

Assessing the Olympics

Preliminary Economic Analysis of a Boston 2024 Games
Impacts, Opportunities and Risks

Prepared by:

UMass Donahue Institute Economic and Public Policy Research

for

The Boston Foundation



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The Boston
Foundation

March 2015

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Preface

Whether you are for or against having the 2024 Olympic Summer Games come to Boston, you can agree that the Games would require significant investment in the city and its infrastructure. As Greater Boston's community foundation, it makes sense that the Boston Foundation would fund and support an examination of the economic impact the Games would have on the city and on the Commonwealth of Massachusetts.

To provide the analysis, we turned to Dan Hodge, Mark Melnik and their team at the University of Massachusetts Donahue Institute, and asked them to focus on both the short-term economic impact the Games might have on the city and region, and to begin to pull together information on the longer-term possibilities and risks of holding the Games here.

The Boston 2024 Partnership provided the UMDI staff with information gathered prior to the bid being submitted to the United States Olympics Committee. In addition, Boston 2024 met several times with UMDI staff to discuss bid details, including detailed aspects of the operational budget.

The findings, not surprisingly, neither suggest that holding the 2024 Olympic Games is an economic slam dunk for the city, nor do they reflect the economic disaster scenarios painted by some. Instead, they show that the Olympics could be a net economic positive, but that success will depend upon smart budgeting and effective planning to avoid some of the huge cost overruns that have bedeviled some Olympics host cities in the past.

The Boston 2024 entry into the bidding process was prompted in part by a new platform that was put forward late last fall by the International Olympic Committee called "Olympic Agenda 2020," which contained a set of recommendations that aim to reduce costs and overspending on the Games. While it is too early to tell whether that change in philosophy will result in significant changes going forward, we sincerely hope that this new report will set the stage for new and more robust conversations about the costs and benefits of Boston's bid.

One can expect that this will not be the last time the Boston Foundation examines the issues and potential benefits of a Boston 2024 Olympics. The impact of the Games reaches well beyond specific dollars and cents, and ranges into issues of the use of philanthropy, future decisions on infrastructure investment and overall community engagement.

We hope that this report represents a meaningful contribution to the necessary wide-ranging civic discussion the issue of the Games has stimulated.

Paul S. Grogan
President & CEO
The Boston Foundation

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This work was researched and developed by the Economic and Public Policy Research (EPPR) group at the UMass Donahue Institute. Key project members included:

- Mark Melnik, Senior Research Manager
- Dan Hodge, Director

- Lindie Martin, Research Analyst
- Hinlan Wong, Research Analyst
- Andrew Hall, Research Analyst

Executive Summary

As is well-known throughout Greater Boston and Massachusetts, the Boston 2024 Partnership is in the beginning stages of planning for the 2024 Summer Olympics. The possibility of hosting the Summer Games is sparking significant debate in our community about the potential benefits, costs, and risks associated with hosting the Olympics. With these debates in mind, the Boston Foundation (TBF) commissioned the Economic and Public Policy Research group (EPPR) at the UMass Donahue Institute (UMDI) to perform a detailed economic impact assessment of Boston's proposed 2024 Olympic bid.

While the Boston 2024 proposal is a working document and should be thought of as a "proof of concept" rather than a concrete plan, there are still several components of the proposal that can be evaluated at this time. The following report contributes to the public discourse by providing a preliminary assessment of the quantitative short-term economic impacts of hosting the 2024 Summer Olympic Games in Boston. In addition, this report highlights several of the potential opportunities, challenges, and risks associated with hosting the Olympic Games that are difficult to quantifiably measure at this time, but require further attention as the Olympic bid evolves over the next couple of years.

Our analysis is focused on estimating the *net* short-term economic impacts of the proposed 2024 Boston Olympics. While there are undoubtedly long-term economic benefits and costs to hosting the Olympics, due to the preliminary nature of the current plan, it is not possible to estimate the full range of costs and benefits at this time. As a result, the current analysis focuses on three key components of short-term Olympic related spending: 1) construction; 2) Game production and operations; and 3) spectators and tourism. While there will obviously be a great deal of economic activity related to the Olympics, our work focuses only on the economic impacts experienced in the Massachusetts economy. In that, we carefully consider only those dollars that that would be "new" to the Massachusetts economy (i.e., funding and investment that would not otherwise occur in Massachusetts) and would be spent on Massachusetts firms and workers. In addition, our work attempts to reflect any potential crowding out or displacement effects related to economic activity (e.g., visitors who opt to avoid Boston *because of* the Olympics). Our short-term economic impact analysis assumes that the Games will be executed as currently planned by the Boston 2024 Partnership, including at the proposed total cost of approximately \$9.1 billion.

With regard to construction impacts, we assumed that \$2.1 billion of the estimated \$3.8 billion in construction activity would represent new activity benefiting Massachusetts firms. Over a construction period lasting approximately six years (2018-2023), we estimate construction spending associated with the Olympics will create or support over 24,000 job-years in Massachusetts, or roughly 4,100 jobs annually during the construction period.¹ Construction activity will have a total impact of nearly \$4 billion dollars to the state economy over a six-year period.

In terms of Olympic operational impacts, such as spending on venue management, security, IT support, and ceremonies, we assumed that \$2.9 billion of the estimated \$5.3 billion in operational spending would be new activity benefiting Massachusetts firms. We estimate that in the year of the Games, Olympic

¹ The seasonal and temporary nature of construction lead to construction jobs typically being reported in "job-years". This can be understood as the number of full-time jobs that will be supported for a year through construction related spending. To estimate the more commonly understood concept of a "job", one needs to divide job-years by the length of the project(s). In this case, we divided job-years by six as most Olympic construction activities will happen over a six year time period. Note however, that construction activity will not occur evenly throughout the six years. Some years will have more construction jobs than others.

operational spending will create or support over 50,000 jobs in Massachusetts. Olympic operational spending activity will have a total impact of over \$5 billion dollars in the state economy during the year of the Olympics.

In terms of tourist spending, knowing Greater Boston is already a popular tourist destination, we used conservative estimates of the proportion of spending that can be directly attributed to the Olympics, assuming 70% of visitor spending occurring during the Olympics would have happened in the region regardless of the Games. Based on that assumption, we estimate that Olympic spectators, media members, athletes, and officials will add a one-time net increase of \$300 million in spending to the Massachusetts economy in 2024. In the year of the Olympics, we estimate visitor spending will create or support nearly 4,300 jobs in Massachusetts. Olympic operational spending activity will have a total impact of nearly \$514 million dollars in the state economy.

While we understand that it may be tempting for readers of this report to try to add up the estimated economic impacts, we advise against doing that for two reasons. First, the three short-term impact concepts estimated in this study reflect different time periods and different dynamics, which make the seemingly simple addition more complex. For example, the construction-related economic impacts will occur over multiple years in the lead up to the Olympics while operations spending and tourism impacts would occur in the year of the games (2024). Second, our intent is to present results for these three *potential* economic impacts in a clear and transparent analysis that recognizes various uncertainties and past research and thus are best understood individually rather than in aggregate.

While our estimates show the Olympic would have a positive short-term impact on the local and Massachusetts statewide economy, it should be noted that there are still several significant aspects regarding the Olympics that are unclear or uncertain. A continued close examination of the following issues is necessary for the region to fully understand the potential benefits and risks associated with hosting the Olympics. Our research highlights several of these issues. First, long-range legacy impacts of hosting the Games need further consideration. While Olympic proponents tout the potential economic development and tourism opportunities associated with hosting the Games, there is still a great deal unknown about the future of Olympic sites and the potential displacement of current economic activity. In addition, there is little agreement on the long-range tourism benefits associated with the Olympics.

Second, community leaders need to be mindful about the real possibility of cost overruns and what they may mean to the public sector. There is extensive research suggesting that the final costs of modern Olympic Games are always significantly higher than the initial budget estimates.² Contractual agreements with the IOC typically expose the host city to financial obligations related to cost overruns and budget shortfalls. However, some of these cost overruns may not directly represent risks to the public sector. For example, total costs and planned expenditures may increase but that could correspond with increased financial backing from the private sector. In such cases, “cost overrun” would not be a threat to taxpayers. On the other hand, unplanned increases in the total Olympic budget over time (such as increased infrastructure costs necessary to win the bid and host the Games) could directly put the public sector at risk of having to cover budgetary shortfalls. Likewise, costs can overrun if planned expenses turn out to be higher than initially anticipated (and built-in contingencies are not sufficient). In these instances, the primary concern is who would be responsible for covering these overruns.

² Two notable examples include Will Jennings’ 2012 book *Olympic Risk* and Bent Flyvbjerg and Allison Stewart’s 2012 working paper entitled *Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2012*.

