

**A Cost-Benefit Analysis: The Economic and Social
Effects of the Rio 2016 Olympics**

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Abstract

The International Olympic Committee awarded Rio de Janeiro the right to host the 2016 Olympics on October 2nd, 2009. The Brazilian economy was flourishing at that time, and the government's hope was to use the games to further the country's presence in the global economy. Using a mega-event such as the Olympics as means for economic growth has been a widely debated topic among economists. The planning and organizing of these events are difficult, as supporters of Olympic bids tend to overestimate the benefits and the costs are almost always overrun. Many economists believe the increasing costs of hosting the Olympics greatly outweigh any economic or social benefits gained from hosting the event. However, there are also many studies that conclude the benefits of hosting such as job creation, trade openness, infrastructure investments, and tourism outweigh the costs of hosting. This SIP will examine if Rio has benefitted from hosting the 2016 Olympic Games.

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Introduction

Origins of the Olympics

The first recorded Olympics took place in 776 B.C in Elis, Greece and there is a consensus that the Games were at least 500 years old at that time. The Olympics were then banned in 393 A.D by the Roman Empire in its attempt to suppress Paganism in support of Christianity. After over 1500 years without an Olympics, a Frenchman named Pierre de Coubertin proposed the idea to revive the Olympics at a conference on international sport, and delegates from nine countries unanimously approved his proposal. With that, the first modern Olympics took place in Athens, Greece in 1896 with 280 athletes from 13 countries competing in 43 events. The Olympics struggled to gain support and was largely overshadowed by World's fairs for the first few decades of its modern existence. The first Olympics that were viewed as successful were the 1924 Olympics hosted in Paris, France. Since this time, the Olympics have transformed into a sporting mega-event that is viewed globally every four years. From its beginning in 1896 with 280 athletes, the modern Olympics have successfully transformed into a global spectacle with over 11,303 athletes competing in the 2016 Rio Olympics.

As the Olympics have become the biggest sporting event in the world and have continued to grow in size over the past 100 years, the ambitions of the hosts have also transformed tremendously. The early modern Olympics were hosted with the simple goal of providing suitable venues of competition for the games and had a low budget. The 1896 Athens Olympics remodeled the Panathenaic Stadium, originally constructed in 330 B.C, to be used as the venue for the track and field events. The first Olympic Stadium built solely for the purposes of the

Games was at the 1908 Olympics in London. The Games became more expensive and elaborate for the host nations over the next few Olympics. The 1936 games in Berlin saw an increase in the number of venues built specifically for the event, as Adolf Hitler hoped to use the Games to impress the rest of the world and to promote his radical government. The 1936 Olympics was also historically significant because they were the first games to be televised as well as radio broadcasted to 41 nations. After the 1984 Los Angeles Games recorded a profit of \$250 million as a result of low budget planning, the desire of cities across the world to host increased substantially. This resulted in elaborate and expensive proposals by bid cities in an attempt to win the right to host. Due to these elaborate hosting proposals following the 1984 games, the Olympics have not since been profitable and instead have been largely used as a way to impress the rest of the world through elaborate new sports venues. The 2008 Beijing Olympics were notable in spending a substantial amount on new sports venues in hopes of creating a more favorable perception of China across the world. Over the last 100 years, there has been a trend of Olympic hosts spending more money in order to deliver the most extraordinary Olympics the world has ever seen. This increase in spending by host nations in addition to global broadcasting of the events has transformed the Olympics into a mega-event.

Benefits of Hosting the Olympics

As the Olympics have grown into a mega-event, host nations have sought to expand the benefits of hosting beyond the two week time period in which the Olympics take place. In the aftermath of World War II, the event organizers of the 1960 Rome Olympics attempted to use the "Olympics as an instrument of urban transformation" (Gold, Gold, 2008, p. 304). The

infrastructure investments included roads to connect the village to the Olympic venues, a renovation of the local airport, and improvements to the city's telecommunication system. The 1964 Tokyo games saw large amounts of spending on transportation infrastructure, including railways that are still in operation today. The infrastructure investments are just a part of the economic benefits host cities hope to receive due to hosting the Olympics. Rose and Spiegel (2011) conducted a study in which they concluded that host nations can expect an increase in trade openness and trade exports. Other economic benefits include the creation of new jobs and increased tourism revenue. However, due to the rising cost of hosting the Olympics, many economists believe that the perceived benefits do not outweigh the costs of hosting. These economists believe the large investment results in a short term economic stimulus that only helps a small percentage of the population and that money would be better spent on other investments. If the economic benefits were proven to be more long term and the Olympics are hosted on a limited budget, then there is a possibility that the benefits are able to outweigh the costs. The organizers of the 1984 Los Angeles games were able to use existing infrastructure and a low budget to make a profit on their Olympics. In order for the economic benefits to outweigh the costs of the event, the organizers must be committed to a low budget.

Social Impact of Hosting the Olympics

Aside from the economics of hosting an Olympics, the social effects of hosting a sporting mega-event have been discussed increasingly more over the past years. Hosting the Olympics is a pride filled job for the host nation, as it is a way to show the rest of the world their great country. Although the social effects of an event like the Olympics are difficult to quantify,

recent surveys show there are significant social benefits for the people of the host nation.

These social benefits include the existence value inherent in hosting the Olympics as well as the increased national pride that results from the nation's citizens cheering on their athletes and being committed to hosting a successful Olympics. While there are possible social benefits derived from hosting this event, there are also social costs to consider. The difficulty of hosting an Olympics has increased as the event has grown, and this can often induce stress among the nation's government and citizens. There has rarely been an Olympic host that has not faced difficulties in preparing for this event, so a nation must be able to cope with problems that may occur in the preparation for the Olympics.

When Rio de Janeiro was awarded the right to host the 2016 Olympics by the IOC in 2009, their economy was in a much different state than today. The Brazilian economy had been booming for years and had recently hosted the 2007 Pan American games and was preparing to host the 2014 FIFA World Cup. The Rio bid committee believed the economic benefits received from hosting the Olympics would help to strengthen their economy further and increase Brazil's presence around the globe. However, after the 2014 FIFA World Cup, many Brazilian residents no longer supported hosting the Olympics. Much of the new sports infrastructure built to host the World Cup served no purpose following the event and was seen as a wasted investment by the Brazilian citizens. The economy also began to collapse in the build up to the Olympics due to a Presidential impeachment and a corruption scandal at a government run entity. Instead of the Olympics increasing the Brazilian economy's presence across the world, the economic benefits are now being viewed as a hope to stop the current recession. The economic struggles made the preparation for the games much more difficult, as there were funding issues that lead

some projects to be delayed until the conclusion of the games. The Brazilian government and citizens are hoping that the economic benefits will be able to help revive their struggling economy. This paper will examine the economic benefits and costs of hosting the Olympics and if the benefits of Brazil hosting the 2016 Rio Olympics will be able to stimulate the struggling Brazilian economy.

