
max    179.000000      92.000000
```


Passing Rates for Winners and Losers
Passing Rate (%)
90
85
80
75
70
65
60
55
No
Yes
Winner


Passing Rates for Different Game Outcomes
Winner
No
Yes
Passing Rate (%)
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No
Yes
Game Outcome