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Jamaica in the Olympics: The Rise of Usain Bolt

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JAMAICA IN THE OLYMPICS:

THE RISE OF USAIN BOLT

by

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APPROVAL

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ABSTRACT

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Advisor: Michelle McSweeney

The Summer Olympics is a global competition that encourages athletes worldwide to participate in various events. For many countries, especially smaller ones, it allows gaining national recognition for themselves and their country. This project offers insight into how an athlete's Olympic participation can impact their country and the event. Specifically, this project serves as intangible evidence that Jamaica has made an undeniable contribution to the sports world and its legacy by way of prominent athletes such as Usain Bolt. To that end, public Olympic data was analyzed and visualized in Tableau. The resulting visualizations are accessible through a website.

This project can be viewed here https://jamolympics.commons.gc.cuny.edu/

ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my younger brother, whose design advice and expertise helped make the creation of my dashboards easier and more cohesive.

I would also like to thank my Data Bias professor, Allen Hillery for dashboard design feedback and the encouragement and support he offered while I worked on my capstone.

In addition, the support, patience and advice I received from my advisor, Michelle McSweeney, was beyond greatly appreciated. Her willingness to help me brainstorm and provide invaluable feedback helped make working on this capstone project more manageable.

TABLE OF CONTENTS

FIGURES

DIGITAL MANIFEST

I. Capstone Whitepaper (PDF)

II. Tableau Project Export (zip file)

TECHNICAL SPECIFICATIONS

The visualizations for this project were created in Tableau and uploaded to Tableau Public and is also hosted on the CUNY Commons. For an optimal viewing experience, accessing the dashboards through a desktop's web browser is preferable.

The project can be viewed either on the CUNY commons:

https://jamolympics.commons.gc.cuny.edu/

or Tableau public:

https://public.tableau.com/app/profile/micaiah.davis/viz/Capstone_17362004590120/JamaicasOlympicStory

Narrative

Introduction

The Summer Olympic Games is a major international multi-sport event normally held once every four years ("Summer Olympic Games"). It first took place in 1896 in Athens, Greece and has continued with the most recent Games held in 2024 in Paris, France at the time of this writing. Furthermore, the Games serve as a way for countries to garner national prestige and promote culture through sports. Hence, the purpose of this project is to analyze Jamaica's achievements in the Olympics and the instrumental role its most renowned athlete, Usain Bolt played in contributing to them. Jamaica was chosen as the country of focus since it is my home country and is home to the fastest man in the world from 2007 to 2024 (at the time of this writing), though he has retired from the athletics scene. The digital portion of this project is a Tableau story consisting of a series of visualizations based on the analyzed data that tell this story.

Jamaica has been in the Olympics since 1948 starting with their debut in London and has sent athletes to compete in all the Summer Olympic Games since. Due to the support of The Jamaica Olympic Association, it has won to date 93 medals, 27 of which are gold, and the country has grown to become acknowledged as a powerhouse in athletics. The athlete most responsible for such explosive growth in its athletic achievements not usually seen in small countries like Jamaica is Usain Bolt. In fact, he is described as the face of the past three Olympic Games (Usain Bolt | Biography, Olympic Medals, Records), which is a valid conjecture considering he's still the fastest man in the world even after retirement and has left a strong, lasting impact on the Olympics. Bolt currently holds the World and Olympic records for both the 100m and 200m and is a part of the men's team that holds the record for the 4x100m relay.

These feats alone are impressive enough, but Bolt takes it further by not only breaking his previous records to set new ones but consistently getting gold each time. And it's not just his athletic prowess that has won the hearts of fans in the athletics world but his humor and charm. NBC noted that nearly 35 million people had tuned in to watch Bolt make history once more in the 100m final during the 2016 Rio Olympic Games (Littleton, Cynthia). His dominance in sprinting events inspired up and coming athletes worldwide and helped to elevate Jamaica's track and field reputation on the world stage. Bolt's presence in the Olympics also left a cultural impact, his "To Di World" or "Lightning Bolt" victory pose becoming an iconic move that for some is often associated with the Olympics. Bolt proceeded to trademark his signature pose in 2022 and intends to use it as a logo on a variety of items such as clothing, jewelry and bags as well as bars and restaurants (Intellectgroup). The pose became so popular it is often imitated by ordinary people, other athletes and even celebrities. It's in these big and small ways that Usain Bolt's legacy continues to persist.

