DATA ANALYSIS AND VISUALIZATION

Week 11: Inferential Statistics and Hypothesis Testing

In-Class Activity: •Explore inferential statistics and hypothesis

Assignment: • Apply hypothesis testing to draw inferences from a dataset

```
import numpy as np
from scipy import stats

# Generate sample data
np.random.seed(0)
sample1 = np.random.normal(loc=10, scale=5, size=100)
sample2 = np.random.normal(loc=12, scale=5, size=100)

# Perform t-test
t_stat, p_value = stats.ttest_ind(sample1, sample2)

# Print results
print("T-statistic:", t_stat)
print("P-value:", p_value)

# Interpret results
alpha = 0.05
if p_value < alpha:
    print("Reject null hypothesis: There is a significant difference between the two sampl
else:
    print("Fail to reject null hypothesis: There is no significant difference between the
```

```
T-statistic: -2.9083458378968827
P-value: 0.00404840929812317
Reject null hypothesis: There is a significant difference between the two sampl
```