The United States at the 1980 Summer Olympics

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Hypothesis:

The United States would have been the most successful nation during the 1980 Summer Olympics should it have participated. Furthermore, this would also be taking into account the other top nations who also did not participate in the 1980 games.

Introduction:

Ever since the United States started competing in the modern Summer Olympics, we have been dominating other nations in performance. From 1896 and onwards, the U.S. has always contested for one of the most successful competing nations. However, nearing the end of the Cold War, the U.S.S.R made a controversial decision to invade and occupy Afghanistan. This prompted the U.S. and allies to boycott the 1980 games in protest of the Soviet occupation. The U.S's absence during this particular game is intriguing as it is the only game until now that the U.S. has not participated in. Additionally, the 1980 games is the only Olympic to be hosted in the U.S.S.R which brings up the question of *how well the U.S. would have done in this environment*.

For us to explore that question, we would first have to define Olympic performance by a metric. This metric will be the *overall and gold medal count*. We will be using this as a means to determine which nation was the most successful. Next, we would have to speculate other top nation's performances. This is because we wish to recreate a realistic scenario in which the U.S.S.R had not instigated a boycott of the games. Finally, we would then use speculated values to analyze and compare them with actual performance metrics of other nations that did not

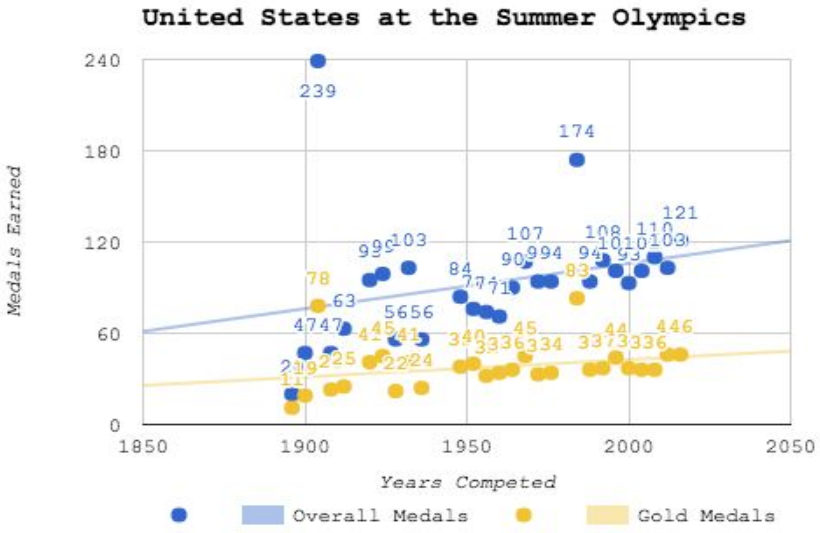
boycott the Olympics. Our group will use: *data mining* to gather all reported data, *data visualization and statistics* to describe gathered data, and *wisdom of the crowds* to discuss factors outside of numbers and calculations that could affect our hypothesis. Ultimately, we wish to discuss what would have happened if the United States competed in the 1980 Summer Olympics.

Methodology:

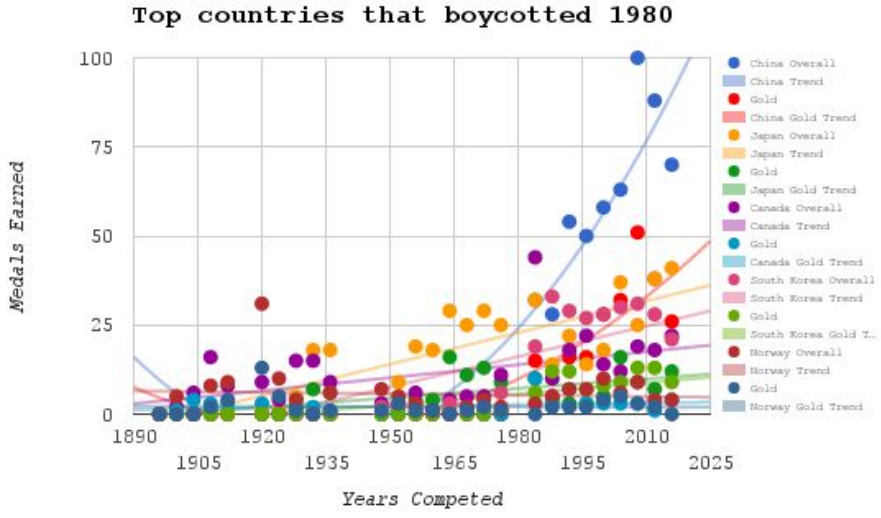
We will be using three types of methods to explore our hypothesis. These methods will be *data mining*, *data visualization* and *wisdom of the crowds*. The first of these methods, **data mining**, is necessary in order to gather the number of overall medals won as well as the number of gold medals. Since we are trying to figure out how well the U.S. could have done compared to other nations we must first find the number of medals the U.S. won over the years to establish a trend to find the number of medals the U.S. could have won in 1980. The data would have to be collected since 1896 since this is the first year the U.S. participated in the Olympics. We then replicate this for other top countries who also boycotted the Olympics. Lastly, we would also need to extract the number of medals of countries who dominated the Olympics. Data mining will happen through databases on the internet. Since this data is not debatable, the numbers will be consistent throughout different sources. Our source we collected from is via a tracker website[1]. Our process of data mining is extracting data from sources and inputting them into a spreadsheet so we can then manipulate and analyze.