Project Background and The Data

The idea for this project was born during the 2024 Summer Olympics when I was still considering ideas for my capstone. I knew from the beginning I wanted to do a digital project since creating visualizations using the different tools we learned about throughout the data visualization program was engaging for me. While watching the Olympics, it occurred to me that as a Jamaican and ex-track athlete who grew up watching the Olympics and felt proud seeing my country excel in events, centering my capstone on that topic would be one way to highlight Jamaica's achievements further. Most of the data was acquired from Statista and was either used in its original format or cleaned to address the questions I chose to focus on.

The visualizations and dashboards were designed in Tableau and hosted on Tableau Public and the CUNY Commons. The first dashboard focuses on Jamaica and its accomplishments and emphasizes how the country does in comparison to other countries. The datasets chosen for this dashboard were all publicly available and downloaded from Statista and concentrated on the Summer Olympics medal winnings in diverse scenarios. One dataset, "All-time medal count at the Summer Olympics from 1896 to 2024, by country and color", contained data about the total medals won for each country that participated in the Games, which are broken down by medal type. The dataset can be found here https://www.statista.com/statistics/1101719/summer-olympics-all-time-medal-list-since-1892/ . The second dataset, "Total number of medals won by athletes from selected non-European countries in the Summer Olympics from 1896 to 2020", like its title indicates, included the medal progression of select non-European countries and is found here https://www.statista.com/statistics/1102289/olympics-medal-progression-by-select-non-european-countries/ . The last dataset, "Average number of medals won per capita at the Summer Olympics from 1896 to 2020", contained data about the average medals won per capita for each country and is found here https://www.statista.com/statistics/1102056/summer-olympics-average-medals-per-capita-since-1892/ . However, there is additional information about some of the countries included in the dataset that should be noted. For "Summer Olympics Medals from 1896 to 2024," the original form of the data employed an asterisk system to denote countries that have caveats attached to them. For example, while East and West Germany participated in earlier iterations of the Olympics, their participation ceased after 1988. Keeping both countries in the dataset is reasonable since they participated in the Games, but I understand the need for a visual cue to signify why the information about a specific country is noteworthy. I transformed the data

to include an ‘Additional Notes’ field to contain the information corresponding with the number of asterisks and included it in the tooltip of the visualization. The information was also cited in the overview sheet of the Excel dataset. Unfortunately, the viewer must scroll through the chart to find Jamaica since the country list is long and I hadn’t figured out a way to highlight Jamaica to make the name stand out amidst the scrolling.

Continuing with the first dashboard, two of the three datasets used for it were curated. I wanted “Medal Progression of Select Countries from 1896 – 2020” to feature countries like Jamaica in terms of location and their participation in similar Olympic events. Unlike one of the previous visualizations that highlights Jamaica’s standing among all countries that participated in the Olympics, the objective of this graph was to compare Jamaica’s medal progression to other countries in similar geographical locations (the Caribbean) and known for doing well in different athletic events. The original dataset contained a list of select non-European countries, therefore I updated the list to reflect the graph’s objective by keeping some of the countries and appending new ones. Some of the lines are broken in the line chart to represent non-participation in the Olympics for that year. However, a count of 0 was reserved for countries that did participate but didn’t receive any medal awards. For “Average Medals won per Capita in the Summer Olympics from 1896 – 2020”, the medal type and a country’s 2020 GDP data were added to the dataset. A log scale was used for this graph since the order of magnitude for the smallest and largest GDP were different and this kind of scale would make those differences easier to read. We can infer that countries with high GDPs are likely to invest more financially into their Olympic Development Program thereby increasing their chances of winning more medals.

