Spring 2023 **Firstname M. Lastname**

University of Central Florida
College of Business

QMB 6911
Capstone Project in Business Analytics

Solutions: Problem Set #2

Data Description

By engaging an industry consultant to gather relevant and appropriate information, your firm has been able to put together data concerning 248 different fly-fishing reels, over one-half of which are produced in the United States, with the remainder being produced in Asia—either in China or Korea. These data are contained in the file `FlyReels.csv`, which is available in the `Data` folder. Each fly-fishing reel in the data set is a row, while the columns correspond to the variables whose names and definitions are the following:

Variable	Definition
`Name`	product name (a string)
`Brand`	brand name (a string)
`Weight`	weight of reel in ounces (a real number)
`Diameter`	diameter of reel in inches (a real number)
`Width`	width of reel in inches (a real number)
`Price`	price of reel in dollars (a real number)
`Sealed`	whether the reel is sealed; `"Yes"` versus `"No"` (a string)
`Country`	country of manufacture, (a string)
`Machined`	whether the reel is machined versus cast; machined=`"Yes"`, while cast=`"No"` (a string)

Empirical Distribution Function of Fly Reel Prices

Figure 1 is a plot of the empirical cumulative distribution function (CDF) of fly reel prices.

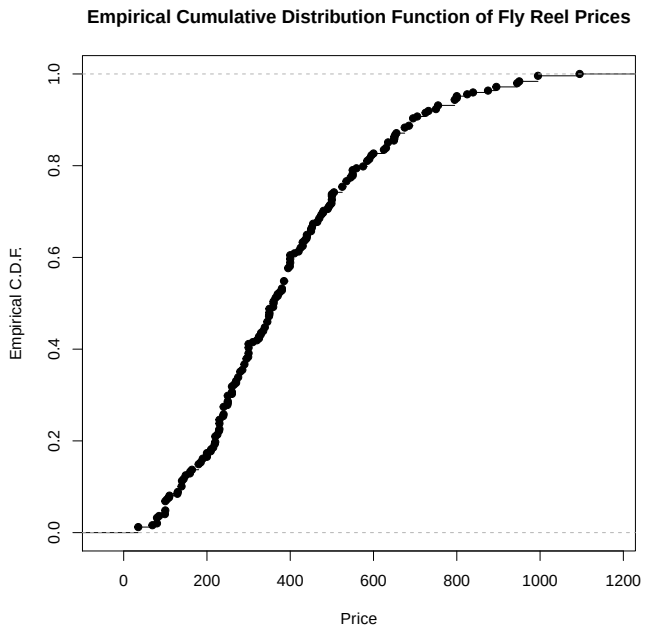

Figure 1: Empirical Distribution Function of Fly Reel Prices

Relative Histogram of Fly Reel Prices

Figure 2 is a histogram of fly reel prices.

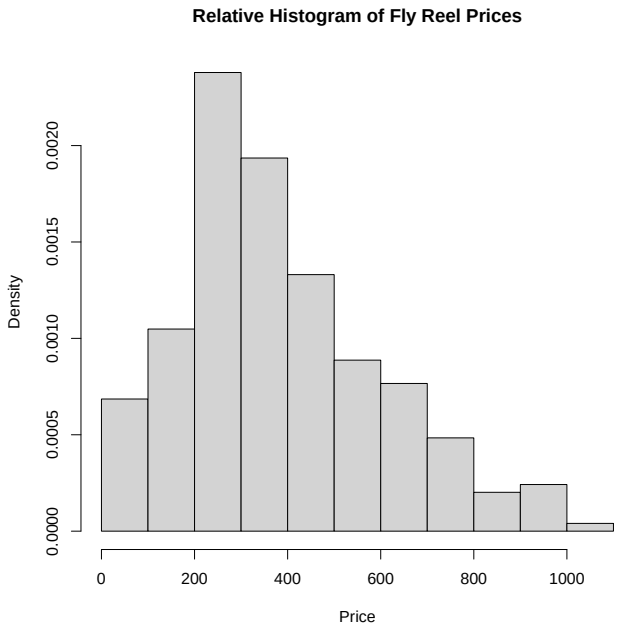

Figure 2: Relative Histogram of Fly Reel Prices

Probability Density Function of Fly Reel Prices

Figure 3 depicts the kernel-smoothed probability density function of the natural logarithm of price.

