

P Chapter 3 Projects

Project A: Olympic Gold

The following table gives the years of the Winter Olympics and the number of gold medals won in each year by the United States through 2014.

USA Gold Medal Count												
Year	1924	1928	1932	1936	1948	1952	1956	1960	1964	1968	1972	1976
Number of Gold Medals	1	2	6	1	3	4	2	3	1	1	3	3
Number of Events	16	14	14	17	22	22	24	27	34	35	35	37
Year	1980	1984	1988	1992	1994	1998	2002	2006	2010	2014	2018	
Number of Gold Medals	6	4	2	5	6	6	10	9	9	9	?	
Number of Events	38	39	46	57	61	68	78	84	86	98	102	

Source: Olympic.org. "Olympic Games." <http://www.olympic.org/olympic-games> (4 April 2019).

Analyze the data in the table by calculating descriptive statistics for the USA gold medal count. We will use these statistics to estimate the expected number of gold medals for the United States in the 2018 Winter Games. Note that the number of events is not the same for every year. Therefore, it will be necessary to take into account the number of gold medals as a percentage of the number of events.

1. Begin by calculating the number of gold medals won each year as a percentage of the number of events. To do this, divide the number of gold medals by the number of events, and then multiply by 100. Round your answers to the nearest whole percentage. Create a table similar to the one above with the percentage of gold medals won in each year.
2. Calculate the range of the number of gold medals and the range of the percentage of gold medals.
3. Calculate the median number of gold medals and the median percentage of gold medals.
4. Calculate the mode of the number of gold medals and the mode of the percentage of gold medals.
5. Calculate the mean number of gold medals won.
6. Calculate the mean percentage of gold medals won by adding to get the total number of gold medals won in all years, dividing by the total number of events in all years and then multiplying by 100. Round your answer to the nearest whole percentage. (Note that you cannot average percentages. This is why we have to go back to the numbers of gold medals and the numbers of events.)
7. Calculate the five-number summary for the number of gold medals won.
8. Draw a box plot for the number of gold medals won.
9. Using a value of 102 events in the 2018 Olympics, estimate the expected number of gold medals by multiplying 102 by the median percentage of gold medals won by the United States.
10. The United States actually won 9 gold medals in the 2018 Winter Games in Pyeongchang, South Korea. How does your calculation for the expected number of gold medals compare to the actual number?

Project B: Where Would You Invest Your Money?

Let's look at several sets of stock prices. The following prices were obtained from historical records from 2019, and are listed in dollars per share.

Stock Prices		
Coca-Cola (KO)	Facebook (FB)	General Electric (GE)
46.38	166.69	10.01
46.18	165.55	10.10
46.57	165.87	10.24
46.72	167.68	10.10
46.86	166.29	9.99
46.58	164.34	9.89
46.61	166.08	9.96
46.64	165.44	10.10
46.03	161.57	9.88
45.93	160.47	9.98
45.51	165.98	10.27
45.53	170.17	10.22

Source: Yahoo! Finance. <http://finance.yahoo.com> (4 April, 2019).

- Find the mean of each set of stock prices.
- Find the median of each set of stock prices.
- Calculate the variance and standard deviation of each set of stock prices.
- If you have \$10,000 to invest, what stock would you buy under the following circumstances? Justify your reasoning.
 - You are nearing retirement and need a stable investment for the future.
 - You are a wealthy entrepreneur hoping to make a large profit in a short amount of time.