That said, the Boston 2024 Partnership has committed to avoid using public funds to pay for the Games and there are reasons to think that they could minimize the budget issues and cost overruns experienced by other host cities. In particular, in December 2014 the International Olympic Committee (IOC) approved the *Olympic Agenda 2020*, a set of 40 recommendations and reforms surrounding the Olympic Games. Most significantly for the current Boston 2024 bid were resolutions aimed at reining in costs and encouraging the use of existing and temporary facilities. This shift in IOC priorities in evaluating Olympic proposals appears to place the Boston 2024 bid in a stronger competitive position and may help to keep costs down compared to previous Games. In addition, it is important to note that the last three U.S. hosted Olympics (Los Angeles 1984, Atlanta 1996, and Salt Lake City 2002) were cash positive in terms of the Olympic operating budget (revenues generated by the Games compared to Game operational expenses). Finally, Boston 2024 is pursuing novel approaches to obtain insurance policies to alleviate the financial backing responsibility of Boston as the host city. Regardless, the issue of budget, cost overruns, and public sector commitment need to be closely monitored as the Boston 2024 Olympic bid progresses.

Third, transportation and public infrastructure represent complex challenges in terms of funding, what is needed for the Olympics, and local and statewide investment priorities. While many of the transportation projects identified by Boston 2024 as being necessary for the Olympics are already funded in the Commonwealth's Capital Investment Plan or identified in the State's Transportation Bond Bill, there are a number of projects that are much less certain with regard to funding, timing, or prioritization, most notably the South Station expansion. In addition, weather conditions this winter highlighted the incredible backlog of needed maintenance on the public transit system.

The possibility of hosting the 2024 Summer Olympics is an exciting proposition for our region and does have the potential to unlock underutilized areas for redevelopment and help press forward on long-sought infrastructure improvements. Preparation for the Games will provide regional leadership a goal in developing long-range plans for the metropolitan region. It is clear that Olympic construction and spending activity will likely have a significant economic impact on the state, especially as it draws on otherwise untapped sources of funding from the private sector or external sources. That said, substantive questions still remain regarding the bid and the fiscal realities of the budget forecast. As Boston's Olympic bid continues to evolve in the coming years, further research will be necessary to fully understand the impact of a possible Summer Olympics held in Boston. This will include revisiting any changes to the bid or planned venues over the next two years. As more is understood about budget and insurance protection, careful consideration should be paid to public sector contributions, partnerships, and risks. These are also issues that are either not fully understood at this time or it is too early to predict outcomes, but are significant factors in determining the true economic and fiscal impact of hosting the Olympics in Greater Boston.

Introduction

The benefits, costs, and risks associated with hosting the Olympic Games is a hotly debated issue, particularly for communities being considered to host the Games. Pro-Olympic advocates point to job creation related to construction, event production, and tourist spending as key reasons a city should want to host one of the largest sporting event in the world. Proponents also contend that hosting the Olympics raises the profile of a city on the world stage and helps to usher in legacy benefits associated with economic development, transportation, and tourism (such as London in 2012 and the East End improvements). Opponents of hosting the Olympics often state the economic benefits attributed to the Games are overstated and that local communities put themselves at financial risk due to the commitments associated with venue, infrastructure, and event production. Opponents also argue that there are better ways to spend public dollars than hosting a short term mega sporting event and point to recent Olympics (for example, Athens in 2004 and Sochi in 2014) that experienced major cost overruns and elaborate venues with limited or no long-term purpose. With these debates already percolating in the local public discourse, the Boston Foundation (TBF) commissioned the Economic and Public Policy Research group (EPPR) at the UMass Donahue Institute (UMDI) to perform a detailed economic impact assessment of Boston’s proposed 2024 Olympic bid based on available data, assumptions, and past findings.

This analysis focuses on short-term economic impacts related to hosting the Summer Olympics on the state economy, as well as a discussion of some of the potential long-range economic opportunities and challenges facing the region as it would prepare to host the Games. Short-term economic impacts focus on those activities directly related to preparing the city and region to host the Olympics, as well as activities necessary to execute the Games. Included in short-term economic impacts are venue construction and preparation, Olympic operations, and tourist visitation and spending. In order to avoid overstating the economic benefits associated with hosting the Olympics, our analysis carefully considers only those economic activities that would be considered “new” to the region. In that, we exclude any spending that we estimate would have taken place without the Olympics, displaces other forms of spending in the local economy, or benefits firms outside of Massachusetts. While the current Boston 2024 Olympic bid requires several transportation projects to be completed in advance of the Games, the majority of these projects were already planned by the Massachusetts Department of Transportation (MassDOT) and the Massachusetts Bay Transit Authority (MBTA) as part of the State’s long-term transportation plan. As a result, we do not consider the economic activity associated with these transportation projects as being part of the economic impacts related to the Olympics (though we do identify some of the challenges and risks related to transportation).

Aside from the direct impact related to Olympic spending, there are other economic opportunities, challenges, and risks associated with hosting a large-scale event like the Summer Olympics. At this stage of the bidding process, it is too difficult to precisely measure some of these opportunities and risks. However, it is important for community leaders and the Boston 2024 Partnership (hence referred to as Boston 2024) to consider these challenges as the region moves forward in planning for the 2024 Games. In terms of opportunities, the Olympics have the potential to help stimulate economic development opportunities in areas of the city that have long been underdeveloped. For example, Boston 2024 suggests that the area where the temporary Olympic stadium will stand will be ripe for future economic development due to utility upgrades and infrastructure improvements. Some Olympic projects are expected to have a long-term legacy benefit as well, such as using parts of the Olympic Village as student and middle-income housing in the city. Other opportunities include leveraging Game preparation as a way to spur

comprehensive community planning throughout the region and to push long needed transportation infrastructure projects forward.

Of course, there are significant challenges and risks associated with hosting the Games as well. For example, the Olympics are not only an expensive endeavor to execute, but the Games have a long history of significant cost overruns.³ This is a prime concern as host communities typically agree cover any revenue shortfalls needed to fund Olympic operating expenses and often over-promise on related public infrastructure improvements. Boston 2024 is currently exploring insurance coverage options to help protect the City against this financial commitment and is promising a compact Games largely based on existing venues and infrastructure, but these are aspects of the Olympic bid that will need to be worked out in detail over time.

Another challenge includes ensuring necessary long-range transportation projects are fully funded and come in on budget. While Boston 2024 often states they will not need any public money for producing the 2024 Summer Olympics, the reality is there are several transportation projects that are not fully funded yet, despite the State's Transportation Bond Bill. Projects scheduled to begin after 2020 are much less likely to have all funding components figured out. One important project as it relates to the 2024 Games is the expansion of South Station, which still has significant question marks in terms of funding and timeline. Another potential concern is that Boston area projects may need to be prioritized over others in different parts of the state to meet Olympic deadlines and commitments. The Commonwealth may also need to borrow additional money to make sure projects are finished in advance of the 2024 Games. In addition, the challenges of maintain and operating the MBTA has come under renewed visibility and focus following the historic snowfalls experienced in the Greater Boston region over the last few weeks. While, obviously, snow emergencies would have no impact on the Summer Olympics, this winter does highlight the incredible backlog of needed maintenance on the public transit system.

The following analysis is based on a combination of information provided by Boston 2024, as well as independent research we conducted on past Games and Olympic proposals. Our analysis should be understood as a preliminary assessment of the current Boston 2024 Olympic bid. At this time, the Boston 2024 proposal can be thought of as a "proof of concept". Meaning, there are still likely to be many changes, updates, and revisions to Boston's Olympic plan. The actual impact of hosting the Olympics in Boston will depend largely on how detailed plans for hosting the Games develop over time, including any potential changes to the operating and construction budgets.

As Boston's Olympic bid continues to evolve in the coming years, further research will be necessary to fully understand the impact of a Summer Olympics held in Boston. This will include revisiting any changes to the bid or planned venues over the next two years. In addition, as more is understood about budget and insurance protection, careful consideration should be paid to public sector contributions, partnerships, and risks that are not well-defined or understood at this point. Lastly, as the final bid takes form, future research should consider neighborhood impacts and long-term legacy effects associated with hosting the Games.

³ For a more detailed conversation regarding cost and cost overruns associated with the Olympic Games see Bent Flyvbjerg and Allison Stewart's 2012 working paper entitled *Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2012*.

Overview of the Bid

Overview of Olympic Costs and Budget

In order to estimate the short-term economic impact of hosting the 2024 Summer Olympics in Boston, we must first understand the potential costs, investments, and revenues associated with the Games. There are three key components to costs when thinking about the Olympics: 1) the overall budget for operating the Olympic Games; 2) construction costs for permanent and temporary facilities; and 3) infrastructure and transportation projects important to supporting Olympics events. The plan developed by Boston 2024 seeks to limit costs associated with facility and transportation construction by relying on existing sports venues, including various local colleges and universities, utilizing the built-out transportation infrastructure, and leveraging planned transportation projects associated with the State's Transportation Bond Bill.⁴ In estimating the economic impact of hosting the 2024 Summer Olympics, UMDI did not include the costs and benefits of any projects that would have occurred regardless of hosting the Olympics. Along those lines, we did not quantitatively evaluate the transportation projects, since they are not specifically being done for the Olympics. In addition, we did not include any already planned new sports venues that were to be built separate from the Olympics. **With that, we assume the total cost for hosting the 2024 Summer Games in Boston to be approximately \$9.1 billion.** This figure includes both the general operating budget for the Olympics, including security, as well as all construction costs associated with the Games.