Literature Review

There has been extensive research done on the costs and benefits of hosting the Olympics. Many studies focus largely on the economic variables associated with hosting. Economic benefits discussed include tourism revenue, increased trade, new infrastructure, and job creation, among others. There have also been many studies that focus more so on the social benefits of hosting the Olympics. These social benefits include increased national pride and the existence value. The economic costs of hosting the games include the bidding process, the building of the Olympic village, new stadiums, and the creation of necessary public transportation. One interesting possible social cost of hosting the Games is the stress that it puts on government officials and the city's residents. With the numerous previous studies, it is important to determine which variables have been determined to be insignificant, and which variables were seen as significant and therefore should be included in my analysis.

While my study will be based on a cost-benefit analysis of the hosting the Olympics, the previous researchers have used a variety of other analytical tools. In order to attempt to quantify the existence value of hosting the Olympics, one researcher used a model developed to calculate the existence value of the Pittsburgh Penguins that is enjoyed for the residents of

the city. While this might seem far-fetched, the researcher made a convincing argument that hosting the Olympics has a large existence value. The various methods used by previous researchers can be valuable in helping to determine whether certain variables are significant enough to be discussed in my cost-benefit analysis.

1. Economic and Social Benefits

A. Trade Openness

One of the most debated topics is whether or not hosting the Olympics leads to increased exports and trade openness for the host nation. The International Olympic Committee (IOC) claims that the nation's exports will increase after visitors see the Olympic venues throughout the Games. Rose and Spiegel (2009) argued that trade openness is increased due to the games using OLS regression analysis. The results of their regression concluded that hosting the Olympics have resulted in 30% more exports. They also cite the fact that Olympic host cities have signed trade deals shortly after winning the rights to host the games. After Beijing won the right to host the 2008 Olympics, China successfully negotiated joining the World Trade Organization (WTO). When Rome was awarded the 1960 games, they joined the United Nations. They also began the talks that led to the Treaty of Rome and the European Economic Community. Rose and Spiegel cite Rome, Beijing, as well as other similar examples that demonstrate hosting the Olympics lead to increased trade openness. If trade openness increases by hosting the Olympics, this could result in large economic gains that continue for decades after the Games conclude.

Although Rose and Spiegel's analysis suggest that increased trade openness is a strong benefit that is derived from hosting the Olympics, other scholars are skeptical of this research. Baade and Matheson (2016) believe that the trade openness relationship is more because nations that host the Olympics almost always have stable economies with a strong outlook for the future. It could be interesting to investigate any changes in trade in Brazil after the 2016 games because their economy is not stable and has been struggling recently. If Brazil seems to have increased exports and trade openness after they were awarded the 2016 Games, it would contradict Baade and Matheson and further strengthen Rose and Spiegel's claim.

B. Job Creation

Possibly the largest benefit to hosting the games is creation of new jobs for citizens of the host country. Although not many economists will reject the claim that hosting the Olympics creates jobs in the host nation, there are many disputes about the extent of benefits derived from these jobs. Researchers often dispute characteristics such as the skill level, the duration of employment, and the number of jobs created. Because job creation can be a decisive economic factor when a country is determining whether or not to make a bid to host, the research surrounding this variable may be biased. Those making a claim that hosting will benefit a nation tend to overestimate the quality of employment created by the games, while those who claim hosting will negatively affect a nation will likely underestimate the quality of employment. Due to possible biases, reviews of previous research must be critical of claims made by the authors.

Hotchkiss, Moore, and Sobay (2003) used differences-in-differences analysis to examine the effect of the 1996 Atlanta games on job growth in the surrounding areas. When Atlanta won

the right to host in 1990, the costs of hosting the games was estimated to be \$2.5 billion, but the benefits of hosting were expected to outweigh this large price tag. The authors outlined three exogenous effects that hosting the Olympics are expected to bring to the labor market. First, there should be a short-term effect on employment due to direct spending by the organizing committee. Second, the job training that was provided as well as the experience gained by the volunteers should increase future employment opportunities. Lastly, the investments on facilities and infrastructure are expected to have a positive impact on employment and wages in the long-run. Researchers who argue that the job creation potential of hosting the Olympics does not justify the costs of the games often state the jobs created have minimal benefits for the surrounding area because of their short-term nature. Hotchkiss, Moore, and Sobay argue that although the initial jobs created by the direct spending are merely short-term employment, the real benefits are in the job training and infrastructure investments that will lead to future employment opportunities for city residents.

The results of their OLS regressions suggested that there significant increases in employment as a result of hosting the Olympics, with regards to the 1996 Atlanta games. The differences-in-differences analysis divided the area into venue and near venue (VNV) counties, and non-venue (non-VNV) counties. The results showed that employment increased 17% more in VNV counties compared to non-VNV counties. The increases in employment lead to approximately 293,000 more jobs in the VNV counties after the Olympics when compared to the average levels across Georgia prior to the Olympics. The researchers examined the robustness of their claims, and concluded that the increases in employment were in fact due to "The Olympic Effect", rather than other changes that might have increased employment during this time. A regression was

run to prove that the employment increase was not a metropolitan phenomenon, as the metropolitan areas in Atlanta had an 11% increase in employment compared to other metropolitan areas during the Olympic time period.

While Hotchkiss, Moore, and Sobay (2003) concluded that the 1996 Atlanta games created many jobs and had a positive impact on the surrounding community in regards to future employment opportunities. However, another study conducted by Feddersen and Maennig (2013) used the same methodology to analyze the effect the 1996 Atlanta games had on employment as well. Their results differed from the previous research, as they did not believe the jobs created by the games had a large enough impact to justify hosting the games. They concluded that "the employment effects seem too small and too concentrated sectorally and locally to justify public funding from general sources at the state level." (Feddersen, Maennig, 2013). While the games did generate 29,000 jobs, the short-term nature of these jobs created lead to only minimal benefits that do not outweigh the \$2.5 billion price tag of the Atlanta games. However, Feddersen and Maennig neglect the long-term benefits to employment that were outlined in previous research. The job training and positive effect of infrastructure investments on wages and employment may add long-term job opportunities for the citizens of the host city. The low skilled workers in Rio may benefit greatly from job training and infrastructure benefits, which may create a lasting impact of the Olympics on the Brazilian labor force.