Once we have successfully datamined, we would have to analyze them by using **data visualization and statistics**. First, we need to calculate the hypothetical number of overall and

gold medals that the United States might have won. We do this by creating a scatter plot with a line of best fit to guess the results of 1980.



If we use 1980 in the trend line's equation (*blue and gold lines shown above*), the U.S. would have won approximately <u>100 overall medals</u> and <u>40 gold medals</u>.



Similarly, if we repeat the process we can see that China would have been the closest in matching the U.S. due to its sudden explosion in the later games (*and thus the only nation*

needing a polynomial trend). However, even if it was the best performing of the top boycott nations, it would only have had approximately 25 overall medals and 10 gold medals. Knowing this information allows us to dispel the notion that another nation that did not compete could have toppled the U.S. in performance. Thus, the U.S. would have been the top leader from the boycott nations and we can use this fact to compare the U.S. with the top medal earners of the games. Unsurprisingly, the U.S.S.R dominated the boards with 195 overall medals and 80 gold medals. Finally, we decided to compare the U.S. and the U.S.S.R by medals won vs athletes sent. For the Soviets, approximately 39% of their athletes earned a medal (*506 athletes sent*) and 16% of them won gold in 1980. This is hard to contrast with the United States because they did not send anyone, but we can extrapolate from another linear regression line (*using athletes*^{2}). Ergo, the U.S. would have sent approximately 469 athletes. This means that the U.S. would have had 21% of their athletes earning a medal and 9% of them earning a gold. These are the results based on opening calculations.

We then move onto the third method, which is **wisdom of the crowds** to legitimize our previous calculations. In order to further analyze the data we must also take into account other possible factors that professionals see. These factors may not be readily seen or accessed by the general public. According to an article by fivethirtyeight.com[3], political scientists have conducted studies that points towards an obvious homecourt advantage for host countries. Athletes from host countries have: automatic entry into events, favorable referee and crowd reactions, and comfortability in the environment. These combined advantages then turned into a massive positive medal correlation shown below:

		ATHLETES FROM HOST COUNTRY PARTICIPATING		
HOST COUNTRY	YEAR	PREVIOUS OLYMPICS	HOST YEAR	CHANGE
Finland	1952	129	258	+129
Australia	1956	81	294	+213
Italy	1960	135	280	+145
Japan	1964	162	328	+166
Mexico	1968	94	275	+181
West Germany	1972	275	423	+148
Canada	1976	208	385	+177
Soviet Union	1980	410	489	+79
United States	1984	396	522	+126
South Korea	1988	175	401	+226
Spain	1992	229	422	+193
United States	1996	545	647	+102

Since the 1980 games were held in Moscow, it would be reasonable to say that Russian athletes would have performed a lot better than other countries' athletes. The U.S. medal count from our data visualization would thus finally be legitimate in that it would be unlikely for the U.S. to have performed exceptionally well that year.

Conclusion and Discussion:

Ultimately, our proposed methods had strong evidence leaning against our hypothesis. Based on our combined data mining, data visualization, and wisdom of the crowds, we see that the U.S. would have had a brave effort at best in defeating the leading medal earners. The U.S.S.R had too many advantages in their favor to downplay.

There were a lot of biases and other factors that we neglected in our study. First of these factors were possibilities that cannot entirely be predicted by numerical computation. Possibilities such as an athlete not being able to perform due to possible performance anxiety or getting handicapped by an illness does exist and can change performance outcome. These possibilities are also further taken into account by athletes and their trainers so they take

precautions in order to prevent such possibilities. This in turn still affects the possible medal count because the athletes and trainers want to win that medal. The will of athletes is significant and thus cannot be measured. The numbers and analysis that we came up with solely accounts for numerical adjustments, but it is justified and reasonable for an extrapolation. Finally, since we will never truly know how many medals the U.S. could have won, we really just have an educated guess.

Individual Contributions:

Shawn Le provided the project idea, brainstormed the methods, and did the calculations for the project as well as found sources. *Salvador Camino* data mined the data from the tracker website and cleaned it for analysis. *Haruna Sasaki* cleaned and revised every part of the report.

Sources:

1. **http://olympic-medal-count.pointafter.com/**

2.

http://www.teamusa.org/News/2016/July/23/US-Olympic-Committee-Announces-555-Member-2016-US-Olympic-Team

3. **http://fivethirtyeight.com/features/is-there-home-field-advantage-at-the-olympics/**