The narrative for the second dashboard switches to a focus on Usain Bolt and his impact on the Olympics. Two of the datasets chosen were again downloaded from Statista. Data about top-performing Olympic athletes was compiled in "Athletes with the most gold medals won at the Summer Olympic Games from 1896 to 2024" and found here https://www.statista.com/statistics/262865/olympic-games-athletes-by-number-of-gold-medals-won/ . While the other contained data about Olympic records set in athletic events titled, "Number of current Olympic Records in athletic events in each Olympic year from 1968 to 2016" and found here https://www.statista.com/statistics/1119201/olympic-current-athletics-records-by-year/ . The third dataset was compiled using Google N-Gram data available through R packages and libraries. The first visualization compares his gold medal achievements in the Olympics to other top-performing male athletes. For this dataset, I transformed the data to showcase only the male athletes (since top-performing women were previously included). It is noteworthy that Bolt was the only male from outside the US to have such an outstanding gold medal legacy in track and field. The second visualization examines the number of Olympic records set in men's athletic events for the years 2000-2020. A total of 15 records were set between Usain's active years (2004-2016), four of which were set by him. The others were spread across different events outside of the 100m, 200m and 4x100 relay. Originally the "Years" field was a discrete field that reflected only the years in the dataset. However, the field had to be changed to continuous to create the reference lines the way I wanted. Regrettably, this added unnecessary years to the graph but since the years needed were highlighted with visible data points, I decided to work with it.

The dataset needed for the last visualization proved to be the trickiest. I wanted to examine another area that provided concrete evidence of the impact Usain Bolt had on the

Olympics. First, I considered Olympic viewership data but without a distinction between viewership for the entire Olympics and specific events namely athletics since that is my focus it proved futile. My attention then shifted to ticket percentages, but again the data provided wasn't broken down in a way related to my topic, so that idea was discarded as well. My advisor suggested looking into stadium sales specifically since that would be a bit closer to what I needed. However, finding the necessary data was challenging. This led me to seek help from ChatGPT. By using the prompt 'What data should I focus on to prove Usain Bolt had an impact on the Olympics?', it provided me with ideas I could expand on or explore relating to Usain Bolt's impact on the Olympics. The responses given are displayed in the figures below. Based on the responses, analyzing the impact Bolt had on Olympic viewership seemed worth exploring. But again, finding and compiling the data was perplexing and yielded unsuitable results. I also attempted to investigate Twitter data to compile the number of times Bolt's name appeared concerning the Olympics. I recalled a Python exercise done in one of my courses that involved searching for tweets by content keywords and then using statistics to map the correlation between them. However, despite having the assignment as a reference, the code was difficult to parse.

At a loss, I reached out to my advisor, and she suggested going the indirect quantitative/ qualitative route instead of a direct one. She recommended using a text analysis tool, Google N-Gram that shows the frequency of n-grams (user-selected words or phrases) across multiple books and print media. The intention is to portray how frequently a top-performing athlete is mentioned concerning the Olympics, a way to depict how relevant they are in today's culture. The default smoothing option was changed from 3 to 0 so that the raw unadjusted data could be analyzed. Since Google N-Grams doesn't offer an export friendly

option, I did research into alternative solutions and discovered I could achieve the desired outcome using the programming language R. I took advantage of RStudio, a free online open-sourced environment available for developing R code. I began by installing the necessary packages and libraries (tidyverse and ngramr). The ngramr package allows the user to utilize the ngram() function that retrieves data from Google while tidyverse provides packages required for data analysis. The result is an Ngram data table that can be written to a CSV file and then downloaded for personal use.

Figure 1: ChatGPT prompt responses

To prove that Usain Bolt had a significant impact on the Olympics, you should focus on a combination of quantitative and qualitative data across several key areas:

1. Performance and Records:

- **Gold Medals and Wins**: Bolt won **8 Olympic gold medals** (2008, 2012, 2016) in the **100m**, **200m**, and **4x100m relay**. Highlighting his dominance in these events shows his direct impact on Olympic outcomes.
- **World Records**: Bolt set **three world records** (100m, 200m, and 4x100m relay) during his Olympic career. This data is crucial, as world records at the Olympics amplify their global significance and reflect his unparalleled ability to push the boundaries of the sport.
- **Times and Comparison**: Look at Bolt's **race times** and compare them to previous Olympians to emphasize how much faster he ran than other sprinters. His 2008 and 2009 world record times were revolutionary for the sport.