Breakdown of Olympic Costs

There are two key parts to understand the costs and budget of the 2024 Boston Olympic bid: the Organizing Committee for the Olympic Games (OCOG) budget and the non-OCOG budget. Boston 2024 has publicly stated that the Games will cost approximately \$4.7 billion. This figure refers specifically to the OCOG budget. The OCOG budget is the cost associated with putting on the Olympic Games, including the construction of temporary venues, labor costs associated with staffing the Games, IT and telecommunications, administrative costs, advertising, and ceremonies. These expenditures are supposed to be covered by Olympic revenues, such as sponsorships, ticket sales, licensing agreements, and donations. Boston 2024 plans to have these revenues and costs align so that they will not need to ask for any public money for operating the Olympics. It should be noted, though, that the host city typically agrees to cover any shortfalls in Olympic revenues needed to fund Olympic expenditures. This is one place where the public sector could be exposed to some financial risk. Boston 2024 is working to purchase insurance to protect the City from covering revenue shortfalls or cost overruns, though such insurance would likely need to be paid for with the OCOG revenues.

⁴ The Transportation Bond Bill passed by the Commonwealth in April 2014 was for around \$13 billion. This includes a host of transportation projects, such as the Green Line expansion to Somerville, MBTA station upgrades and expansions, and general highway projects. Approximately \$5 billion of these projects are already under way. Boston 2024 estimates that of the remaining \$7-8 billion, \$4-5 billion are directly relevant to the 2024 Summer Olympic Games, most notably the South Station expansion, West Station construction, and the re-opening of Dorchester Avenue. Despite the Bond Bill, some of the funding of these future projects is not 100% secured. As the planning process continues for hosting these Games, it will be important to understand how the Commonwealth and the Greater Boston region will prioritize transportation projects in order to be ready to host the 2024 Summer Olympics. We will discuss this in greater detail later in this report.

Important in understanding Olympics budgets, OCOG revenue sources cannot be used to construct permanent or legacy projects for a region. OCOG revenues can only be used for temporary construction, venue operation, and other costs related to event production. Permanent construction associated with the Olympic Games would be paid for using other funding sources. We refer to that in this document as the non-OCOG budget. Currently, Boston 2024 describes the non-OCOG budget as being funded by public/private partnerships. More specifically, Boston 2024 proposes that the public sector will only be needed in securing land. Any public costs associated with the non-OCOG budget would be repaid by private sources once development began. Currently, Boston 2024 estimates approximately \$3.4 billion in non-OCOG expenses. The vast majority of these expenses⁵ are associated with the construction of the Olympic Village (\$2.45B), the Olympic Stadium (\$350.6M)⁶, and the International Broadcasting Center (\$464.7M). There is an additional \$168.1 million⁷ estimated in non-OCOG construction costs associated with other venues throughout the region.

Table 1 shows a general breakdown of the OCOG and non-OCOG expenses associated with the proposed Boston 2024 Summer Olympic Games, which also includes \$1 billion in estimated security costs. Currently, it is assumed the federal government will cover security costs. As a reminder, this budget summation does *not* include transportation expenditures, which are discussed in more detail in other sections of the report.

Table 1: Olympic Expenditures (Dollars in Millions)

OCOG Expenditures		OCOG Revenues	
Venue Construction & Operations	\$1,000		
Operating Expenses	\$3,700		
Total	\$4,700	\$4,700	Olympic Games
Non-OCOG Expenditures		Non-OCOG Funding	
Olympic Stadium	\$351		
Olympic Village	\$2,450		
International Broadcasting Center	\$465		
Other Venues	\$168		
Total	\$3,433	\$3,433	Private Funding
Federal Expenditures		Federal Funding	
Security	\$1,000	\$1,000	Federal Funding
Expenditure Total	\$9,133	9,133	Revenue Total

Source: Boston 2024

⁵ Each of these venues actually uses OCOG revenues as well. OCOG revenues would be used for facility rental and operations during the Games. In fact, all venues that will be used during the Olympics, including existing facilities such as the TD Banknorth Garden, will use some OCOG revenues for facility rental and operations.

⁶ The total stadium cost estimated by Boston 2024 is \$531.6M. While the stadium is being described currently as a temporary venue, there are significant non-OCOG and OCOG revenues covering the venue. Included in the stadium costs are \$45.3M in OCOG expenses related to renting and operating the stadium during the Games. There is an additional \$135.7M in OCOG revenues going towards stadium costs related to land acquisition, site preparation, utility updates, construction, and/or transformation costs. It is unclear from the information provided by Boston 2024 how that \$135.7M would be split across the categories outlined above. The remaining \$350.6M (from the non-OCOG budget) would be spent across the same categories.

⁷ Later in our analysis of construction related economic impacts, we exclude \$78.5M of these non-OCOG costs as it is a facility that is planned to be built separate from the Olympic Games. This facility is a new basketball arena that would be used for Olympic handball competitions.

In the following sections, we estimate the potential short-term statewide economic impact of hosting the 2024 Summer Olympic Games in Greater Boston. Our impact assessment considers the \$9.1 billion in construction and operation expenditures associated with the Olympic Games, as well as estimates of tourist spending. In order to more accurately estimate the net economic benefits associated with the Olympic Games, we apply two filters that scale down the likely economic gains: 1) we only consider Olympic expenditures that are funded by “new money” to the local economy (i.e. money that would be coming to Massachusetts from outside of the state specifically because of the Olympics); and 2) we only consider “new money” that benefits Massachusetts-based firms. Part of these assumptions are to consider spending related to the Olympics that would be new to the region versus expenditures that would be replacing other types of spending that would have occurred in the local economy anyway. Put in another way, the analysis carefully accounts for economic benefits attributed specifically to the Olympics and considers ways that Olympic spending is likely to displace other forms of spending in the local economy.

Short-Term Economic Impacts

Defining Economic Impacts and Opportunity Costs

This economic analysis was conducted specifically to estimate the *net* short-term economic impacts of the proposed 2024 Boston Olympics. Estimating net impacts means that we account for new economic activity generated by the Olympics while excluding or offsetting spending and activity that would have happened even without the Olympics. This requires careful consideration of where the funding for the Olympics is likely to come from and what funding represents new dollars to the Massachusetts economy. Along those lines, our tourism impact analysis is focused on the short-term *incremental* tourist spending that may occur for the Olympics while *excluding* potential longer-term tourism increases due to hosting the Olympics.

This analysis is based on information and assumptions gleaned from current Boston 2024 plans, as well as independent research we conducted on past Games and Olympics proposals. As such, we have termed this a preliminary assessment and therefore, much of the actual impact will hinge on how more detailed plans are developed and to what extent current budget plans hold true in the future. Thus, to best understand the quantitative estimates derived in this study, it is important to know:

- **The economic impacts to Massachusetts are derived from net new dollars invested or spent in the state.** Positive economic impacts for Massachusetts can only result from additional investment, spending and jobs that would not have otherwise occurred in the Commonwealth. For example, spending by the International Olympic Committee (IOC) and the U.S. government on security would likely represent expenditures that could only stem from hosting the Olympics. On the other hand, spending funded by the City of Boston or the Commonwealth, or funding generated by local resident and business spending is likely to represent a re-distribution of local dollars that does not add to the economy. Therefore, this analysis considers the sources of funding and spending by the public sector, federal government, private sector, visitors, and other sources.
- **We exclude spending that would likely happen without the Olympics.** To isolate the likely economic impacts of the Olympics, it is important to only include expenditures directly related to the Olympics that would not otherwise occur. For example, Boston 2024 has noted a wide range of funded and planned transportation projects that MassDOT and its local/regional partners will be implementing between now and 2024. Because these identified projects are intended to serve a broad range of purposes and long-term mobility needs, we do not include any publicly funded transportation investments in the economic impact analysis. Further discussion below highlights some of the opportunities and challenges for transportation related to the Olympics. Similarly, while it is likely that some of the privately funded investment promised for a Boston Olympics would represent new spending; we assume that part of that investment by Massachusetts firms would actually have occurred anyway on other initiatives.
- **We carefully consider displaced economic activity and only include new dollars that will benefit Massachusetts workers and businesses.** For example, this means that we focus on isolating incremental economic gains due to tourism that consider the likely displacement of other visitors. From past studies, it's unclear if the number of visitors would substantially increase because of the Olympics, particularly in a place like Greater Boston where the summer-time hotel occupancy rate is often above 90 percent. In addition, it's likely that local workers and commuters may choose to avoid the city during the Olympic Games. That said, Olympics-related visitors tend

to spend more per visit than other tourists. Consequently, our analysis presents a range of possible tourism economic impacts, each assuming that the majority of visitation and spending is offset by displaced spending. Additionally, our analysis considers how much pre-Games construction activity would likely benefit out-of-state contractors as some of the specialty construction of temporary, movable facilities is likely to require non-Massachusetts businesses.