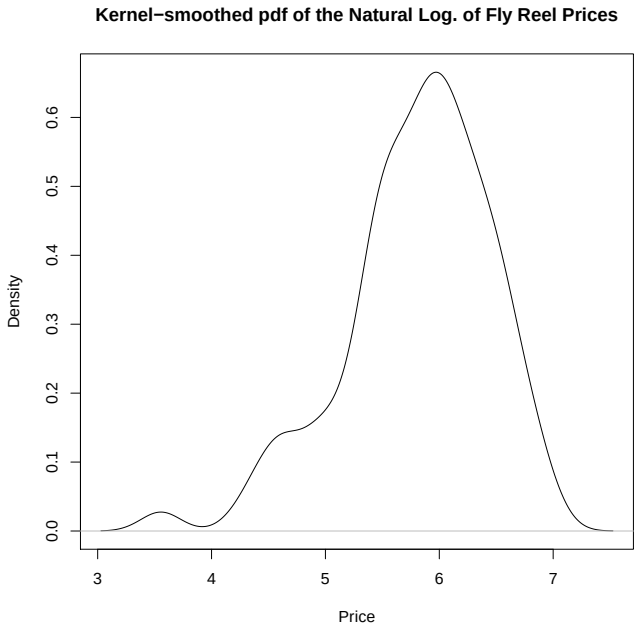

Figure 3: Probability Density Function of Fly Reel Prices

0.0.1 Probability Density Function By Country of Manufacture

Now we investigate the prices of fly reels made in the USA compared to those made in China and Korea. Figure 4 shows the kernel density estimate of the prices of fly reels made in the USA in blue, those made in China in red, and those made in Korea in green. The modes of the distributions are similar, however, we observe more variability in the prices of fly reels made in Korea. The distribution of fly reels made in the USA is shifted toward the higher price range, compared to those made in other countries. This indicates mild support for a "Made in America" premium but we should also consider that it may be explained by the features of the reels made in the USA. We will investigate this further in regression analysis and other modeling approaches.

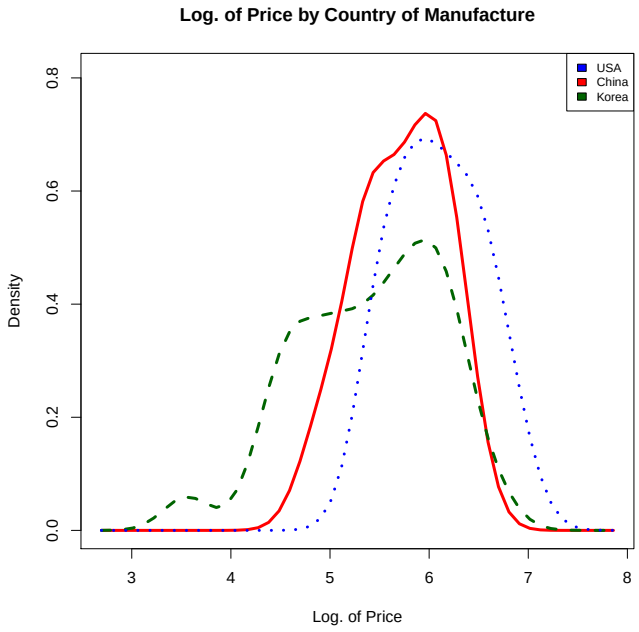

Figure 4: Densities of Log. Fly Reel Prices by Country of Manufacture