C. Tourism

With the hundreds of thousands of visitors that an Olympics will attract, the revenue generated by tourism could be a substantial benefit to hosting the games. However, previous research has overwhelmingly concluded that the additional tourists do not have as big an economic impact as one might expect. In a cost-benefit analysis conducted prior to the 2010 Vancouver Olympics, Darren Mchugh estimated the Olympics will earn \$361 million in tourism revenue over the games. The \$361 million estimated for Vancouver "is a far cry from the billion-dollar figures for "economic impact of tourism" touted by Games proponents" (Mchugh 2006). The tourism revenue from the Olympic visitors does not appear to be beneficial enough to justify hosting the Olympics, especially when compared to expectations made by supporters of the Olympic bid. Another issue that arises with tourism in mega-events such as the Olympics is that poor planning could lead to losses, and not gains, for local businesses. For example, as Barcelona hotels increased the supply of rooms due to increased tourism expectations, the supply outweighed the demand, and "revenue per available room tumble by almost 60% in the 2 years after the Games" (Preuss, Solberg 2007). The inability of local businesses to predict the necessary increase in supply needed for the influx of tourists should come as no surprise to economists, who have trouble themselves estimating the effects prior to an Olympics. This inability of businesses to estimate necessary supply, as an under or over-estimation will surely lead to missed revenue or a loss in revenue, respectively.

While the Olympic do not generate as much revenue as might be expected due to the large influx of visitors who come to see events, hosting the Olympics may have a great and positive effect on future tourism in a host nation. A study conducted in 2015 examined the growth of

tourism in Greece following the 2004 Athens games, and found strong growth in tourism in the following years. A country benefits from the global exposure of hosting the Olympics, and thus may become a desired travel destination for many travelers. There was positive growth in the number of visitors to the host area each year from 2004 to 2007. Although the number of visitors declined in 2008, likely due to the economic crisis, the four-year increase in tourism to the area is a benefit that can continue to generate revenue for the city years after the Games conclude. Historically, the visitors to Greece have mainly been people who live in other European countries. However, the percentage of visitors from other European countries declined in years following the games. The “share of arrivals from Europe on total arrivals fell from 95% in 2004 to 89% in 2012” (Zonzilos et al. 2015), strengthening the theory that hosting the Olympics makes an area a global travel destination.

D. Infrastructure Investment

Analyzing the benefits of investing in infrastructure investment that is necessary for hosting the Olympics is difficult because the benefits can vary greatly. Host cities have spent extraordinary amounts of money on infrastructure in preparation for the games, so efficient planning is crucial in order to maximize benefits from the massive investments. When planning is not efficient, the new infrastructure can become a financial burden on the city as its cost may be underestimated. Investments may also be inefficient as there might not be any use for the infrastructure beyond the games. However, when planning is efficient, there can be large positive benefits of the infrastructure investments on the surrounding area. When discussing infrastructure built in order to host the Olympics, many people will focus on the sports infrastructure such as the stadiums. However, spending on sports infrastructure makes up only

a fraction of the total expenditures on infrastructure, as cities need to update general infrastructure in order to accommodate the masses of people visiting the city. There is strong evidence that cities will benefit more from general infrastructure improvements than from sports infrastructure improvements. For example, past host cities have invested greatly in order to improve their public transportation system, the benefits of which will be reaped by its citizens for years following the games. Hosting the Olympics may help a city's growth because "a mega-event may prompt otherwise reluctant public officials into making needed general infrastructure improvements" (Baade, Matheson 2004).

Sports Infrastructure

As the bidding process has become more competitive since the 1984 Los Angeles games, bid



cities have proposed to the IOC building expensive stadiums in order to increase their chances to host the games. In the early 2000's, Beijing enticed the IOC with plans to build new world class stadiums and were awarded the games, with expected costs around \$1.39 billion. Bid

cities need to commit to expensive stadiums in order to win the right to host, while most of these stadiums have no use beyond the Olympics. While Beijing hosted a memorable Olympics and enhanced their reputation to the rest of the world, many of the newly built stadiums went unused following the games, including the beach volleyball stadium pictured above. The venues

have also caused unexpected and social problems in China. The stadiums were built on residential areas and displaced many citizens from their homes. Citizens were clearly displeased and would “gather to petition the government over the demolition of their homes; and thousands have filed lawsuits against unfair evictions.” (Broudehoux, 2007). Furthermore, many of the venues will “not be accessible to the general public, but will be turned into luxury resorts for China’s new rich.” (Broudehoux, 2007). This only increases the social inequality of a country that already has a great amount of inequality. The 2008 Beijing games are an excellent example of the negative effects of expensive Olympic venues and how inefficient planning can cause unexpected problems. Olympic venues often go unused after the games, and this problem is only amplified in host cities that do not have sports franchises willing to use the stadium. Thus, these expensive investments often become financial burdens for the tax payers and local government.

Even when the sports infrastructure built for the Olympics has a planned use for after the games, these plans may not be fulfilled. The planning committee for the 2012 London games had a specifically designed use for their Olympic stadium following the games. During the bidding process, “the original candidate file contained a pledge to retain an athletics legacy” (Davies, 2011). However, the plan was never fulfilled, and instead the West Ham United Football Club became the tenants in the fall of 2016. The contract signed by West Ham stills makes taxpayers liable for many costs of the stadium as well. The original construction cost of the stadium was £429 million. West Ham’s has committed to paying only £2.5 million per year and “not a penny towards the running costs of their new home, including policing and stewarding, pitch maintenance, and even goalposts, goal nets and corner flags – the bill for

which will be footed by the taxpayer” (Rumsby, 2016). Even with a specifically designed stadium, the after games plan for venues may not come to fruition.

The struggles of both the Beijing 2008 and the London 2012 planning committee to find a use for Olympic venues demonstrate that it is hard to benefit from the sports infrastructure necessary to host the games. Even if there are local sports clubs or other businesses willing to take over the venue, there still may be a substantial burden placed on citizens either socially or economically. It is clear to see that new sports infrastructure in Olympic cities is a greater burden than a benefit.

Transportation Infrastructure

Another type of infrastructure that is necessary to improve in order to host the Olympics is transportation infrastructure. The influx of visitors into the city can put a great strain on the public transportation system; so many cities are required to improve their transportation systems in order to host successful games. Although the investment in transportation is largely to “ensure that the movement of athletes, spectators and officials during the event is efficient, and so presents the best possible impression of the host city to its visitors, enlarged airport capacity, new roads and better public transport systems can be an essential part of the Olympic preparations”, these investments are mostly permanent so that the benefits can be passed to the city’s residents after the games (Essex, Chalkley, 2003).

