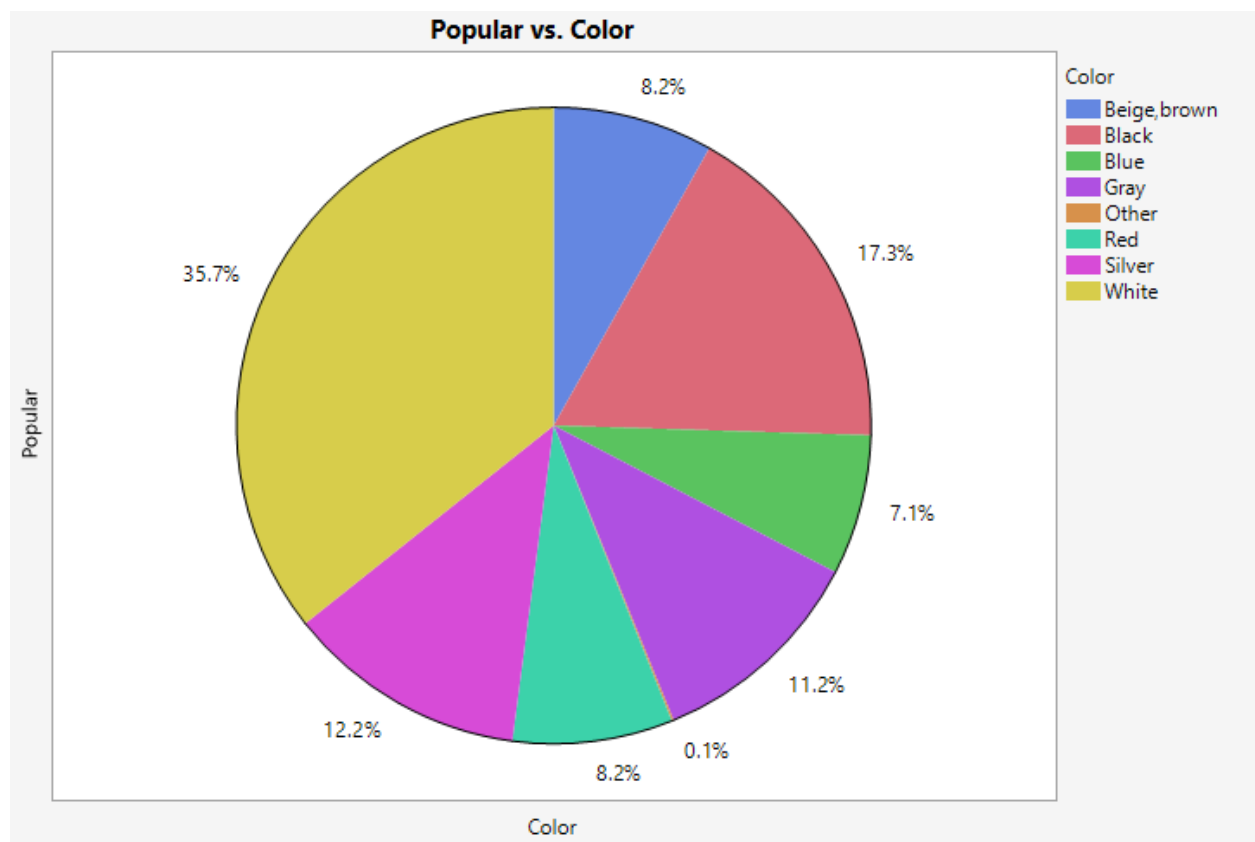
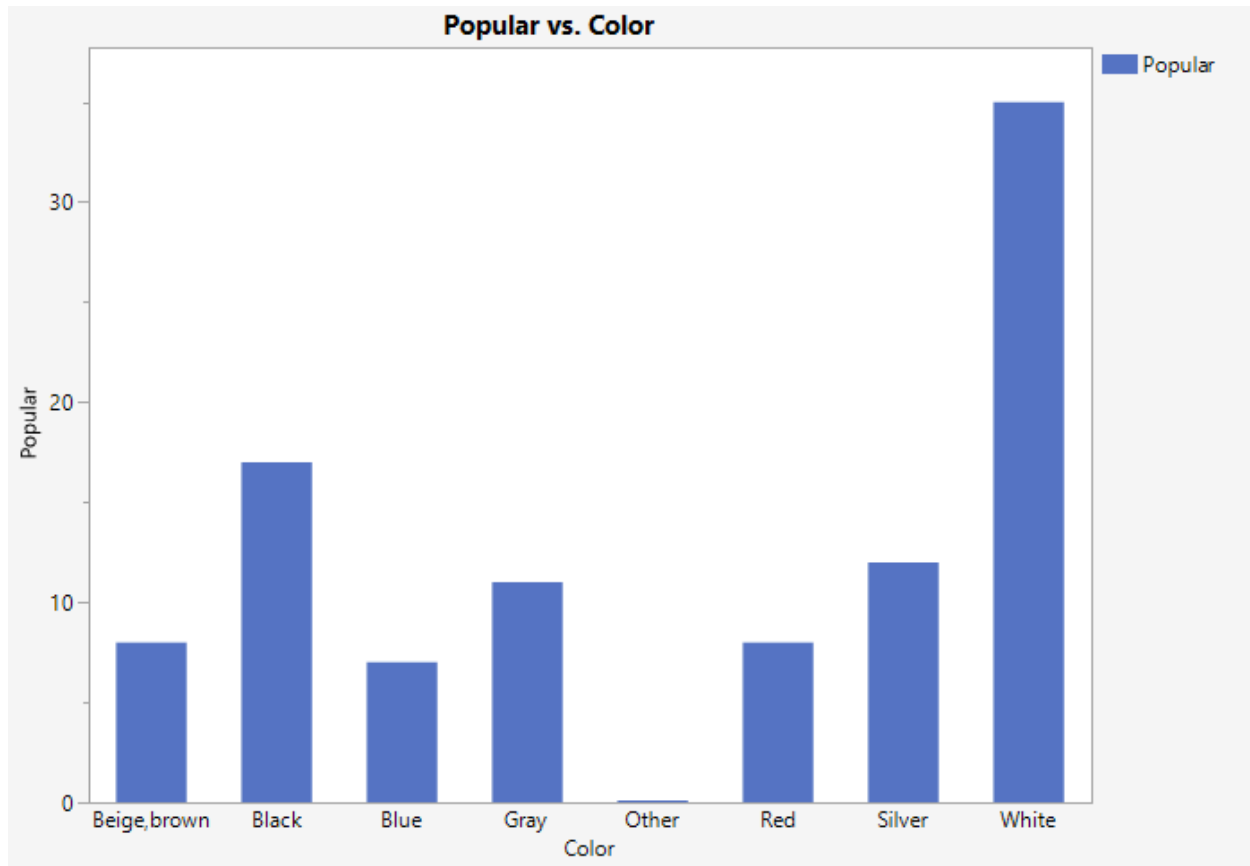


