

Case Writeup 2

1. Identifying the Challenge

On January 28, 1986, NASA had planned to launch Challenger, a space shuttle. However, the rocket engineers were hesitant of proceeding with the launch due to the low temperatures that were expected that day. The engineers were concerned that the low temperatures might affect the proper functioning of the rubber O-rings, causing a failure in the fuel booster joint segments. In this way, they presented a series of Exhibits to the NASA officials, based on a detailed analysis of 24 previous shuttle launches, focusing on the temperature and performance of the O-rings. Nevertheless, despite the information provided to the NASA officials, the launch took place, and the space shuttle exploded in less than 90 seconds after liftoff¹.

This case study can be conceptualized as a business problem because it addresses the challenge of effectively communicating complex data through different visualizations to inform and take a decision.

2. Analysis of the Exhibits

The Exhibits presented by the NASA engineers wanted to show the relation between the low temperature and the likelihood that the O-rings would fail, however, NASA officials failed to understand the risk. In my opinion, the exhibits allowed the users to understand that there was a relation between temperature and possible failure, however, they did not show that the risk was higher than previous launches. In first place, the information presented was technical and the format used was not friendly for the user. For example, in Exhibit 2, the graph does not clearly show the specific launch each observation corresponds, as well as the temperature of them. In addition, it does not mention the consequences of how the failure affected to entire launch previous times. Moreover, the labels and measure units are not clear, and there were additional texts added by handwriting that made the chart look disorganized. Another example is Exhibit 5, in which we observe the relation between the motor and the temperature, however it does not indicate the exact temperature at which the O-ring would fail, as well as if each launch was successful or not. Overall, the Exhibits failed to transmit the notion that the life of the astronauts on that mission was at risk and that the failure of the O-rings could lead to a catastrophe.

3. Recommendations

If I were a NASA engineer, my pitch would go as follows: Dear NASA Officials, As the Challenger launch approaches, I want to express my concern regarding the safety of the crew and the success of the mission. As shown in Exhibit #1, the low temperature of the day established for the launch (27F – 29F) and the history of the performance of the O-rings on previous space shuttles, evidence a high threat of failure, that could lead to a catastrophic result. Moreover, after analyzing this trend, we can see in Exhibit #2 that the number of O-ring failure increases as the temperature decreases. There are several safety concerns as well as additional tests to the motor, that failing to perform them could be a mistake. Although there is pressure to continue with the launch, I firmly suggest delaying it, which will show the commitment that NASA has with the safety of its members.

¹ Datar, S. M., & Bowler, C. N. (2018, May 14). Data Visualization and Communication Exercise [Case study]. Harvard Business School.

4. Exhibits

Exhibit #1

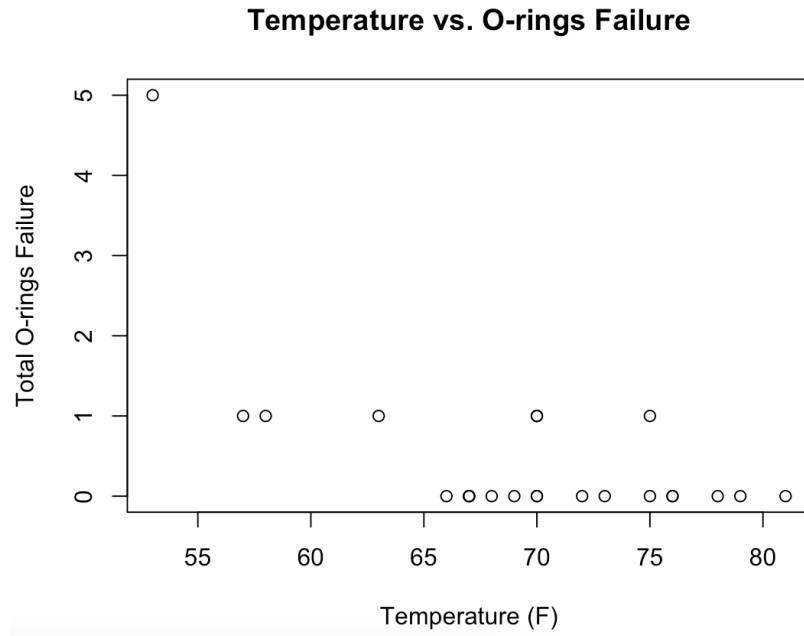


Exhibit #2