Many necessary transportation investments came from the Beijing 2008 games, an area that had struggled with travel inefficiency and congestion even before they were awarded the right to host the Olympics. It was evident in their transportation investment that the planning

committee for the Beijing games wanted to host an Olympics that would impress the world. The capacity of the subway lines was nearly quadrupled from 481 million passengers per year to 1.74 billion per year, and the amount of lines was increased from two to seven. Following the Olympics, improvements to the transportation system has continued as “transit ridership has increased in Beijing and the metro now has twelve lines” (Joaquin, 2012). In addition to decreasing the daily congestion that was making travel burdensome for Beijing’s citizens, the reduction of the number of cars that were on the road helped to improve environmental conditions. Beijing invested in necessary transportation improvements that may have been ignored had they not bid to host the Olympics.

Sixteen years prior to Beijing, Barcelona also used its Olympic games as means to invest in its transportation system. The 1992 games in Barcelona have been praised for its ability to use Olympic investments as a way to improve the city. Barcelona benefitted from the fact that there were already stadiums in the city able to host the events and thus “had more to spend on other public infrastructure with only about 18% of investments going to Olympic-specific structures and the rest to general urban improvements” (Joaquin, 2012). The improvement to their transportation system was an important addition to their urban improvements. In order to handle the increased traffic, two new ring roads were constructed that could handle about 230,000 cars per day and “would help to alleviate traffic flows along other major routes in Barcelona” (Joaquin, 2012). However, for as much praise as Barcelona received for its infrastructure developments, the transportation system began to experience congestion a decade after the games finished. Further investments were not made in order to keep up with the growth of the city that continued in the years following the games. It is interesting to ask

whether there is a finite expiration date on the transportation system built in cities for the purpose of the Olympics. If further investment is not made as the city continues to grow after a successful games, the infrastructure cannot keep up and might once again become outdated and inefficient.

E. Existence Value

When doing cost-benefit analysis, it is important to discuss the social benefits of an action. In the case of hosting the Olympics, many people believe the existence value of hosting is substantial and must be included in the benefits. Existence value is most often used in discussions regarding environmental economics. In this context, it is defined as "Willingness to pay for the existence of an environmental resource without on-site use" (Whitehead, 2008). However, it may be interesting to attempt to discuss existence value within the context of the "Olympic Halo". This refers to the idea city residents may benefit from the fact their city is hosting the Olympics, regardless if they visit the venues or receive any other direct economic benefits.

Attempts have been made to quantify the existence value of the hosting the Olympics through the usage of contingent valuation surveys. McHugh (2006) used a contingent valuation survey that estimated the benefit Pittsburgh residents receive because of the existence of the local NHL franchise Pittsburgh Penguins as a basis to determine the monetary benefits of Canadians due to the 2010 Vancouver games. The average citizen received a monetary benefit of \$5.77 due to the existence of the Pittsburgh Penguins, and McHugh used this amount in his benefit as well, admitting however that this might be lower than the per capita value of the Olympics.

McHugh believed that residents in British Columbia (the province in which Vancouver is located) would receive the full \$5.77 benefit, while the rest of Canada's residents would receive half of that benefit. Through this analysis, McHugh estimated that the existence value of the Vancouver Olympics "works out to approximately \$88m" (McHugh, 2006).

While there are certainly inherent issues with the analysis of McHugh, the possibility that there is \$88 million benefit to the existence value means it is significant enough to be discussed in my analysis. Pertaining to Rio, the existence value could be tremendous as it was the first games ever hosted in South America, which could mean there is a wide range of people who benefit from the existence of the Rio Games.

F. National Pride

Another social benefit that may be derived from hosting the Olympics is an increase in national pride. Hosting the games can unite a nation together in an attempt to host the best event



possible. When the host nation executes a spectacular opening ceremonies or one of its athletes wins a medal, it can unite the nation which can result in a positive social benefit. The increase in national pride is another benefit that might be hard to quantify, but has been discussed in

previous analysis and may be fairly significant. Similar to existence value, the increase in national pride can best be determined through the use of surveys. For the residents of Great

Britain, the increase of national pride was most evident as Team Great Britain pulled off a number of surprising triumphs throughout the 2012 Olympics. The long-term effects of Great Britain's victories at the 2012 games may be substantial as a survey found that "the shift in national mood may change attitudes on a long term basis, with seven out of ten respondents saying Team GB athletes have replaced music stars and footballers as their role models" (Marsh, 2012). Aside from the athletic competition, surveys also found that the British were emotional while watching the opening ceremonies. The opening ceremonies have traditionally highlighted the best of the host country, so it is fair to assume the British were overflowing with pride while watching the spectacle.

It will be important to include national pride as a possible benefit to my analysis in regards to Rio. The Brazilian people are historically very proud of their country and might be relishing the chance to put on a spectacle for the rest of the world, while being able to show their pride in their athletes and their homeland.

2. Economic and Social Costs

The costs associated with hosting the games have changed drastically over the past century, and have exponentially increased following the 1984 Los Angeles games. There are a variety of reasons as to why the costs of hosting have increased so greatly. The host cities of the early 20th century were purely focused on providing a sporting venue for the games, neglecting the idea the games could be used as a way to revitalize the city. Therefore, the host cities in the early 20th century did not face the great costs that are seen today with improving infrastructure and urban regeneration. It was not until nearly sixty years ago "at Rome 1960, after the end of post-

war Austerity, did the full potential of the Olympics as an instrument of urban transformation start to dawn” (Gold, Gold, 2008). The increased focus on improving the city and the legacy of the games has given rise to increase costs of hosting the games in the late 20th century and the early 21st century.

Another reason for the increasing costs of hosting the Olympics has been the transformation of the spectacle into a mega-event. Mega-events are “defined as festivals that achieve sufficient size and scope to affect whole economies and receive sustained global media attention” (Getz, 1997). The Olympics gradually turned into a mega-event as host cities continued to spend more in order to impress the rest of the world. Particularly financially disastrous games were the 1976 Montreal games, which reported a loss of \$1.2 billion and “crippled city finances for the next two decades...primarily caused by confused political goals, poor financial and logistical management, and severe budget deficits on overambitious buildings.” (Gold, Gold, 2008). The Montreal Olympic stadium was not completed until 1987 and was unsustainable, becoming a burden on city’s taxpayers.

A. Bidding Costs

The 1984 games turned a large profit, which has enticed many cities to submit bids in an attempt to win the right to host the games. The competition between potential host cities since the 1984 Los Angeles games has led to significant increases in the costs of submitting a bid. Cities are now required to impress the IOC with lavish plans to prove they can host the most successful games. In an attempt to show their commitment to hosting the games, the “candidate cities sign on to build future amenities in an attempt to impress the International

Olympic Committee (IOC) and win the Games” (Hyde, 2016). Because the IOC will usually favor the city who has presented the most lavish proposal, there is new discussion that the current bidding process leads to what is referred to as the “winner’s curse” effect. This idea comes from the belief that the “city that wins tends to be the one that overestimated the value of hosting the Olympics the most, and hence the one that went furthest overboard in their bid” (Hyde, 2016). The “winner’s curse” is multiplied even further each bidding process as proposals continue to become more extravagant.

