

Impact of London Olympics According to Tweeters

Yu Fu¹, Shirmeen Virji¹, and Goutam Chakraborty²

¹Management Science and Information Systems, Oklahoma State University, Stillwater, OK 74078

²Marketing, Oklahoma State University, Stillwater, OK 74078

Introduction

In this digital world where people express their sentiments on social media such as Twitter, Facebook, blogs, discussion forums etc., it is not that difficult to find out what people think about the claims that are made by the governments regarding the Olympics.

In this poster, we would like to focus just on the sentiments that people expressed on Twitter. Our focus is to find out what people think about the impact of the Olympic Games on the economy of London and all the claims made by the government such as getting a big boost to the tourism industry, collection of taxes, and, ultimately, job creation. We are also interested in knowing what people think about the initial investment that the government is making and whether it will help or hinder the growth of the British economy

Methods

Text Mining

In order to collect the data, we used topsy.com to gather the historical data of Twitter (Larson 2010). Firstly, we used Regular Expression rules to clean the data for URLs, RT tags and all the unnecessary special characters (Garla and Chakraborty, 2011). Then Text Miner of SAS® Enterprise Miner TM 7.1 was used to analyze our data. Five clusters and various interesting topics were generated by these nodes. Two concept linking diagrams were used to find out the positive and negative sentiments of the people on the same keyword “Olympics”.

Sentiment Analysis

In order to enhance our previous findings on the results of SAS Enterprise Miner, we gathered approximately 1,000 tweets between August 13th and August 15th through Twitter API. We used that data for testing purposes to corroborate our results. 139 positive and 192 negative tweets that represented the data that we used in text mining were used to create the corpus to train the statistical model in SAS Sentiment Analysis Studio 1.4.0. We also used this statistical model to test the three divided data to find out the trend of public sentiments on economic impact of London Olympics.

Results

Results Using SAS Enterprise Miner:

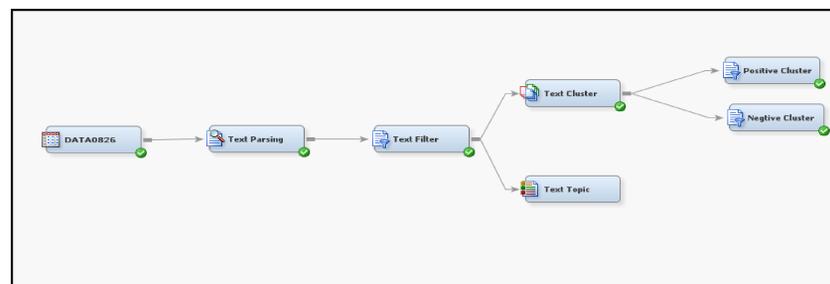


Figure 1. Application of text mining on Twitter data.

Cluster ID	Descriptive Terms	Frequency	Percentage
1	'ailing economy' +attend +business +cameron +class david +prime +bbc ailing +boost news +europe +minister leaders +osborne	145	10%
2	+uk +boost +effect foreign gdp +investment +govt 13bn happiness jobs +bring figures economy london2012 'economic boost'	241	16%
3	'economic growth' +economic benefit +britain +economic opening seats social +ceremony +global economy benefits +empty +recession +crisis +benefit +greece	371	25%
4	'olympic games' +british economy +brazil +british +country +money +olympic +spend +world countries gold greek medals +china +gold	407	27%
5	'economic impact' +ghost +impact +london people +town +city +video +bad +report cities +good hosting good +fuck	342	23%

Figure 2. Clusters formed

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Five clusters were created by the Text Miner on the dataset. From our findings, we believe that two clusters (1 & 2) are positive; two clusters (3 & 5) are negative.

Positive: The words that are used in the first two clusters are promising such as boost, jobs, and \$13 billion. These words give us an idea that the ailing economy that the UK is currently experiencing can get a boost of \$13 billion because of the Olympics as it will bring investment. This investment may be converted into the jobs and ultimately the GDP will increase, as said by the Prime Minister David Cameron.

Negative: The words that are used in clusters 3 and 5 are discouraging. Words such as recession, empty seats, ghost town, bad etc. show us negative sentiments of the people about the holding of the Olympics in London. It is interesting to note that Greece and crisis are also in the same cluster. It seems like people believe London might experience similar financial turmoil as Greece experienced after it hosted the Olympic Games in 2004.

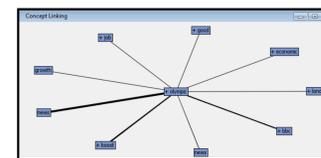


Figure 3. Concept linking diagram for Positive Clusters

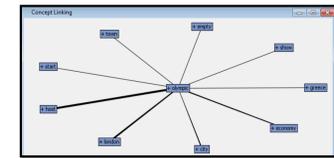


Figure 4. Concept linking diagram for Negative Clusters

The concept linking diagram is created using same key word “Olympic” to give a comparison to the audience regarding the sentiments of the people.

