**Chapter 2 Case Study #1**

**Heavenly Chocolates Web Site Transactions**

Heavenly Chocolates makes and sells chocolate in Saratoga Springs, NY. They developed a website and sell chocolates online. The want to increase sales even further and so they have provided a sample of data from their web traffic from the last month.

Let’s take a look at the data:

**Goal: 1.** Determine whether online shoppers who spend more time and view more pages also spend more money during their visit to the web site.

**Let’s use the methods of descriptive statistics that we’ve learned the last 2 weeks to submit a useful report for the Heavenly Chocolates company.**

1. **Summarize the variables: “Length of Time”, “Number of Pages”, and the “Amount Spent” numerically.**
   1. Create a new sheet at the bottom
   2. Title the sheet “DescripStats”
   3. In B1 type “Time(min)”
   4. In C1 type “Pages Viewed”
   5. In D1 type “Amount Spent”
   6. In A3 type, Mean, Median, Mode, SD, Variance, Range, Min, Max, Sum, Count
   7. Put borders around the table for aesthetics
   8. Fill in column B, C and D with the calculations

**Conclusions:**

**For Time:** Average about 11-12 mins on the website. Max is 33 mins.

**Pages Viewed:** Average about 4-5 pages viewed. Max is 10

**Amount Spent:** Average about $68, Min $17 and max $158

1. **Summarize the variables: “Length of Time”, “Number of Pages”, and the “Amount Spent” graphically. (Histograms)**
   1. Histogram for “Length of Time”
      1. Number of Bins: We’ll say 10 or 11
      2. Bin Width: (32.9 – 4.3) / 11 = 2.6 – Let’s say 3
      3. Bin Limits: 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35
      4. Change Bin limits (Add ‘)
      5. Change Chart Titles

**Conclusions:** Most people spend between 8 and 17 minutes. Histogram is skewed right. Could be a couple of outliers if the people who spent a lot of time didn’t spend a lot of money.

* 1. Histogram for “Number of Pages”
     1. Number of Bins: We’ll say 9 – 50 numbers between 2 and 10
     2. Bin Width: 1
     3. Bin Limits: 2,3,4,5,6,7,8,9,10
     4. Change Bin limits (Add ‘)
     5. Change Chart Titles

**Conclusions:** Most people view between 2 and 7 pages. Pretty wide range. The most is right at 4 pages. Maybe there are some popular chocolate products on those 4 pages. Might be helpful to know if it’s the same 4 pages or not.

* 1. Histogram for “Amount Spent”
     1. Number of Bins: We’ll say 12, 13, 14 – 50 numbers between 17.84 and 158.51
     2. Bin Width: (158.51 – 17.84) / 12 = 11.7 so we can say and even 12
     3. Bin Limits: 15, 27, 39, 51, 63, 75, 87, 99, 111, 123, 135, 147, 159, 171
     4. Change Bin limits (Add ‘)
     5. Change Chart Titles

**Conclusions:** Also skewed right. Most people spend between $44 and $80. Could be popular products again or some kind of pricing/marketing deal.

1. **Create a scatter plot and compute the covariance and correlation coefficient to explore the relationship between “Time Spent on the Web” and the “Amount Spent”.**
   1. Highlight the 2 variables (columns)
   2. Insert – Scatter Chart
   3. Adjust Titles and axes
   4. Type Covariance and Correlation Coef
   5. =COVARIANCE.S(D1:D51,F1:F51)
   6. =CORREL(D1:D51,F1:F51)

**Conclusions:** We see a positive relationship and relatively strong correlation between these two variables.

1. **Create a scatter plot and compute the covariance and correlation coefficient to explore the relationship between “Number of Pages Viewed” and the “Amount Spent”.**
   1. Highlight the 2 variables (columns)
   2. Insert – Scatter Chart
   3. Adjust Titles and axes
   4. Type Covariance and Correlation Coef
   5. =COVARIANCE.S(E1:E51,F1:F51)
   6. =CORREL(E1:E51,F1:F51)

**Conclusions:** We see a **STRONG** positive relationship and **STRONG** correlation between these two variables.

1. **Create a scatter plot and compute the covariance and correlation coefficient to explore the relationship between “Time Spent on the Web” and the “Number of Pages Viewed”.**
   1. Highlight the 2 variables (columns)
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**Conclusions:** We see a positive relationship and relatively strong correlation between these two variables.

**Final Notes:** Do online shoppers who spend more time and view more pages also spend more money during their visit to the web site. – Yes it looks that way. Shoppers who view more pages tend to spend more. So Heavenly Chocolates should focus on attractive webpages and getting people to transition to more pages which will increase time spent and will increase sales!