An interesting way to analyze the costs of the bidding process is to examine the money spent by the bid cities that did not win the right to host. This analysis allows for clear differentiation



The piece of land taxpayers in Chicago are still paying for that was meant to be used for an Olympic Village

between bidding costs and the overall cost of hosting the games. As mentioned previously, bid cities will commit to building infrastructure as a way to demonstrate to the IOC their desire to host. In 2008, Chicago bought land as a

part of its bid to host the 2016 games. The land was bought with the purpose being the site of the Olympic village if Chicago won the right to host. However, Chicago lost out on in the bidding process to Rio de Janeiro. The land that cost \$91 million at the time put “taxpayers on the hook for \$91 million and it won't be paid in full until 2024” (Bradley, 2016). Eight years later, the taxpayers are still paying for a piece of land that has no current purpose.

Even if cities are fortunate enough to win the right to host the Olympics, they still endure many costs from the bidding process. Previous literature has found evidence that “the large expenditures and competitive selection process in hosting recent Olympics may lower potential long term net benefits for recent host cities” (Holladay, Billings, 2010). It will be important in my analysis to discuss Rio’s bidding process to determine whether their net benefits might be affected due to the competitive nature of the bidding process.

B. Sports Related Costs

The analysis of spending on sports infrastructure is intriguing because the amount spent can vary greatly across Olympics and across time. While one may believe there is a negative relationship between spending on sports infrastructure and maximizing benefits from hosting, this is not always the case. By examining the literature on Olympics where the spending on sports infrastructure was relatively high or relatively low, we can determine if there is a desired amount of spending that leads to benefits of hosting being maximized.

The 1976 Montreal games were viewed by many as a disaster due to bad sports investments such as its Olympic Stadium. The stadium had an elaborate design that ended up leaving the stadium unusable and with a much higher cost than expected. The stadium that was expected to cost \$71 million ended with a final price tag of \$1.1 billion. The roof, which was designed as an innovative retractable roof, was not completed until 1987 when “an orange Kevlar roof was finally installed” (Todd, 2016). The stadium continued to strain the city financially beyond the time of the games. The Kevlar roof tore repeatedly and had to be replaced in 1998 by a fixed roof, an improvement that cost an additional \$37 million. Although the actual games went fairly

well, the poor planning left the city's residents under great financial stress and marred the perceived success of the Montreal games. The organizers of the 2008 Beijing games also spent a great deal on its sports infrastructure in pursuit of hosting a successful Olympics. The expected cost of sports infrastructure for the Beijing Olympics was \$1.872 billion, which is three times what Atlanta spent on their sports infrastructure in 1996. However, unlike Montreal, large spending on sports infrastructure was planned by the Beijing organizers. Beijing wanted to host an Olympics that was a spectacle for the rest of the world, and the expensive stadiums were part of this spectacle. Because the main goal for the Beijing organizers was to "show off" to the rest of the world, the expensive stadiums were an effective way of increasing their net benefits of hosting.

The 1984 Los Angeles games were revolutionary because of the way existing sports infrastructure was used to help lower the cost of hosting the games. The 1984 bidding process had very few candidate cities because there were few cities willing to host after the financial disaster of the 1976 Montreal games. This allowed Los Angeles to have a low budget plan that made use of existing infrastructure for the venues of sporting events. There were only two permanent venues built for the games, with all other being temporary venues or previously existing venues. The final budget for venue construction was \$27.77 million, a fraction of what Montreal had spent eight years earlier. The low budget for construction allowed the games to turn a profit of \$225 million. The games were viewed as a huge success and revived the desire of other cities to host Olympics in search of similar profits.

Beijing spent a significant amount on their sports infrastructure and their games were viewed as successful because they wanted to impress the rest of the world. However, Montreal was viewed as disastrous because they spent so much on their infrastructure. Los Angeles proved that it was possible to spend a minimal amount on venues and host a successful game while also making a profit. In order to determine if Rio spent a desirable amount in order to maximize their benefit to hosting, it will be important to discuss their goals for hosting the Olympics.

C. General Infrastructure

The investments that leave long term benefits for the residents of host cities are not sports investments, but investments in transportation and urban renewal. Because investments in general infrastructure are much more beneficial than investments in sports infrastructure, successfully hosted games will tend to have a high percentage of their costs be from general infrastructure costs. There have been many examples throughout Olympic history where infrastructure spending has helped to regenerate cities that may otherwise not have funded these projects. The 1964 Tokyo games were hailed for its ability to help revive the city as it was still struggling with the aftermath of the 1945 war. Whiting (2014) notes that "In 1959, when Tokyo won the bid to host the Olympics, the capital looked nothing like the gleaming high-tech megalopolis it would later become". The games were relatively expensive, but much of the money spent went to infrastructure improvements. The transportation infrastructure in 1964 included the first bullet trains, which are still in use today. In looking forward to the Tokyo 2020 games, the organizing committee has reflected on the success of the 1964 as guidelines for hosting a successful Olympics in four years. Much of the infrastructure built in 1964 is still used today, but it is becoming outdated. Therefore, the Tokyo 2020 planning committee is planning

improvements and “the cost of the improvements is estimated at \$5 billion to \$6 billion” (Smart, 2014). The 1964 Tokyo games reflect that if a high percentage of costs are associated with transportation infrastructure and urban planning, the legacy of the games will tend to be more positive than if money is invested elsewhere.

D. Employment Costs

Although it seems viable to think that the Olympics would have substantial operational and employment costs, the operational costs are often negligible. Because there are extreme costs of hosting the Olympics, host cities often rely on volunteer work to run the event in order to reduce spending. While one may think it would be hard to find a person willing to work for free, this is not the case when it comes to the Olympics. For the London 2012 Olympics, 240,000 applications were received by the organizing committee, and there was a need for only 70,000 volunteers. Sebastian Coe, Chair of the London 2012 Organizing Committee, said that “Volunteers are the lifeblood of the Olympic Games”. The thousands of volunteers take on many different roles, from transportation jobs to medics in the Olympic village polyclinic. The volunteers are often residents of the city, and therefore are incentivized to do a good job so that visitors will have a favorable perception of the city.

Analysis on the volunteer work of the Olympics have examined the money that was saved by using volunteers rather than paid workers. The Sydney 2000 games had 47,000 volunteers who helped in various roles to make sure the events ran smoothly. It is estimated that the Sydney organizers saved \$140 million on employment costs by using volunteers. This is a significant

cost that is subtracted from the overall costs of the games because organizing committees can entice people to volunteer.

The Olympics have relied on volunteer work to reduce costs since the 1948 London games, so it would be far to assume that the Rio Olympics will also rely heavily on volunteer work. Because volunteer workers are not paid, it is likely that the operational costs for the Rio games will be negligible.