1). The most popular colors for cars and light trucks vary with region and type of vehicle and over time. In North America, silver and white are the most popular choices for midsize cars, silver and black for convertibles and coupes, and white for light trucks. Despite this variation, overall white remains the top choice worldwide for the eighth consecutive year, increasing its lead by 2% over the previous year. Here is the distribution of the top colors for vehicles sold globally in 2018. (use data **ex01-25carcolor.jmp**). Fill in the percentage of vehicles that are in other color in the data, Make a bar graph and pie chart to display the distribution of color popularity (including other color).

Answer:

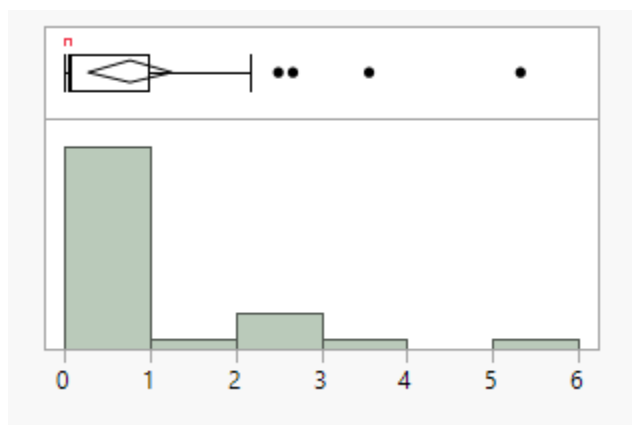
The percentage of other colors is 0.1 because when I add the numbers together it adds up to 99.9 but in a pie chart it needs to add up to a 100, so that means that the other color is 0.1.