- **Net new spending and investments can have multiplier effects on the Massachusetts economy.** We apply the IMPLAN economic impact model for Massachusetts to estimate the extent to which net new spending will produce indirect and induced impacts (multiplier effects) on the state economy. IMPLAN is the most widely used economic impact model in the U.S. and includes customized data on Massachusetts to best capture how additional demand will impact Massachusetts companies, increase income and subsequent consumer spending, and result in supply chain benefits to local business. This analysis is conducted for two time periods: a) the six-year pre-Games construction from roughly 2018 to 2023; and b) expenditures, hiring, and visitation during the Olympics (roughly the summer of 2024).
- **It's not possible to estimate all potential impacts and effects at this point.** There are a series of possible positive and negative effects related to the Olympics that are either too difficult to measure quantitatively or more information is needed in the coming months and years of the bid preparation. For example, this study does not quantitatively measure possible effects such as the “hassle” of hosting the Games on local residents and potential traffic issues (though summertime traffic levels and MBTA ridership in Boston are noticeably lower due to fewer college students and more workers being away on vacation). The study also does not measure possible trade-offs in future public funding for transportation whereby Boston-area projects could be prioritized over projects in other parts of the state. On the other hand, although not measured, we recognize potential positive long-term economic development benefits that could stem from: a) updating infrastructure to under-developed parts of the city; b) potential legacy benefits of increased affordable housing units; c) motivating a full-range of stakeholders to complete long-needed, generally agreed upon transportation projects; and d) potential longer-term economic benefits to Boston and Massachusetts from the substantial global exposure provided by the Games.

Approach, Analysis Framework, and Assumptions

This economic analysis focuses on job creation and economic output directly related to Olympic spending and activities. We focus on three main aspects of Olympic activities: 1) venue construction; 2) Olympic operations; and 3) visitor spending. As mentioned above, in order to conduct this analysis, UMDI utilized MIG Inc.'s IMPLAN economic modeling system, a widely used and highly regarded proprietary software package that can be used to assess economic impacts and contributions. IMPLAN combines the U.S. Bureau of Economic Analysis' Input-Output Benchmarks with regional employment and wage data to construct quantitative models of the flow of goods and services between a region's businesses and households, and estimates direct, indirect, and induced effects of investments and ongoing economic activity (see the Appendix for more detail on the IMPLAN economic impact methodology). IMPLAN's proprietary database details economic activity across hundreds of industry sectors, as well as local, state, and federal government and household spending. IMPLAN models reflect the most reliable and up-to-date knowledge about local spending patterns and is customized to Massachusetts.

Inputs for the IMPLAN model came from multiple sources. Data estimates and assumptions on construction and venue costs associated with the Olympics were provided by Boston 2024. In terms of Olympic operations, UMDI used the \$4.7 billion budget reported by Boston 2024. For tourism, UMDI used information provided by Boston 2024 regarding the number of hotel rooms for spectators and media

members. UMDI supplemented this information with additional data on local dorm rooms, average room rates from the Massachusetts Office of Travel and Tourism (MOTT), and assumptions about visitor spending and how much visitation activity would represent net new expenditures. All data in this analysis are in current dollars, both in terms of inputs from Boston 2024 and others, as well as IMPLAN outputs.

In both the analysis of Olympic operations and tourism, UMDI consulted a study conducted by the Anderson Economics Group (AEG) regarding the potential economic impact of the Chicago 2016 Olympic bid.⁸ AEG utilized a similar economic impact framework as the one proposed for this analysis. In particular, UMDI considered AEG's assumptions regarding:

- The amount of OCOG money that would be coming from outside of the study region;
- The amount of OCOG expenditures that would go to local firms;
- The number of visitors that could be expected to attend the Olympics; and
- Estimates of consumer spending, displacement, and the percentage of visitors and visitor spending directly attributable to the Olympics.

In many cases, we applied the assumptions that AEG used for their Chicago study. In several instances, however, UMDI changed assumptions to reflect local conditions in Greater Boston. For example, UMDI opted to use a more conservative estimate of tourism and visitor spending directly attributable to the Olympics. The assumptions used for Olympic operations and tourism provided UMDI basic information for spending by industry related to the Olympics. These data inputs were then run through the IMPLAN model to estimate the direct, indirect, and induced impacts in Massachusetts related to Olympic spending. The following sections outline those economic impacts.

Venue Construction Impacts

This section estimates the economic impact of projected construction activity to host the 2024 Summer Olympic Games in Boston. Our analysis includes construction activity for all major and small venues for the Games. The most notable construction projects include the Olympic Village (\$2.45B), the Olympic Stadium (\$486.3M), and the International Broadcasting Center (\$464.7M). There are also dozens of smaller venues throughout the region that will require some level of construction activity, whether it be building temporary venues (e.g., equestrian activities in Franklin Park) or adapting existing facilities to accommodate Olympic competitions (e.g., hosting indoor volleyball at the South Boston Convention Center).

Boston 2024 provided estimates for construction and venue operations costs. Construction costs are costs associated with building facilities, including land acquisition, site preparation, utilities upgrades, and physical construction. Venue operations costs are costs incurred for running Olympic events at a location. In order for UMDI to estimate the impact of construction activity associated with the Olympics, we separated construction costs from venue operations costs. Venue operations costs and associated economic impacts are estimated with all other spending associated with Olympic operations (see Olympic Operations Impacts section).

Boston 2024 lists four types of venues: *additional*, *temporary*, *planned*, and *existing with overlay* (overlay can be thought of as costs associated for event operations). For our analysis, all non-OCOG spending was considered construction spending, as these are all dollars being used to build permanent or semi-permanent venues (e.g. the Olympic Village). For OCOG spending, we considered the type of venue and

⁸ For more information on the Anderson Economic Group study, see *The Likely Economic Impact of a Chicago 2016 Summer Olympics*, <http://www.andersoneconomicgroup.com/Publications/Detail/tabid/125/articleType/ArticleView/articleId/7909/The-Likely-Economic-Impact-of-a-Chicago-2016-Summer-Olympics.aspx>

split the OCOG estimates between construction activity and spectator sport event operations. The estimated spectator sport event operations were removed from the construction analysis and included with the Olympic operations analysis.⁹ In total, we estimate approximately **\$3.8 billion in construction activity associated with the Boston 2024 Summer Olympics.**¹⁰

We reduced the modeled construction costs associated with the Olympics in a two-step process to reflect only those impacts experienced by the Massachusetts economy. First, we reduced all construction costs 25 percent, assuming that non-Massachusetts firms and employees would do this portion of construction work. Particularly, this may be the case for unique forms of modular and temporary venue construction that may require a specialized workforce not present in Massachusetts (it is reported that both the stadium and part of the Olympic Village will be deconstructed and moved to other locations following the Games). It also reflects the potential that construction firms and employees in nearby states (e.g., New Hampshire and Rhode Island) may contribute to construction projects.

Second, we reduced construction spending further to try to isolate dollars that represent “new” dollars that would not otherwise be present in the state. For construction activity performed with OCOG revenues, we assumed that 73 percent of OCOG revenues¹¹ come from outside Massachusetts and, therefore, represent new dollars to the local economy. Likewise for projects funded by non-OCOG sources, we reduced the construction cost total by 25 percent to reflect construction spending that would have occurred without the Olympics. While the projects themselves may be Olympic specific, since these projects are being funded by the private sector, it is likely that some construction spending in the region will be diverted towards Olympic projects. In that way, this level of construction spending would not be “new” to the local economy.¹² After taking these reductions in to account, **we estimate the net new construction activity attributable to the Olympics would be approximately \$2.1 billion** (reduced from the total of \$3.8 billion). Below, Table 2 gives a breakdown of construction costs and our reduction estimates for this analysis.¹³

⁹ For *existing with overlay* and *additional* facilities, we assumed 100% of the OCOG budget went to game operations. For *temporary* venues, we assumed 85% of OCOG spending was for construction and 15% was for game operations. We evaluated the two *planned* venues separately and considered how much construction activity we expected to occur. For volleyball events at the convention center we assumed 60% of OCOG went to construction and 40% to game operations. For handball events at a planned basketball arena, we assumed 100% of the OCOG budget went to game operations. Related to this, we eliminated the non-OCOG construction costs listed for the planned basketball arena from this analysis as this venue is not specifically being built for the Olympics.