E. National Stress

Hosting the Olympics is a laborious task in which the desired result is often hard to achieve. Although many cities are at first ecstatic over the opportunity to host the games after they win their bid, the process can cause great stress to a city's residents and government. Many residents often have their attitudes shift about hosting the Olympics as troubles arise in the preparation process. Costs are often underestimated and this can cause great anxiety among the taxpayers. The Greek government spending went 97% above their initial budget when the cost of the 2004 Athens games soared to \$11 billion. The overspending on the Olympics has been noted as a cause of the financial collapse of Greece over the past few years. Olympic legacies can also be marred by corruption scandals, such as the scandal that surrounded the 1998 Winter Olympics in Nagano, which lead organizers to destroy the financial records of the games. Planning of the games is often difficult and can lead to unexpected stress and disastrous results when the planning proves to be ineffective.

With the 2016 Rio games, the stress upon the government and the city's residents could be amplified. Rio is the first South American country to be hosting the games, and it will be

intriguing to examine how the developing nation will cope with the stress that is associated with hosting the Olympics.

Benefits of the Rio Olympics

A. Trade Openness

A potential benefit that was discussed by Rose and Spiegel (2009) was that hosting the Olympics leads to increased trade openness for the host nation. Rio could use increased trade openness to help with their economic recovery. Brazil is a large economy that is instrumental in regional trade deals throughout South America. However, they are not too involved in international trade as they have no substantial trade agreements with the United States. However, since Rio was awarded the rights to host the Olympics in 2009, they have become more active in seeking international trade agreements. Brazil recently signed a trade agreement with the United States that states the U.S will “allow the importation of fresh beef from Brazil under specific conditions that mitigate the risk of foot-and-mouth disease” (White House). Brazil agreed to science-based risk rulemaking in 2013 that allowed for the development of this agreement. The agreement allows for the expansion of trade between the two countries, as Brazil currently exports \$307 million in red meats to the United States each year. Brazil and the United States are two of the leading agricultural producers and exporters, so this deal could be significant in helping Brazil in its economic recovery.

Rose and Spiegel (2009) concluded that host nations have 30% more trade and that hosting the Olympics has a positive impact on national exports. Through its agreement with the United States, it appears that Brazil is becoming more open in its international trade. It is very possible

that Brazil hosting the Olympics has been a catalyst in its talks with the United States. In a 2011 visit to Brazil, the U.S Secretary of Commerce mentioned Brazil hosting the Olympics while discussing the new agreements between the two countries. The trade agreements between the U.S and Brazil may be a long-term benefit to Rio hosting the 2016 Olympics.

B. Job Creation

Job creation is a significant benefit that comes from hosting the Olympics. While there has been mixed conclusions from past researchers about the magnitude of the job creation from past Olympics, it is clear that there will be significant job creation in Rio as a result of the games. One reason for this is that Rio is inherently different from previous Olympic hosts. It is still largely a developing nation where many people are actively seeking jobs. Brazilians will also benefit more from the types of jobs created by the Olympics than citizens in a more developed nation such as the United States, as Olympic jobs tend to be more blue-collar work. Furthermore, Rio citizens will benefit greatly in the long run from the job training they receive in preparation for the Olympics.

In a study in 2009, when Rio was awarded the 2016 games, the University Of São Paulo Institute Of Administration conducted a study estimating the potential number of jobs that could be created due to the Olympics. The study concluded that there would be thousands of additional jobs created in the preparation for the games, as well as continued job growth for a decade after the games end. The researchers estimate that “by 2016 120,000 jobs per year will be created, this figure rises to 130,000 for each of the next ten years” (Rio 2016). The long run benefit sustained job growth can be attributed to the training workers will receive and the

investment that has increased due to the Olympics. Workers were given training opportunities that will allow for job opportunities and advancement, such as the “approximately one million English lessons (that) were available for local volunteers and service providers such as taxi drivers” (Olympic.org).

Economists may argue that the Olympics have not had a positive effect on job creation because the Brazilian unemployment rate has been rising steadily since the beginning of 2015. This viewpoint fails to consider the political turmoil that has occurred in Brazil with the impeachment of their President. The economic downturn has also been fueled by a corruption scandal at Petrobras, the state-run oil company. Considering these shocks to the Brazilian economy, it is easy to see why the unemployment rate is rising steadily. However, before these events occurred, Brazil was experiencing a period of declining unemployment rates from 8% in 2008 to 4.8% in 2014. The announcement of the games might have been a catalyst for this lowered unemployment rate as the preparation for the games has created jobs throughout Brazil. Furthermore, the job training that was given to the Olympic workers may very well help Brazil recover from the current recession. Although it is clear Brazil is in a recession currently, this does not mean the Olympics have not had a positive effect on jobs in the country. The Games helped to lower the unemployment rate in the preparation process, and the job training received by workers may help to the country have a quicker recovery from the current recession.

C. Tourism

The Rio Olympics highlighted popular destinations such as Copacabana beach in order to attract international tourists to the area. Brazil is the top ranked country in the world for natural beauty and resources, and Rio was eager to show this beauty to the rest of the world. While there were health concerns for tourists due to the Zika virus that has spread throughout Brazil, there was still a significant increase in tourism due to the Olympics. The high level of tourism resulted in an influx of business into the Rio as the "434,000 foreign visitors who spent about 2 billion reais (\$617.24 million) during the Games" (Miami Herald). The \$617.24 million in revenue from the games is comparable to past Olympics and can be viewed as a success, especially when considering the media concerns before the games. Rio also hopes that the exposure from the Olympics will result in increased tourism in the future. Rio seems to have made the most of this exposure, as international tourists gave a 98.7% approval rating of the hospitality shown by the citizens. This bodes well for more tourists to look at Rio as a global travel destination for their future travels.

D. Infrastructure Investment

Sports Infrastructure

The sports infrastructure created for the Olympics has often been a burden for host cities beyond the games, as many of the stadiums go unused and become "white elephants". The organizers of the Rio games designed the venues in hopes of maximizing the usefulness of the infrastructure after the games. Of the 34 venues used for competition, 18 of the venues already existed, 9 venues were newly constructed for permanent usage, and 7 venues were built for

temporary usage. Many of the 18 existing venues were built for the 2014 FIFA World Cup and the 2007 Pan Am games. One of the most efficient usages of the existing infrastructure was the use of the Maracanã stadium as the official Olympic Stadium and the site of the opening and closing ceremonies. As previous Olympics such as Montreal have shown, the task of building a new Olympic stadium can be time consuming and extremely costly. Aside from preventing spending on a new Olympic stadium, the Maracanã's usage also helped to show the rest of the world the great history of Brazilian sport as it is the most famous stadium in Brazil.