2.) **Food Oils and Health.** Fatty acids, despite their unpleasant name, are necessary for human health. Two types of essential fatty acids, called omega-3 and omega-6, are not produced by our bodies and so must be obtained from our food. Food oils, widely used in food processing and cooking, are major sources of these compounds. There is some evidence that a healthy diet should have more omega-3 than omega-6. **ex01-34foodoils.jmp** gives the ratio of omega-3 to omega-6 in some common food oils. Values greater than 1 show that an oil has more omega-3 than omega-6.

a. Make a histogram and a stem-leaf plot of these data. (JMP required)



Stem and Leaf		
Stem	Leaf	Count
5	3	1
4		
4		
3	6	1
3		
2	57	2
2	002	3
1		
1		
0	56	2
0	00000000111111111124	21

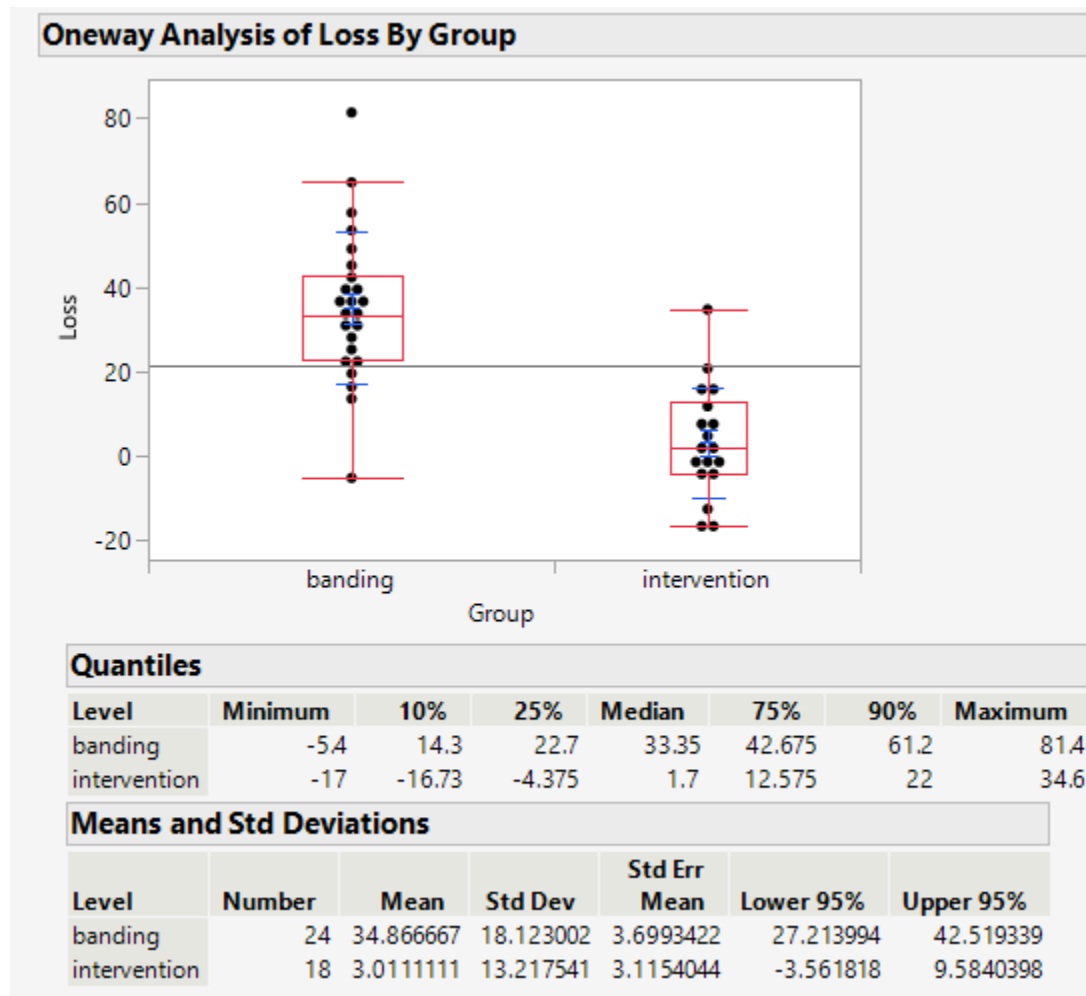
0|0 represents 0.0

b. What is the shape of the distribution? How many of the 30 food oils have more omega-3 than omega-6? What does this distribution suggest about the possible health effects of modern food oils