2. **Olympic History and Legacy:**

- **Olympic Impact**: Analyze how Bolt's performances have reshaped the **sprint events** in the Olympics. His consistency at the top level made him an iconic figure in track and field.
- **Legacy and Influence**: Bolt's impact extends beyond just his results. He became a global figure and the face of the Olympics. Look at how his presence at the Olympics influenced both **athletes** and **spectators**, especially how he elevated interest in sprint events.

3. **Media Attention and Global Popularity:**

- **TV Ratings**: Data on Olympic TV ratings, especially in years when Bolt competed, can show his drawing power. He was arguably one of the top athletes who helped boost global viewership of the Olympics.
- **Social Media Impact**: Measure Bolt's presence on **social media platforms** (Twitter, Instagram, Facebook) during and after Olympic events. His popularity and engagement with fans can be used as evidence of his massive global influence.
- **Endorsements**: Bolt's sponsorships with brands like Puma, and his impact on the **global economy** of Olympic-related endorsements, can further show how his Olympic success transcended sport into popular culture.

4. **Athlete Influence:**

- **Inspiration to Other Athletes**: Data from surveys, interviews, or quotes from other sprinters and athletes can illustrate how Bolt inspired a new generation of track and field competitors. Many sprinters have cited Bolt as a source of motivation.
- **Performance Shifts in Sprinting**: Look at trends in sprinting times before and after Bolt's Olympic appearances. Did the level of competition increase as a result of Bolt's impact on the sport? Were younger athletes motivated to break his records?

5. **Economic Impact:**

- **Sponsorship and Merchandise**: Bolt's global appeal likely influenced sponsorship deals not only for himself but also for other Olympic athletes and the event as a whole. The **financial success** of brands tied to Bolt during Olympic years can be an important piece of evidence.
- **Host City Impact**: Consider how Bolt's participation contributed to **tourism** and **revenue** in the Olympic host cities, as his presence likely drew attention and increased attendance to the games.

6. **Cultural and National Influence:**

- **Jamaica's Global Status**: Bolt elevated the profile of **Jamaica** on the global stage. His Olympic success helped put the island nation at the forefront of global sprinting. Investigate how this influenced the nation's sports culture and pride, as well as their investment in track and field.
- **Bolt's Charitable Work**: His involvement in charity and how he used his Olympic fame to give back can also provide insight into his broader influence.

By combining data in these areas, you can provide a comprehensive case for Usain Bolt's extraordinary impact on the Olympics. Focus on how his performances, global appeal, and influence on the sport helped transform the Games and elevated sprinting to a global spectacle.

Figure 2: RStudio Ngram Data Table

```
> ngram(athletes,year_start = 2004,smoothing = 0)
# Ngram data table
# Phrases:              Carl Lewis, Mark Spitz, Michael Phelps, Ray Ewry, Usain Bolt
# Case-sensitive:       TRUE
# Corpuses:             en-2019
# Smoothing:            0
# Years:                2004-2020

  Year     Phrase    Frequency  Corpus
1 2004 Usain Bolt 1.352487e-10 en-2019
2 2005 Usain Bolt 3.580332e-11 en-2019
3 2006 Usain Bolt 1.720246e-10 en-2019
4 2007 Usain Bolt 2.019489e-10 en-2019
5 2008 Usain Bolt 6.858670e-09 en-2019
6 2009 Usain Bolt 1.481929e-08 en-2019
# ... with 79 more rows
```

Relationship to Focus Area and Previous Course of Study

The main reason I enrolled in the Data Visualization and Analysis program was to gain a deeper understanding of visualization techniques and data analytics that I began discovering during my undergraduate internship. My hands-on data visualization classes laid the groundwork for my familiarity with data visualization tools. Starting with my "Visualization and Design" course taught by Professor Michelle McSweeney, I was introduced to the idea of stories

in Tableau. A story is a sequence of visualizations or dashboards used to convey information, and it is this concept that shapes my approach to this project. I asked myself how I could apply the lessons taught throughout my academic journey to craft a successful narrative for my capstone by keeping the question "What story am I trying to tell?" at the forefront of my mind. My project centered around Jamaica and its achievements in the Olympics leading into Usain Bolt's impact on the Olympics, therefore the datasets needed to contribute to that story. Upon reflection, I decided the culmination of my capstone would be a Tableau story.