There are also plans outlined for the purposes of the sports infrastructure after the games conclude. Planners hope that the transition of the infrastructure after the games will have a positive impact on the society. The sports infrastructure will transform into infrastructure that is able to increase the society's social welfare function, as much of the infrastructure will be used for purposes other than athletic events. For example, the handball venue "will provide the material to build four 500-student primary schools in the city's Jacarepaguá neighborhood" (Wired). The International Broadcast Center will serve as a dormitory for a local high school. The sustainability of these venues could convert what is seen as the most expensive and wasteful part of hosting the Olympics into a slight benefit for the citizens of Rio.

Transportation Infrastructure

Rio had a difficult task in constructing transportation infrastructure that would be able to accommodate all of its Olympic visitors. When Rio was awarded the bid in 2009, the transportation infrastructure was already inefficient. Citizens had morning commutes upwards of two hours on buses that were always packed too full. Additionally, new roads and subways

had to be constructed to connect the different areas hosting the Olympic events. This meant constructing roads through hills and the difficult landscape of Rio. However, the transportation infrastructure is now complete and the Olympic visitors and Brazilian citizens have been reaping the benefits of the new infrastructure.

A major improvement in Rio's transportation infrastructure was a result of investing further in their Bus Rapid Transit (BRT) system. The increase in the BRT system led to drastic cuts in travel time to many of the Olympic venues. For example, the BRT TRANSOLÍMPICA route connected the Olympic center to the Deodoro event venues. Before this new road was constructed, the travel time from one end to the other was 110 minutes. The construction of the BRT TRANSOLÍMPICA decreased this travel time to 40 minutes. The benefits of the new BRT system will continue even after the Olympics conclude. The efficiency of the new travel routes will help Rio citizen's decrease their morning commutes. Traffic had become a significant problem in Rio prior to the construction of the new public transportation systems. The public transportation systems were inefficient that "Rio de Janeiro has 24% fewer people than New York City but 51% more private vehicles" (WSJ). The BRT system will help to decrease the traffic, therefore decreasing commutes and increasing the efficiency of transportation in Rio.

E. Existence Value

The existence value of Rio hosting the Olympics is difficult to quantify, but previous research has shown there is a great existence value of sporting events. McHugh (2006) used a contingent valuation survey to determine the existence value of the Pittsburgh Penguins hockey team. He concluded that the value of the existence of the franchise for the city's residents was \$88

million. While a similar survey has not been conducted in terms of the Rio games, we can use his thinking to determine the Olympics has an existence value that exceeds \$88 million. There are a few reasons why the Olympics would have a greater existence than an NHL franchise. First, the fact that the Olympics are a mega-event that only occurs once every four years. It is the largest sporting event in the world that is seen by 3.6 billion people from across the globe. The sheer size of the event is sure to have a large effect on the existence value. Another reason it is fair to assume a large existence value is that the existence benefits are enjoyed by people across South America. Because Rio is the first South American Olympic host, the benefits of the Olympics "existence" can be seen throughout the continent. There are many more people who experience a benefit through the existence of the event when compared to an NHL franchise, where the fan base usually consists of the city's residents. Because of the magnitude of the Olympics and the amount of people who experience the existence benefits is much larger than that of an NHL franchise, we can assume that the existence value of the Rio Olympics is in excess of \$88 million.

F. National Pride

Aside from the economic benefits, there are also social benefits that come from hosting an



Brazilian fans cheer on their soccer team in the gold medal match.

Olympics. One notable social benefit is that hosting the games increases the national pride of the country's citizens. Recent events such as the impeachment of the Brazilian President and the Petrobras corruption scandal have led to troubling times in the South American country. However, the Olympics gave Brazilians an opportunity to

show their beautiful country off to the rest of the world and restore their pride in their country.

The Brazilian people showed their national pride while cheering on athletes from the host nation. The Brazilian soccer team won the gold medal over Germany in a rematch of the 2014 FIFA World Cup semi-final that Germany won 7-1. When Germany won that match two years ago, the Brazilian people were very disappointed, as they have great pride in their soccer team.

The pride of the country seemed to have been restored when Brazil won the gold medal over Germany. After enduring difficult times recently, one Brazilian fan commented "being in the spotlight for a positive thing and showing the world we are good at something has made us Brazilians very proud" (The Guardian).

Costs of the Rio Olympics

A. Bidding Costs

There is a certain amount of difficulty in determining how much Rio spent to win the right to host the Olympics. The best way of analyzing the cost of the bidding process is to determine how much cities who did not win the right to host spent on bid projects. However, since Rio won the right to host the Olympics, this technique cannot be used to evaluate the cost of their bidding process. The best alternative analysis to determine if the Rio organizing committee had a cost effective bidding process is to examine why it was that the IOC awarded Rio the right to host the Olympics. Rather than focusing too much on proposals for fancy but costly event venues, the Brazilian Olympic Committee (BOC) appealed to the IOC that the games would have a long lasting legacy on the social problems facing the country. The BOC proposed that “the Games would be a platform for social integration and prosperity” (Mittl, 2016). The idea that the Games would help to diminish social problems in the country was a fundamental argument used by the BOC throughout the bidding process.

In addition to arguing the Games would help to alleviate social problems in the country, the BOC proposed infrastructure plans that were necessary throughout the country. They focused on investing in infrastructure that would be useful to the citizens of Rio after the Games were over. The infrastructure built would have a lasting legacy in the city and would not go unused like some previous Olympic investments had, most notably in Beijing as discussed early. The appeal of a lasting legacy in Rio helped them to win the right to host the games. Because the

BOC focused on legacy and not on fancy but costly sports venues throughout the bidding process, they had a cost effective plan that was still able to appeal to the IOC.

B. Sports Related Costs

The sports related costs associated with hosting the Olympics are comprised of two categories: operational costs and direct capital costs. Operational costs are mainly comprised of the workforce, administration, ceremony, technology, and transportation costs. Direct capital costs are those that are “incurred by the host city or country or private investors to build the competition venues, Olympic village(s), international broadcast center, and media and press center, which are required to host the Games” (Budzier, Stewart, Flyvbjerg, 2016). The sports related costs of hosting the Rio Olympics was \$4.6 billion. The Rio organizers seem to have changed the trend of increasing costs of hosting the Olympics, as London 2012 and Sochi 2014 had sports related costs of \$15 billion and \$21.8 billion, respectively. Although the Rio committee spent 51% more than their original budget, they overspent less than previous Olympic hosts. Every Summer Olympic host has overspent when compared to their original budget, with average cost overruns of 176% and a median of 83% in real terms. From this viewpoint, the BOC (Brazil Olympic Committee) was relatively successful in their budgeting and spending.