The shape of the distribution is right skewed. 7 of the 30 food oils have more omega-3 than omega-6. This distribution suggests that the majority of the modern food oils do not have more omega-3 than omega-6, so unfortunately the majority of the modern food oils are deprived of such necessary nutrients, and may have adverse health effects on the consumers.

3). Adolescent obesity is a serious health risk affecting more than 5 million young people in the United States alone. Laparoscopic adjustable gastric banding has the potential to provide a safe and effective treatment. Fifty adolescents between 14 and 18 years old with a body mass index (BMI) higher than 35 were recruited from the Melbourne, Australia, community for the study. Twenty-five were randomly selected to undergo gastric banding, and the remaining 25 were assigned to a supervised lifestyle intervention program involving diet, exercise, and behavior modification. All subjects were followed for two years. Data **ex02-42gastric.jmp** shows the weight losses, in kilograms, for the subjects who completed the study:

Use JMP to give a graphical comparison of the weight loss distributions for the two groups, using side-by-side boxplots. Provide appropriate numerical summaries for the two distributions and identify any high outliers in either group. What can you say about the effects of gastric banding versus lifestyle intervention on weight loss for the subjects in this study?



The numerical summaries are given in the picture above. There was one high outlier from the banding group with weight loss of 81.4 kg. I can conclude from the study that Gastric banding causes more weight loss and its effects are more profound than lifestyle intervention.

4). **The Fortune Global 500.** The *Fortune* Global 500, also known as the Global 500, is an annual ranking by *Fortune* magazine of the top 500 corporations worldwide as measured by revenue. In total, the Global 500 generated \$32.7 trillion in revenues in 2018. **ex02-52globe500.jmp** provides a list of the 30 companies with the highest revenues (in billions of dollars) in 2018. A stemplot or histogram shows that the distribution is strongly skewed to the right.

a. Give the five-number summary. Explain why this summary suggests that the distribution is right-skewed.

Min: 139.4

Q1: 149.125

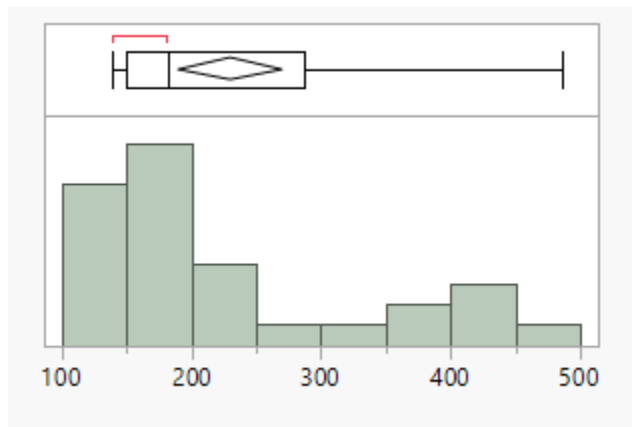
Median: 182

Q3: 286.3

Max: 485.7

The five-number summary suggests that the distribution is right-skewed because the values are spread out more on the higher end (right side) than on the lower end.

b. Give an outlier boxplot for this data, identify the company which are outliers.



There is an outlier box plot above this histogram and it shows that there are no outliers.

c. Use 1.5IQR rule to Identify companies which are outliers (manual computation). Does your computation result agree with the outlier boxplot in b?

$$\text{IQR} = Q3 - Q1 = 286.3 - 149.125 = 137.175$$

$$1.5 * \text{IQR} = 205.763$$

$$Q1 - (1.5 * \text{IQR}) = 149.125 - 205.763 = -56.6375$$

$$Q3 + (1.5 * \text{IQR}) = 286.3 + 205.763 = 492.063$$

No number in the data set is negative so we only look at the upper bound. Since none of the companies exceed 492.063, there are no outliers in this dataset. Yes, my computation result agrees with the outlier boxplot in b.