Positive Clusters: The Figure3 shows compilation of positive clusters. Here, words that are conceptually linked to the keyword are good, boost, job, growth. To enhance this result further, we can say that Olympic Games are associated with prosperity and job creation. These also bring boost and growth to the economy.

Negative Clusters: In Figure 4, the keyword “Olympic” has been conceptually linked with more pessimistic words. Words such as London, empty and town suggest that people are referring to London as empty town because of Olympic Games event.

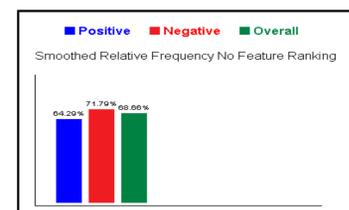


Figure 5. The selected statistical model.



Figure 6. Sentiment distribution in test data

Results Using SAS Sentiment Analysis Studio:

In order to corroborate our findings from SAS Enterprise Miner, we used SAS Sentiment Analysis Studio and built basic statistics model. Smooth Relative Frequency No Feature Ranking model was selected as the best model. The validation result for this model showed that there were 71.79% negative sentiments and 64.29% positive sentiments found in the corpus with overall precision of 68.66%.

The overall result in testing is strongly negative. Out of the 1055 articles that we tested, 765 (or 72.51%) were negative and only 289 (or 27.39%) were positive. This concludes that most people think Olympic Games don't bring any financial benefit to the UK.



We divided tweets into three sections according to the weeks in which those were written. Week 1 represents the week before Olympics Games started. Week 2 includes the tweets of the week in which Olympics Games started. Week 3 has 10 days in it and represents the final week of Olympics. The detailed division is showed in Table 1.

	Sections
July 20 th – July 26 th	Week 1
July 27 th – August 2 nd	Week 2
August 3 rd – August 12 th	Week 3

Table 1. Three divisions for the Twitter data

The trend lines based on the results that we got is showed in Figure 7. In week 1, before the Olympic Games started, there was an overwhelming majority of negative tweets at 64.34%. This was the time when majorities of the people were furious with the huge government's spending on hosting the games.

In week 2, when Olympics actually started, people became more negative as the instant improvement in the economy that the government claimed couldn't be seen anywhere that triggered people to become more pessimistic about the games. At this point, negative tweets soared to a new height of 68.98%.

In week 3, when the Olympic Games were concluding we saw a very interesting shift in the moods of the people. Negative tweets were at all-time low. This is not a drastic change if we compare the overall result, yet it is interesting to see that people are getting less negative

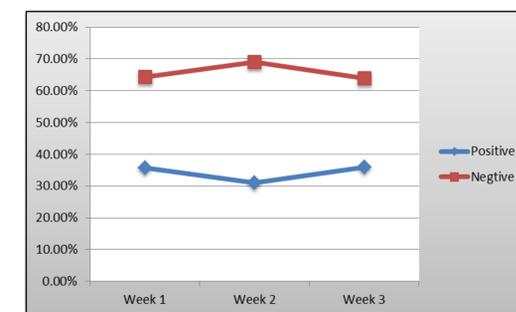


Figure 7. Sentiment trend line

Conclusion

The purpose of this research is to analyze the sentiments expressed by the people about the impact of the Olympic Games on the economy of England. Based on the results we obtained from SAS Enterprise Miner, we found out that people have mixed feelings about the impact of the games on the economy. But, the results derived from SAS Sentiment Analysis Studio produced a clearer picture about the opinions of the people. It showed us that more people have reservations about the huge spending of the government on the Olympic Games.

Social media is full of expressions these days, and we placed a limitation on us by just focusing on the data we collected from Twitter. With the knowledge of mankind expanding exponentially, it is difficult to get an accurate picture of the opinions around the world.

Reference

Kasimati E, Dawson P. Assessing the impact of the 2004 Olympic Games on the Greek economy: A small macroeconomic model. *Economic Modelling* 2009;26(1) 139-146.

Larson D. All the easiest ways to search old tweets[Internet]. 2010[cited 2012 August 23]. Available from <http://blog.tweetsmarter.com/twitter-search/10-ways-and-20-features-for-searching-old-tweets/>

Garla S, Chakraborty G. "%GetTweet: A New SAS® Macro to Fetch and Summarize Tweets," SAS Global Forum 2011; Paper 324-2011

**Fu,
Virji,
And Dr. Chakraborty-**