Due to the current economic conditions, Rio struggled to secure investments for the games. This led to funding problems and the governor of Rio declaring a state of financial emergency in order to secure funds for the games. Funding issues forced the BOC to cut costs on expenditures such as the Opening Ceremonies, where “the budget available was a fraction of

that for earlier Games. One of the directors of the ceremony, filmmaker Fernando Meirelles, who directed the Oscar-nominated "City of God," had said his ambitions were forced to shrink along with the vanishing budget: What began as more than \$100 million was cut in half, a show of 3,000 people sliced to 700" (Washington Post). Although the Opening Ceremonies might have had more appeal with a larger budget, the forced spending cuts helped the games to have a lower cost.

C. General Infrastructure

As discussed in the literature review, the spending on transportation infrastructure results in more long term benefits than spending on sports infrastructure. Therefore, the more successful Olympic hosts will tend to spend a larger amount of their available funds on infrastructure that is not sports related. Rio followed this trend and invested heavily on their transportation infrastructure in preparation for the Games. The BRT Transbrasil is the most costly new route being added to the bus transportation system at an estimated cost of \$380 million. This extension to the busing system will add 31 Kilometers to the existing routes and is expected to be the corridor with the largest demand. The local government oversaw the project with help from the federal government. Although the project is an expensive undertaking, the public will benefit greatly and the route will have high demand.

Although generally the Brazilian residents should benefit from the new BRT routes, there were transportation investments whose legacy is less clear. The biggest infrastructure project that Brazil planned was \$3 billion subway extension that connects beaches to the Olympic park and sporting venues. The project ran into skeptics concern over its viability in the future. There are

many people who are doubt the beneficial legacy of this project because it connects two areas that are economically middle to upper class; people who would not usually choose to use public transportation. Although the subway may become a regrettable investment in the future, it was a necessary investment to host a successful Olympics. While the project struggled to finish on time, it was able to be used by Olympic spectators in order to drastically cut down on travel times to the sporting venues. Although the subway line may struggled to maintain its viability in the future, the overall investment in transportation infrastructure should benefit the Brazilian people in the future. The ability of the BOC to spend more on investments in transportation and limit the costs of spending on sports infrastructure should result in more long term benefits for the citizens of Rio.

D. Employment Costs

Just as previous Olympics have had negligible employment costs due to volunteers, The BOC also heavily relied on volunteer work to drastically cut the employment costs of the Games. The 50,000 volunteers were incentivized to work for a variety of reasons. There were many people who were eager to volunteer so they could say they were a part of the first Olympics ever in South America. A 56 year old grandma travelled over 1400 miles in order to volunteer because when she “found out that the Olympic Games were going to be staged in South America for the first time, she was determined to take part” (Rio 2016). While many volunteers are ecstatic to have the opportunity to be a part of the event, the BOC was just as ecstatic at the money they saved because of volunteer work. As stated in the literature review, the Sidney Olympics saved an estimate \$140 million on employment costs by using 47,000 volunteers. As Rio hired 50,000 volunteers to help run the event, it is fair to assume the BOC saved at least \$140 million on

employment because of volunteer work. The ability for the BOC to incentivize volunteers to help run the events helped greatly in limiting the overall cost of the event.

E. National Stress

The preparation for hosting an Olympics can be a very stressful time, and Rio certainly went through stressful periods. One reason for stress is how much the media covered the Zika virus spreading throughout Brazil, which created relatively unwarranted safety concerns for both athletes and spectators. When the event began, the concern over Zika dwindled due to a few reasons. First, the concern over the Zika virus was largely exaggerated by the international media. August, when the Olympics were held, is part of the winter season for Brazil because the country is in the southern hemisphere. This means that there were very few mosquitos in the areas where events were being held. Additionally, the BOC did everything it could to provide safety measures for athletes. A few times over the course of the competition, trucks would drive around the Olympic village and spray large amounts of mosquito repellent. Therefore, there were nearly zero mosquitos inside of the Olympic village. The media concern over Zika increased stress for the BOC because it was another issue that had to be dealt with in preparation for the Games. Another source of stress for Rio and Brazil was that the funding for Olympic projects ran out before projects were completed. The governor of Rio was forced to declare a financial state of emergency in order to raise funds for the completion of these projects. While this did lower the overall costs of the Games, as discussed earlier, it raised the doubt in people over Brazil's ability to host a successful Olympics. Although the preparation for

the Games might have been difficult and stressful, the Brazilian people now have great pride in the fact that they successfully hosted an Olympics in their great country.

Conclusion

There were many struggles for Brazil in preparing to host the 2016 Olympics. From the time the IOC awarded the right to host to Rio, there were doubts over the ability of a developing country to host the Olympics successfully. The Brazilian economic struggles lead to funding shortages, delayed projects, and scrutiny from the international media, among other uncontrollable difficulties such as the Zika virus. However, the BOC, with the help of the Brazilian government, managed to deliver a successful Olympics despite these obstacles. The infrastructure spending on needed amenities such as a new public transportation system will help to increase efficiency. The job training workers received in preparation for the games may be a long term benefit that will allow them to find more high skilled work in the future. There have already been trade agreements signed with global powers such as the United States that will help Brazilian industries increase their exports. While there were safety concerns from tourists before the event, those who went had a favorable impression of Rio and the Brazilian people. This should help to increase the amount of tourism to Rio and surrounding areas in the future, bringing in revenue for years to come. The national pride gained by the Brazilian people due to hosting a successful Olympics should help restore pride that had been because of the economic recession and a failed World Cup in 2014.

While it seems the BOC was able to maximize the potential benefits from hosting, they also were effective at limiting the costs of the event. Their planning included good use of existing

and temporary sports infrastructure that limited the costs of the event venues. The use of volunteer work helped to reduce the employment costs of the event. Without these volunteers, it would have been difficult for the organizers to have such a successful event. Though there was an increase in stress caused by the difficulty of a developing nation to host an event such as the Olympics, the Brazilian government and people showed resilience throughout the process. The problems that arose such as the Zika virus were dealt with so well that they were of little concern for spectators and athletes during the event. Although it is unclear how much the bidding process cost in order to secure the right to host the Olympics, the cost effective measures used by the planning committee throughout the process of hosting is reason to believe these costs were minimal.

Rio was the first South American country to host the Olympics and there was concern that Brazil could not host a successful event. However, Rio was able to maximize the economic and social benefits and limited the costs of hosting the Olympics. The long term economic and social benefits may help Rio and Brazil to recover from their current recession and lead them back to the prosperous economy they were projected to be when they were awarded the right to host the Olympics in 2009. While my analysis concluded that hosting the Olympics should help them to recover from their current recession, future research on the Rio Olympics should be conducted to determine whether my conclusion holds true based on future economic data.

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