¹⁰ Boston 2024’s construction estimates include contingency needs, estimated at 10 percent of construction costs.

¹¹ Some OCOG revenues will be from new sources to the region, such as IOC contributions and top-level national sponsorships. These dollars would only be spent here because of the Olympics. Others, such as local ticket sales and local sponsorships, are local dollars that are being diverted to Olympic spending away from other places. This assumption will be discussed in more detail in the Olympic operations analysis.

¹² We used the “new money” estimate of OCOG revenues as guidance for estimating “new money” construction in private sector projects related to the Olympics.

¹³ Some figures may not add up due to rounding.

Table 2: Estimated Construction Costs and Estimated New Massachusetts Investment (Dollars in Millions)

Type	Major Venues	Small Venues	Total
Total Cost	\$3,401	\$383	\$3,784
OCOG	\$136	\$294	\$429
Reduced OCOG <i>(25% of work to non-MA Firm, 73% of money from outside of MA)</i>	\$75	\$168	\$243
Non-OCOG	\$3,265	\$90	\$3,355
Reduced Non-OCOG <i>(25% of work to non-MA Firm, 25% of spending replacing other construction)</i>	\$1,837	\$48	\$1,884
Modeled MA Construction	\$1,911	\$216	\$2,127

Source: Boston 2024 and UMDI Analysis

Economic Contributions from Construction

Construction activity related to the 2024 Summer Games would likely occur primarily between 2018 and 2023. As shown in Table 3 below, we estimate that construction activity related to the Boston 2024 Summer Olympics will create or support over 24,000 job-years in Massachusetts over the construction period, or just about 4,100 jobs annually.¹⁴ We estimate that construction spending and activity related to the Olympic Games would create or support nearly 11,000 direct construction job-years in Massachusetts (or 1,833 jobs per year). These jobs will pay approximately \$78,000 annually. Construction spending activity will support an additional 13,000 job-years through construction support activities and other spending over the construction period. These jobs would pay approximately \$54,000 annually on average. We estimate that over a six-year period, construction activity will directly add over \$2.1 billion to the Massachusetts economy. Further, this spending will support an additional \$1.9 billion in spending in Massachusetts, which will bring the total economic contribution of construction spending to nearly \$4 billion. The total impact of \$4 billion is an economic measure consisting of total business and industry sales associated to construction activity and related spending.

Table 3: Employment & Economic Activity from Olympic Construction (Dollars in Millions)

Impact Type	Job-Years	Labor Income	Value Added	Output
Direct	10,998	\$857	\$866	\$2,127
Indirect	7,004	\$364	\$565	\$938
Induced	6,383	\$357	\$573	\$922
Total	24,385	\$1,578	\$2,004	\$3,987

Sources: Boston 2024, MIG, Inc. IMPLAN System, and UMDI Analysis

¹⁴ Due to the temporary nature of construction work, job-years is a common way of describing construction employment when discussing economic impact. Simply put, a job-year is the number of full-time jobs that can be supported for one year. To reduce job-years to jobs, one simply needs to divide job-years by project length (in years). In this example, we would divide job-years by six to reach the number of full-time jobs supported over the construction period, or in this case 4,064 jobs annually, with 1,833 being direct construction jobs. It is important to realize that some years will likely have more jobs than others during the construction period. Odds are construction will be lighter during the first few years of construction and heavier as 2024 draws closer.

Olympic Operations Impacts

This section estimates the economic impact of expenditures related to hosting and operating the Olympic Games. The revenues and expenditures associated with the Olympics are typically referred to as the Organizing Committee of the Olympic Games (OCOG) budget. In the event Boston is selected as the host city for the 2024 Summer Olympics, Boston 2024 would function as the OCOG.

OCOG revenues are used to cover OCOG expenses. Boston 2024 estimates that it will cost approximately \$4.7 billion to execute the 2024 Summer Olympic and Paralympic Games. These costs include, but are not limited to, temporary venue construction, venue operations, venue rental, support services, information technology, and other game services.¹⁵ These activities are generally covered by revenues gathered from domestic sponsorship, broadcasting rights, and ticket sales. As mentioned above, OCOG expenditures include temporary venue construction. In order to avoid double counting economic impact effects, we removed all dollars spent on venue construction. Separate from the OCOG budget, but related to the Game operations, are security costs. Boston 2024 assumes \$1 billion in security support from the federal government. We include these dollars in the economic impact assessment of event operations. **In total, we assumed Olympic operational spending to be close to \$5.3 billion.**

In order to appropriately model the economic impact of Olympic expenditures, we needed to estimate how much of Olympic expenditures can be considered “new” money in the local economy and how much would have been spent locally with or without the Olympics. For example, local sponsorship revenue is generally money that would have been spent locally anyway. This means that local sponsorship revenues for the Olympics are likely spending that is happening at the expense of other local events or sponsorship opportunities.¹⁶ On the other hand, contributions from the IOC, such as broadcasting rights, would not be in Boston without the Olympics. For our impact analysis, we want to focus on those dollars that are new money in the local economy because of the Olympics. In order to estimate the “local” share of Olympic revenues, or the amount of revenues coming from dollars already in the Massachusetts economy, we generally followed assumptions developed by AEG related to the Chicago Olympic bid.¹⁷

Table 4 below shows our basic assumptions about the local share of Olympic revenues. For example, we assume 20 percent of ticket sales would be coming from local sources and are, therefore, not new dollars in the local economy. We estimate that \$3.4 billion of the \$4.7 billion in Olympic revenues, or 73 percent, would be from out-of-state sources. This is an important distinction in an economic impact analysis, as it is assumed that local revenue sources would have been spent in Massachusetts regardless of the Olympics. As a result, this analysis will only consider 73 percent of OCOG related revenues as being new money in the local economy.

¹⁵ Contingency needs are built in to the line-by-line expense estimates in the Boston 2024 OCOG budget, as recommended by the USOC.

¹⁶ The actual budget provided by Boston 2024 mixed local and national corporate sponsorship in to one category called “domestic sponsorship”. It was important for us to disentangle the two as we assume that all the money from national corporate sponsors, like Nike or Coca-Cola, would be “new money” in the state economy, whereas local sponsors would be dollars that would have been spent in the local economy with or without the Olympics. For our analysis, we looked at how the Chicago 2016 bid estimated revenues from national corporate sponsors and local sponsors and assumed Boston’s sponsorship distribution would look the same proportionally. We got this information from the Civic Federation’s review of Chicago’s Olympic bid. For more information see: <http://www.civicfed.org/sites/default/files/Chicago%202016%20Olympic%20Bid%20Review.pdf>

¹⁷ We opted to increase the estimated share of local ticket sales and donations from those provided by Anderson Economic Group, in part because of geographic differences between the two studies. AEG focused on Chicago and Cook County, whereas our research focuses on Massachusetts. As a result, we opted to increase the assumed local share of ticket sales, donations, and other expenses.

Table 4: Estimated Revenue and Sources for Boston Olympics (Dollars in Millions)

Description	Original Amount	Estimated "Local" Share	Non-local Revenue Sources	Local Revenue Sources
Domestic Ticketing	\$1,150	20%	\$920	\$230
IOC Contribution	\$1,300	0%	\$1,300	\$0
National Corporate Sponsorship	\$375	0%	\$375	\$0
Local Sponsorship	\$875	100%	\$0	\$875
Additional Revenue to Support the Games	\$400	15%	\$340	\$60
Other Revenue	\$600	15%	\$510	\$90
Totals	\$4,700	27%	\$3,445	\$1,255
		Non-Local Sources= 73%		

Sources: Boston 2024, Anderson Economic Group, Civic Federation, and UMDI

Table 5 below shows our estimate for “new money” spent in the Massachusetts economy through Olympic operations. To do this, we took our non-construction estimate of OCOG expenses (\$4.7 billion) and added Boston 2024’s estimate of \$1 billion in federal security funding. Next, we estimated the amount of Olympic operations spending that would be spent on Massachusetts firms and workers.¹⁸ For example, we assume 100 percent of the spending on running Olympic venues would go to Massachusetts firms. We assume 65 percent of federal security dollars would be spent on Massachusetts firms, and so on.¹⁹ In the aggregate, this estimates the amount of Olympic operations spending that would benefit Massachusetts firms (in this case, \$3.7 billion of the \$5.3 billion). Next, we reduced this figure further to estimate the portion of spending on local firms that would come from money outside of Massachusetts. In the case of federal security spending, that would be 100 percent. For all other expenditure categories, we assumed 73 percent of the money spent on local firms (via the OCOG budget) would be dollars from outside of Massachusetts.

