Spring 2023 **First Last**

University of Central Florida
College of Business

QMB 6912
Capstone Project in Business Analytics

Problem Set #4

1 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)

I have downloaded the file `FlyReels.csv`, loaded the data described above into R, calculated the summary statistics for these data, and finally, presented these statistics in LaTeX tables. These operations are all performed by the script `FlyReel_Tables.R` in the `Code` folder. The script uses an R package called `xtable` to automate the production of the tables from a data frames in R.)

I analyze the data in subsets, according to country of manufacture, calculating the summary statistics for each subset and present these statistics in the LaTeX tables that follow.

2 Summary by Country of Manufacture

Table 1 lists summary statistics for numeric variables in separate columns for subsamples defined by the country of manufacture.

	China	Korea	USA
Min. Weight	3.000	7.296	12.900
Mean Weight	2.100	6.500	15.097
Max. Weight	2.540	6.459	14.800
Min. Diameter	2.500	3.935	5.250
Mean Diameter	2.750	3.925	5.500
Max. Diameter	2.700	3.878	5.430
Min. Width	0.790	1.093	1.570
Mean Width	0.7874	1.1434	1.5800
Max. Width	0.750	1.070	1.688
Min. Price	129.0	331.6	600.0
Mean Price	34.99	280.22	839.00
Max. Price	200.0	484.9	1095.0

Table 1: Summary by Country of Manufacture

3 Country of Manufacture by Brand of Fly Reel

Table 2 lists the frequencies of observations of each brand of fly reel by country of manufacture.

	China	Korea	USA	Total
3-TAND	15	0	0	15
Abel	0	0	15	15
Allen	0	18	7	25
Aspen	0	0	8	8
Bauer	0	0	2	2
Cheeky	11	0	0	11
ECHO	0	12	0	12
Galvan	0	0	23	23
Hatch	0	0	8	8
Loop	0	14	0	14
Nautilus	0	0	15	15
Orvis	1	0	1	2
Ross	0	0	28	28
Sage	0	6	0	6
Taylor	0	12	0	12
TFO	0	16	0	16
Tibor	0	0	4	4
Waterworks-Lamson	0	8	24	32
Totals	27	86	135	248

Table 2: Country of Manufacture by Brand of Fly Reel

4 Reel Design by Brand of Fly Reel

Table 3 lists the frequencies of observations of each brand of fly reel across two categorical variables: whether the reel is sealed and whether the reel is machined versus cast.

	Unsealed	Sealed	Cast	Machined	Total
3-TAND	0	15	0	15	15
Abel	9	6	0	15	15
Allen	8	17	1	24	25
Aspen	8	0	0	8	8
Bauer	0	2	0	2	2
Cheeky	6	5	6	5	11
ECHO	9	3	12	0	12
Galvan	20	3	0	23	23
Hatch	0	8	0	8	8
Loop	0	14	0	14	14
Nautilus	4	11	0	15	15
Orvis	0	2	0	2	2
Ross	21	7	0	28	28
Sage	2	4	0	6	6
Taylor	0	12	0	12	12
TFO	4	12	4	12	16
Tibor	3	1	0	4	4
Waterworks-Lamson	0	32	8	24	32
Totals	94	154	31	217	248

Table 3: Reel Design by Brand of Fly Reel

5 Correlation Matrices

We plot the correlation between fly reel prices and numerical variables. Table 4 shows the correlation between the log. of house sale prices and the numeric variables weight, diameter, and width. All three variables are positively correlated with prices.

	Price	Weight	Diameter	Width
Price	1.000	0.546	0.498	0.254
Weight	0.546	1.000	0.833	0.687
Diameter	0.498	0.833	1.000	0.643
Width	0.254	0.687	0.643	1.000

Table 4: Correlation Matrix of Prices and Numeric Variables