Econ 4006 – Economics of Sports

Spring 2025

Homework #1 – Local Economic Impact of Mega Events

Directions: You have been tasked by the FSU Booster's and Athletic Department to estimate the local economic impact of hosting FSU Football Games. In this assignment, you will use real data to estimate the impact of hosting games on a single margin, the lodging and hospitality industry.

In Canvas, download the following dataset, "**tlhSTR_hotels.dta"**. This data has been provided by STR Global, a data consulting firm in the hotel and hospitality industry, under an academic use license (https://str.com/training/academic-resources/share-center).

This data has been combined with data reporting the dates of home football games for the FSU Seminoles (https://fbschedules.com/ncaa-2010/team/florida-state).

Data Contents: The dataset contains daily market level hotel data for the local Tallahassee market. The data is generated by hotels that report their daily pricing and occupancy data to STR in exchange for market level reports on their segment of the market. Below I will summarize variables that are key to completing the homework, it is not an exhaustive description.

Variable Name	Description
Day	Numeric Variable for day number of month, values 1-31
Month	Numeric Variable for month of year, values 1-12
Year	Numeric Variable reporting the year, values 2010-2018
OccupancyRate	Numeric variable reporting the percentage of rooms in the sample rented, values 0-100
avgDailyRate	Numeric variable reporting the average daily hotel rate for hotels in the TLH market area
roomsAvailable	Numeric variable reporting the number of hotel rooms available from hotels reporting
roomsRented	Numeric variable reporting the number of rooms rented on a given day
Revenue	Numeric variable reporting the total daily revenue for the entire TLH market area
hotelsReporting	Numeric variable reporting the number of hotels that submitted data to STR on the market day
hotelRoomsReporting	Numeric variable, reports the number of rooms covered by the sample on a market day
ShareOfHotelsReporting	Numeric variable, reports the percent of hotels in the TLH market sharing data with STR on the market day
game	Binary variable, takes value of 1 if the day contains a FSU home game, 0 otherwise

dayBeforeGame	Binary variable, takes value of 1 if it is the day before a FSU home game, 0 otherwise
dayAfterGame	Binary variable, takes value of 1 if it is the day after a FSU home game, 0 otherwise
day1 – day7	Binary variable, reports if a given market day is on a specific day of the week (i.e.) day1 = 1 if the day is a Friday, 0 otherwise
month1 – month12	Binary variable, reports if a given market day is in a specific month of the year (i.e.) month1 = 1 if the market day is in January, 0 otherwise

Conceptual Questions:

1. If you were tasked to estimate the local economic impact of hosting FSU athletic events, what outcomes aside from hotel/lodging would you like to evaluate.

2. Does the hotel/lodging data provide a complete picture of the lodging industry in the TLH market?

Data Exercises:

1. How many unique market-day observations are contained in the dataset?

2. What are the average, minimum, and maximum values of revenue, avgDailyRate, and OccupancyRate (Hint: the sum command will be useful)

3. What is the avgDailyRate for each month in 2015? Which month has the highest avgDailyRate?

4. What is the avgDailyRate for each day of the week in 2017? Which day of the week has the highest avgDailyRate?

5. Perform a t-test of the difference in means for the following variables, comparing game days to non-game days: avgDailyRate, Revenue, roomsRented. For each variable, report the average for game and non-game days, the difference, and indicate if the difference is statistically significant at the 5% level (Hint: the ttest command will be useful).

   Based on your results, what is the average price markup for hotels on game days?

6. Using the "twoway graph bar" command and options, create a bar chart of the AvgDailyRate variable for the days in the window Aug 27, 2017 and Nov 4, 2017. Save this figure as "dailyRate_lastname_firstname.pdf". Based on the figure, if you had no information regarding game days, could you identify which days are likely candidates for game weekends? How many game weekends do you suspect occur over this 2 month time window?

7. Suppose an economist wants to formally model the relationship between 3 outcomes (hotel prices, quantities, and revenues) and game days. To estimate the relationship, the economist specifies the following linear model:

$$Y_{it} = \beta_0 + \beta_1 DayBeforeGame_{it} + \beta_2 Game_{it} + \beta_3 DayAfterGame_{it} + \varepsilon_{it}$$

   Estimate the model and report your regression results using the reg command for each of the 3 outcomes (run 3 regressions, 1 for each outcome: hotel prices, quantities, and revenues)

8. Are they any other potential events that regularly occur in Tallahassee that might affect hotel prices, occupancy rates, and revenues that the model has not explicitly addressed?

9. Using your regression results for the outcome avgDailyRate, you should find that the estimates for β_1 and β_2 are positive and statistically significant. Is there any reason why prices increase on these days, but not the day after a game?

10. Perhaps it is surprising the prices rise on the day before a game and the day of a game. Do the local hotels have any policies in effect that could contribute to this finding.

11. Using the estimates from the regression using Revenue as the outcome of interest, determine the total increase in revenues over the 2018 season (note, there were 7 home games in 2018).

12. Are there any possible effects of hosting football games that are negative? If so, what type of data would you need to estimate a possible relationship?