Furthermore, I learned to be cognizant of design choices when creating visualizations to effectively communicate my story. Making use of annotations, chart types, and color schemes as well as considering the overall design can enhance the storytelling aspect of a visualization, ensuring the information meant to be conveyed isn't lost. These best practices were not only discussed in my "Visualization and Design" but also in my "Interactive Data Visualization" course led by Professor Ellie Frymire which further encouraged critical thinking when it came to visualization design. 'Graph types should be appropriate for the data they represent' was a grading criterion for the final project that resonated with me, and I also remember one of her comments to me on that same project was to revisit the color scheme I had chosen for gender as there were better options available that promoted inclusivity. Consequently, while working on this capstone project, I kept the importance of colors in mind. For example, the medal colors chosen in one of my visualizations reflect the colors of real medals. When possible, I adhered to the Jamaican color scheme, so gold, green and dark grey (in place of black) were used in the graphs. Additionally, even though I utilized backgrounds and images in my dashboards, the chart types selected were ones the general audience was familiar with and could

easily comprehend. Line charts were used to show progression over time, bar charts for comparisons and a scatterplot for correlation.

As for programming tools and languages that this project benefited from, R and RStudio come to mind. I was introduced to them both during a workshop and because of this, I had no problems with using them to compile the n-gram data. The workshop exercise file was especially helpful as a reference because the code was easy to understand and the R packages I needed to install weren't hard to find. While the code for analyzing the n-grams did not come from the workshop, the basic introduction to the language and the online tool armed me with enough understanding to execute the desired goal for this project.

Conclusion

The legacy that Usain Bolt has left in the form of current Olympic and World records are clear indications of the impact he had on the Olympics. The frequency of Olympic records set in men's athletic events depicted in "Current Olympic Records set in men's athletic events by 2000-2020", showcases how the number increased during Bolt's active years. Moreover, the fact that he is often written about after retirement further proves that legacy. Particularly, the data presented in "Google N-Gram for Olympic Male Athletes with the Most Gold Medals from 2004-2019", supports this statement. Usain Bolt's name in print and digital books saw a steady upward trend, starting from his debut in the Olympics (2004) to when he retired (2016). And while there is a decrease in his name being mentioned after retirement, it is not a severe decline. Lastly, this project also serves as evidence that the Olympic Games are a place where even athletes from smaller countries can shine and leave their mark on the sporting world. Bolt is one of two males from a relatively small country to have made it onto the list of

top-performing Olympic male athletes which is illustrated “Gold Medals Won by Male Athletes in the Olympics.” More accurately, Bolt is from the smallest country featured in that data.

As for ways I could see this project expanding, going in-depth on Bolt’s social media impact could be another avenue worth exploring. I had previously indicated wanting to analyze Twitter data but given the time constraints of this project and the complexity of the code required, I opted not to take that approach. I also see the potential in analyzing his cultural and economic impact. The cultural perspective would acknowledge the awards he received outside of the Olympics such as being named World Athlete of the Year, Track & Field Athlete of the Year, BBC Overseas Sports Personality of the Year, etc. as well as any mentions of him in pop culture (films, music, advertisements). I also mentioned in this paper that Bolt was building his brand, therefore, the economic perspective would address the sales of merchandise associated with him and I would also attempt to establish a connection between his Olympic performances and the revenue generated through his sponsorship deals. Drifting away from Bolt specifically, another potential approach would be analyzing tourism trends or cultural impacts overall in Olympic host cities.

Bibliography

Intellectgroup. “Usain Bolt Trademarks His Signature Victory Pose.” *Intellect Worldwide,* 2 Sept. 2022, www.intellect-worldwide.com/2022/09/08/usain-bolt-trademarks-his-signature-victory-pose/.

Littleton, Cynthia. “TV Ratings: Olympics Viewership Gets a Jolt from Usain Bolt.” *Variety,* Variety, 20 Aug. 2016, variety.com/2016/tv/news/tv-ratings-2016-olympics-usain-bolt-1201837367/.

“Summer Olympic Games.” *Wikipedia*, Wikimedia Foundation, 1 Jan. 2025, en.wikipedia.org/wiki/Summer_Olympic_Games.

Usain Bolt | Biography, Olympic Medals, Records, olympics.com/en/athletes/usain-bolt. Accessed 4 Jan. 2025.