¹⁸ We used the local spending estimates from the AEG study on Chicago’s 2016 bid for guidance. However, the spending categories were different from the Boston 2024 budget, so we made adjustments to reflect these differences. Additionally, we used research from the Civic Federation on the Chicago 2016 bid to understand the scope of detailed spending by industry within each of the general spending categories provided by Boston 2024, as Chicago’s bid was further along in the IOC process and had more details worked out than the current Boston proposal. We used these detailed industries to better understand how OCOG spending may be spread across the economy.

¹⁹ Ranges are reported for a couple of the categories in Table 5. Our actual analysis included more categories than those shown in Table 5. We reduced categories for this report to simplify the table. In instances where you see a range, it indicates that subcategories within that expenditure category used local estimates within those ranges.

Table 5: Estimated Expenses and Sources for Boston Olympics (Dollars in Millions)

Description	Original Amount	Local Estimate	Local Expenditures	% of Money from Outside of MA	Local Expend of Non-Local Sources
Security	\$1,000	65%	\$650	100%	\$650
Spectator Sport	\$431	100%	\$431	73%	\$316
Sport Venue Rental	\$90	100%	\$90	73%	\$66
Non-Sporting Event Rental	\$30	100%	\$30	73%	\$22
Game Services	\$400	50%	\$200	73%	\$147
Technology	\$600	50% - 75%	\$311	73%	\$228
USOC Joint Venture (JV)	\$600	50%	\$300	73%	\$220
Workforce	\$600	75%	\$450	73%	\$330
Support Services	\$1,000	90%	\$900	73%	\$660
Other Costs	\$500	50% - 90%	\$379	73%	\$278
Totals	\$5,251		\$3,741	\$1,510	\$2,916

Sources: Boston 2024, Civic Federation, Anderson Economic Group, and UMDI

In total, of the \$5.3 billion in Olympic operating expenses, we estimate that \$3.7 billion would be spent in the Massachusetts economy. Of this \$3.7 billion, we estimate that \$2.9 billion would be funded with money from outside of Massachusetts, thus representing a gain to the Commonwealth. Again, this number was derived from reducing all OCOG related expenditure categories to 73% to reflect our previous estimate of OCOG revenues from outside of Massachusetts. In short, we estimate that \$2.9 billion of the \$5.3 billion (or 56 percent) of the operational expenditures are estimated to benefit Massachusetts for net economic gains.

Economic Impacts from Olympic Operations

As shown in Table 6 below, we estimate that Olympic operational spending will create or support ²⁰ over 50,000 jobs in the year of the Olympic Games. The operations expenditures for the Boston 2024 Olympics are estimated to create or support nearly 34,000 direct jobs during the year of the Olympics. These jobs would pay approximately \$49,000 annually. Spending related to Olympic operations is estimated to support nearly an additional 17,000 jobs throughout the Commonwealth, at an annual salary of over \$59,000. We estimate that Olympic operational spending will directly add nearly \$2.6 billion to the Massachusetts economy. Further, this spending will support an additional \$2.5 billion in economic activity in Massachusetts, which brings the total economic impact to over \$5 billion during the year of the Games. The total impact of \$5 billion measures total business and industry sales associated to Olympic operational spending. Olympic operational spending represents a one-time impact to the local economy during the spending period.

²⁰ For example, it's likely that the direct jobs related to security will primarily mean that already employed security workers from the federal government (and possibly other state/local organizations) will be working in Boston for the Olympics.

Table 6: The Economic Impact of Olympic Operations (Dollars in Millions)

Impact Type	Employment	Labor Income	Value Added	Output
Direct	33,581	\$1,632	\$1,812	\$2,586
Indirect	4,687	\$318	\$474	\$770
Induced	11,887	\$667	\$1,070	\$1,720
Total	50,156	\$2,617	\$3,355	\$5,076

Sources: Boston 2024, MIG, Inc. IMPLAN System, and UMDI Analysis

Short-Term Tourism Impact

There is extensive debate in academic and popular literature regarding the actual tourism benefits associated with the Olympics and other major sporting events. Some research suggested there are short-term tourism benefits for the host city.²¹ Such research argues that there are direct positive tourism benefits associated with hosting the Olympics, as visitors from around the world travel to the host city to be a part of the Olympic experience.²² Others contend that while many people attend the Olympics, the tourism benefits are overstated. Some would-be visitors may choose to avoid a host city out of concern for crowds and elevated price. Local visitors and workers as well, may choose to stay away from the host city or take vacations to avoid large crowds and hassle. As a result, the actual Olympic impact on visitor spending can be modest-to-nonexistent.²³ An examination of recent tourism data surrounding the Olympics in cities similar to Boston shows a generally positive short-term relationship between tourism and the Olympics. For example, data from the Office of National Statistics in London show that international visitors actually decreased eight percent between summer 2011 and summer 2012. However, international visitor spending in the aggregate increased nearly 15 percent.²⁴ This is consistent with research suggesting that Olympic visitors tend to spend more money than other tourists.²⁵ In another example, Georgia experienced a boost in tourism leading up to and immediately following the 1996 Summer Olympics.²⁶ Georgia experienced an increase in domestic visitation of 16 percent between 1995 and 1996 and 13 percent between 1996 and 1997, before seeing tourism number slow over the next few years.

Our analysis will focus on short-term economic impact estimates related to Olympic visitor spending. We used a similar methodology and set of assumptions regarding visitation and spending activities as was used by AEG in studying the Chicago 2016 Summer Olympic bid.²⁷ In particular, we estimate attendance and

²¹ For a review of some tourism studies related to the Olympics, see Malfas, Theodoraki, and Houlihan. 2004. "Impacts of Olympics Games as Mega-Events." *Proceedings of the Institute of Civil Engineers*, <http://www.icevirtuallibrary.com/content/article/10.1680/muen.2004.157.3.209>

²² For an example, see Pere Duran's 2002 piece entitled *The Impact of the Olympic Games on Tourism- Barcelona: the Legacy of the Games 1992-2002*, http://ceo.uab.cat/2010/docs/wp083_eng.pdf

²³ For an example see James Krohe Jr. 2010. "Five Ring Circus: Do Host Cities Win or Lose with the Olympics." *Journal of the American Planning Association* 79(2) 8-13.

²⁴ Office of National Statistics (ONS). International Passenger Survey. <http://www.ons.gov.uk/ons/about-ONS/get-involved/taking-part-in-a-survey/information-for-households/a-to-z-of-household-and-individual-surveys/international-passenger-survey/index.html>

²⁵ <https://www.thecaterer.com/articles/346225/average-spend-by-olympics-visitors-was-double-that-of-other-tourists>

²⁶ Georgia Department of Economic Development. 1994-1999 Travel Trends.

²⁷ Assumptions include two spectators per hotel room and one spectator per university beds; 10% of spectators will stay with friends or family; 90% of spectators will be from outside the region; 75% of media members will be at the Games for the entire duration of the

spending for spectators, media, athletes, and officials attending the 2024 Summer Olympic Games, while at the same time consider any possible substitution or crowding out effects in tourist and resident spending.

Visitation by Spectators

UMDI estimates there will be close to 150,000 daily spectators attending the Boston 2024 Olympic Games. UMDI estimates the amount of spectators per day by the amount of hotel rooms and university beds available. Boston 2024 estimates that there will be close to 53,000 hotel rooms in Greater Boston in 2024.²⁸ To estimate the number of university beds, we took the amount of students living on campus in Boston institutions (approximately 41,000 students) and added the number of dorm beds estimated by Boston 2024 located between 10 and 50 kilometers outside of the city (approximately 4,900).²⁹

We assume that there will be two people for every hotel room, and one person for every university bed. In total, the university beds and hotel rooms will accommodate more than 151,000 visitors per day. To account for spectators that will stay with friends and family in private or rented units we added an additional 10 percent of visitors to our total. This brings us to approximately 166,000 visitors. We also assume 90 percent of visitors will be coming from outside of the region. The new total visitor per day comes to just under 150,000. Over the course of a 16-day Olympic duration, **we estimate 2.38 million spectator visitor days.**³⁰

Visitation by Media

Overall, we estimate on average that there will be 13,125 media visitors per day during the Boston 2024 Olympics. Boston 2024 estimates that there will be 17,500 rooms available for media members during the Boston 2024 Olympics. This total is a combination of university beds and hotel rooms available to media members. We assume one person per hotel room and one person per university bed. We predict most of the media and staff allocated to the Olympics will take place in the opening ceremony, the closing ceremony, and the major sporting events. As a result, we predict 75 percent of staff coverage will be present through the duration of the Olympics. Therefore, media member attendance would be 13,125 per day. This number when aggregated to reflect the 16-day Olympic period equals **210,000 media member visitor days.**

Visitation by Athletes and Officials

According to Boston 2024, the Olympic Village will accommodate 16,500 people per day between athletes and officials. We assume 95 percent of the rooms will have athletes and officials accommodated during the

Olympics; and all tourism expenditure estimates (except for hotel accommodations), prior to inflating and applying regional price differences based on the Bureau of Labor Statistics (BLS) 2013 Consumer Expenditure Survey.

²⁸ As defined as a 50 kilometer radius around the proposed Olympic Stadium.

²⁹ This estimate of dorm beds is definitely lower than the actual total of dorms beds in the region. Boston 2024's estimate of dorm beds between 0-10 kilometers outside of Boston was approximately 23,000 beds, with an additional 4,900 between 10-50 kilometers outside of the city. Data from the Boston Redevelopment Authority and the City of Boston's Department of Neighborhood Development show that there are roughly 37,000 dorm beds in the city, with an additional 3,400 beds for Boston institutions outside of Boston city limits. See <http://www.bostonredevelopmentauthority.org/getattachment/3488e768-1dd4-4446-a557-3892bb0445c6/> and http://www.cityofboston.gov/dnd/pdfs/boston2030/Boston2030_Chapter_5_Housing_Bostons_Students.pdf for more information. We decided to use the City data on dorm rooms and add it to what Boston 2024 reported for dorms beds between 10-50 kilometers outside of the city. It is likely that there are actually more than 4,900 dorms beds between 10-50 kilometers outside of the city. However, our aggregate estimate of beds is closer to correct than what Boston 2024 currently has in its proposal.

³⁰ In this analysis, UMDI is interested in estimating the aggregate of visitor spending. We did this by estimating the average spending per day for visitors and then adding daily spending across the duration of the Olympics. As a result, UMDI translated visitation into visitor days. In this example, 150,000 visitors multiplied by 16 days equals approximately 2.38 million visitor days.

Olympics. When 95 percent is applied to the amount of rooms available and aggregated over a 16-day period, we estimate a **total number of 250,800 athlete and official visitor days**.

Displacement Effect

Boston and Massachusetts are already popular tourist destinations. In 2013 there were a total of 25 million visitors to Massachusetts, 12 million of which were in Boston. Greater Boston's hotel occupancy rate is typically at or above 90 percent during the summer months.³¹ Although many tourists may visit the city regardless of the Olympic Games, some may otherwise not travel to Boston to avoid Olympic crowds. There may also be local residents that leave the city and/or decrease their local economic activity. Due to this tourism displacement effect, we use the assumption that 75 percent of total Olympic visitation represents a displacement effect (replacing visitors that would have visited even if Boston did not host the Olympics). In other words, we estimate that 25 percent of the visitation is net new and attributable to the Olympics. This assumption is more conservative than AEG's analysis when studying the Chicago Olympic bid. AEG assumed 40 percent of visitors would be attributed to the Olympic Games. We opted for a more conservative estimate as Greater Boston's hotel market has slightly lower vacancy rates overall than Greater Chicago and our review of the research suggests more conservative assumptions are appropriate given the degree of debate over how much net new tourism is attributable to the Olympics. Based on UMDI's assumptions, this results in **712,586 net new visitor days to the region for the 2024 Summer Olympics**.³²

Spectator and Media Member Expenditures

UMDI makes the assumption that on average, spectators and media members attending the Olympic Games will spend the same amount of money per day. Using the IMPLAN economic model for Massachusetts, we break visitor expenditures into five main areas: food, local travel, accommodations, tickets, and other expenses. The tickets are not included in the net economic impacts as the ticket revenues and related expenditures are included in our analysis of the OCOG budget. We divided the "other" category into three typical visitor expenditures: store retailers, attractions, and sightseeing transportation. The expenditure values (except accommodations, which is a value sourced from the Massachusetts Office of Travel and Tourism) were taken from the AEG study, inflated to current dollars, and adjusted to reflect cost of living differences between Boston and Chicago using the Bureau of Labor Statistics (BLS) Consumer Expenditure Survey. We multiplied spending estimates by the number of visitors per day to approximate the net visitor expenditures per day. Visitor expenditures per day were then multiplied by 16 (the number of Olympic days) to get the aggregate total expenditures of Olympic visitors. We assumed that 30 percent of those expenditures occurred in the region because of the Olympics, which results in **\$293 million in total spectator and media expenditures during the Olympics**.³³

³¹ Boston Statistics and Reports, see <http://www.bostonusa.com/partner/press/statistics/and> Massachusetts Office of Travel and Tourism Top Line Numbers.

³² If we used the AEG assumption, the net new visitor days to the region would be 1.1 million.

³³ Similar to AEG, we assume that a greater portion of consumer spending is attributable to the Olympics than the portion of guests. In our analysis, we assumed 25 percent of visitors and 30 percent of spending are attributable to the Olympics. AEG assumed 40% of visitors and 45% of spending are attributable to the Olympics.

Athletes and Officials Expenditures

Since athletes and officials will be accommodated in designated facilities including the Olympic Village, we assume that they will spend 25 percent of what a typical spectator or media member will spend. **We estimate the total expenditures by athletes and officials during the Olympic period to be \$7 million.**

Economic Expenditures by Visitors

Table 7 below shows the total expenditures for Olympic visitors by spending category. In total, we assume that Olympic visitors will add a one-time net increase of approximately \$300 million in spending to the local economy in 2024.³⁴

Table 7: Spectators, Media Members, Athletes and Officials Visitation (Dollars in Millions)

Visitor Expenditure	30% Attributed to Olympics
Food	\$59
Local Transportation	\$26
Accommodations	\$169
Other	\$47
Total	\$300

Sources: Boston 2024, Anderson Economic Group, Massachusetts Office of Travel and Tourism, 2013 Consumer Expenditure Survey, and UMDI Analysis

Table 8 below shows our estimates of economic impacts related to Olympic visitor spending. We estimate that visitor spending will create or support nearly 4,300 jobs in Massachusetts during the year of the Olympics. Nearly 2,900 will be direct jobs, paying just over \$42,000 annually. Visitor spending related to the Olympics is estimated to support an additional 1,400 jobs throughout the Commonwealth, at an annual salary of approximately \$60,000. We estimate that visitor spending associated with the Olympics will add over \$292 million to the Massachusetts economy. Further, this spending will support an additional \$222 million in economic activity in Massachusetts, which brings the total economic impact to near \$514 million. The total impact of \$514 million measures total business and industry sales associated to tourist spending directly attributable to the Olympic Games. This should be interpreted as a one-time net increase to the local economy during the year of the Games.

Table 8: Economic Impacts of Tourism Expenditures (assuming 30% expenditures attributed to Olympics, Dollars in Millions)

Impact Type	Employment	Labor Income	Value Added	Output
Direct	2,863	\$121	\$180	\$292
Indirect	590	\$39	\$62	\$102
Induced	826	\$46	\$74	\$120
Total	4,279	\$206	\$316	\$514

Sources: Boston 2024, MIG, Inc. IMPLAN System, and UMDI Analysis

³⁴ Some figures may not add up due to rounding.

Economic Opportunities and Challenges

Planning for the Boston 2024 Olympic bid is still in its early stages. While this report attempts to estimate the economic impact of hosting the 2024 Summer Olympics in Boston, there are several potential benefits and challenges that are difficult to quantifiably measure at this time. The following section highlights a handful of potential economic opportunities and challenges related to hosting the 2024 Summer Olympics. As Boston 2024 continues to develop their Olympic plan, elected officials and civic leaders should keep the following issues in mind when evaluating hosting the Summer Games. Where appropriate, future research should endeavor to answer or quantify some of these issues, particularly as details of the 2024 bid are developed, refined, and confirmed.

Economic Opportunities

Legacy Economic Development

The Boston 2024 Olympic Games entertain the possibility for a future legacy of economic development opportunities in the Greater Boston region. In particular, the Games provide opportunities for transforming areas to enhance local businesses and encourage economic development. The proposed location for the Olympic Stadium, Widett Circle (which is currently being used as the City's tow lot), is one area that holds great potential for enhancing economic development post-Olympics.³⁵ Boston 2024 contends that after the 60,000 seat temporary stadium is dismantled, the location would be a prime development parcel for entertainment and future commercial development.³⁶ Boston 2024 estimates that after the Olympics, the Olympic Stadium site and Olympic Boulevard could be developed into seven million square feet of mixed use residential and commercial space, along with available parking. Boston 2024 also argues that the stadium site can be used to support middle income housing needs for the city. It should be noted (and we discuss further in the "Challenges and Risks" section of this report) that existing businesses around the proposed stadium will likely be displaced to accommodate building the stadium, as well as any future economic development legacy activities.

Of course, there are other economic development opportunities that could emerge in relation to hosting the Olympic Games. London, for instance, demonstrates how planning the Games with businesses and investment opportunities in mind can lead to successful economic advancements. London 2012 Olympic planners coordinated and helped design a business convention that increased economic development through international trade and inward investment. One key tool the United Kingdom (UK) is using to encourage economic benefits is the GREAT Campaign, which has capitalized on global attention to create an economic legacy from the 2012 Games.³⁷ The campaign unites all of the UK government's international efforts under one brand to create jobs and growth via measurable and sustained increases in trade, inward investment, tourism and foreign student numbers.³⁸ This campaign has gained much traction as it is estimated to have delivered £600 million of revenue to the UK and is used in 86 countries.

³⁵ Arsenaault and Levenson, *Olympic Games would transform industrial district*, The Boston Globe. January 21st, 2015, <https://www.bostonglobe.com/metro/2015/01/21/boosters-olympics-present-details-plan/nYqa788nBG8Ayg4i5gp2NP/story.html>

³⁶ Ibid.

³⁷ UK Government and Mayor of London Report. 2013. 'Inspired by 2012: The Legacy from the London 2012 Olympic and Paralympic Games.' https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/224148/2901179_OlympicLegacy_acc.pdf

³⁸ Ibid.

International trade and inward investment has been a priority to support British businesses ever since London was chosen as the host city. The UK Trade and Investment (UKTI) works with UK businesses to support exports to international markets. Post London Olympics, UKTI undertook a legacy program that uses the successful 2012 Olympics as a selling point to the global market in order to promote exports and growth in the economy.³⁹ This program has shown success – in 2013, UKTI brought £9.9 billion of economic benefits, which was 90% of the four-year target---just one year after the program started.⁴⁰ Along with economic legacy planning, UKTI hosted a Global Investment Conference at the British Business Embassy at Lancaster House during the Olympic Games in 2012 with more than 4,000 business leaders and global figures from 63 countries.⁴¹ UKTI also delivered 60 satellite Business Embassy Events showcasing global opportunities, UK expertise and UKTI support and services to companies across the UK.⁴² Many investment opportunities and economic contributions have been a direct result of these efforts. Of course, these efforts required careful planning by elected officials and economic development leaders, but can serve as a model for the Greater Boston region and Massachusetts as a way to try and leverage legacy economic development and investment benefits related to Olympic exposure.

Catalyst to Regional Planning

Regardless of the International Olympic Committee (IOC) decision in 2017, the Boston 2024 Olympic bid provides potentially exciting opportunities to the Boston metro region. The planning and organizing that goes into the bid process encourages stakeholder, civic leaders, and government involvement in visioning a long-range plan. New York City provides an example to this potential.⁴³ In New York, there were many positive public benefits that arose out of planning their Summer 2012 Olympic bid. This large scale planning may not have happened, or have taken many years to materialize, without the Olympic bid providing the requisite push. The failed New York Olympic bid opened pathways and initiatives for sustainable development of new neighborhoods, parks, stadiums, middle-class housing, and even the first subway extension in 50 years.⁴⁴ An Olympic bid provides local government with a “due date” for trying to achieve certain planning and infrastructure improvements. This external pressure can push government to move more quickly on key projects. For instance, Dan Doctoroff, the Deputy Mayor of New York during the city’s failed bid, estimates that Olympic planning spurred the rezoning of 40 percent of New York.⁴⁵ Redevelopment opportunities now exist where venue sites were proposed. For instance, in New York the proposed site of the Olympic Stadium was rezoned and is currently being developed into a new district that will be a live-work-play neighborhood served by a new subway extension.⁴⁶ The proposed site for New York’s Olympic Village is now where thousands of affordable and middle-income housing units are being built.⁴⁷ The Boston 2024 Olympic bid presents itself with planning and public works opportunities that could have long-term benefits for the city and region. The future vision involved in planning alone opens up the potential to create long-lasting positive changes for communities in Greater Boston.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid.

⁴³ For a detailed conversation of some of the planning benefits associated with New York’s failed Olympic bid, see the Rudin Center for Transportation Policy and Management’s report *How New York City Won the Olympics*:

https://wagner.nyu.edu/files/rudincenter/Olympics_in_NYC%202012_REPORT_110711.pdf

⁴⁴ Leung, Shirley, *What Boston can learn from NYC’s failed Olympic bid*, Boston Globe, January, 14th, 2015,

<https://www.bostonglobe.com/business/2015/01/14/what-boston-can-learn-from-new-york-failed-olympic-bid/ga5LUq6b1Y9v0t6cNSXCfL/story.html>

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Ibid.

Long-Term Tourism Boosts from Heightened Exposure

Olympic advocates and opponents typically disagree as to whether tourism from the Olympics creates an overall lasting legacy impact on the local economy. Proponents argue that tourism is increased in the short term and the long term, as the host city is featured on the international stage. Potential travelers may choose to visit the host city in advance of the actual Olympic Games to see preparation and preliminary activities firsthand. In addition, global travelers may end up seeing the host city in a new light and decide to make that city a destination on their next vacation.⁴⁸ Others have argued that this effect is overstated. Opponents argue that while the Olympics will bring visitors to the region, it will also keep some people away who otherwise would have come to the area. For instance, the Utah Skier Survey found that nearly 50 percent of nonresidents planned to stay away from Utah in 2002 (when Salt Lake City hosted the Winter Games) out of concern for large crowds and higher prices.⁴⁹ Opponents also argue there is little long-term impact on tourism in the aggregate.⁵⁰

An examination of Georgia tourism data shows some mixed results. Georgia appeared to experience a tourism boost leading up to and immediately following the 1996 Summer Olympics.⁵¹ Domestic visitation increased in the state 16 percent between 1995 and 1996 and 13 percent between 1996 and 1997. However, domestic visitation tapered off in the subsequent years. Between 1997 and 1999, domestic visitation only increased about four percent annually; suggesting direct tourism benefits related to the Olympics may be short lived.

One thing is clear – there is extensive debate in the academic and popular literature regarding the actual tourism benefits associated with the Olympics. It can hardly be considered a “slam dunk” that tourism will increase in Greater Boston and Massachusetts over the long run from hosting the Olympics, and it’s also very difficult to directly measure how greater worldwide “exposure” through an event like the Olympics influences travel and visitation choices.

Challenges and Risks

The Olympic Budget and Potential Cost Overruns

Critics of hosting the Olympics typically point to cost overruns as a prime reason to avoid hosting the Games. As mentioned earlier in this report, agreements between the IOC and the host community require that the host city cover any shortfalls in Olympic revenues, as well as any cost overruns. This obviously places local governments at significant financial risk.

The concept of “cost overrun” is a bit tricky, particularly as it relates to the Olympics. Most research comparing Olympic costs and cost overruns examine the difference between the initial bid budget and the overall final costs. Previous research shows that the final costs are always significantly higher than the initial budget estimates.⁵² However, there are two main reasons why the initial bid budget and the overall final costs could be different. First, the total costs and planned expenditures could simply increase. In

⁴⁸ Organization for Economic Co-operation and Development (OECD). 2012. “Local development benefits from staging global events: achieving the local development legacy from 2012”, <http://www.oecd.org/unitedstates/localdevelopmentbenefitsfromstagingglobaleventsachievingthelocaldevelopmentlegacyfromlondon2012.htm>

⁴⁹ Zimbalist, Andrew. *Not a Rosy Picture*, New York Times Opinion Blog, October 9th, 2009, http://roomfordebate.blogs.nytimes.com/2009/10/02/do-olympic-host-cities-ever-win/?_r=0#victor

⁵⁰ Matheson, Victor. *Happiness and Other Intangible Benefits*, New York Times Opinion Blog, October 9th, 2009, http://roomfordebate.blogs.nytimes.com/2009/10/02/do-olympic-host-cities-ever-win/?_r=0#victor

⁵¹ Georgia Department of Economic Development. 1994-1999 Travel Trends.

⁵² Two notable examples include Will Jennings’ 2012 book *Olympic Risk* and Bent Flyvbjerg and Allison Stewart’s 2012 working paper entitled *Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2012*.

instances like this, the key question is whether or not Olympic organizers have sufficient revenues and funding to cover the increased budget. In a hypothetical example, suppose a temporary stadium is replaced in the Boston 2024 plans with a more expensive permanent stadium. This type of change would lead to an overrun on cost compared to the initial bid, but if a private sector entity is willing to contribute additional funding to cover this increased cost, it is not a significant concern in terms of public sector risk. On the other hand, any planned increase in OCOG related expenditures requires a similar increase in revenues or the public sector could be at risk of having to cover budgetary shortfalls.

The second way costs can overrun is when planned expenses turn out to be higher than initially anticipated. For example, unanticipated technical, environmental, or structural reasons could lead to an increased price tag for a construction project or a venue's operational and logistical needs. In these instances, the primary questions are whether or not contingency is enough to cover the increases in costs and who would be responsible for covering these potential overruns. This is an area that would need careful examination in the Olympic planning process as the public sector could be at risk financially in such a scenario.

There are additional factors that make understanding and comparing Olympic costs and cost overruns difficult. First, there are two different Olympic budgets: the OCOG and non-OCOG budgets. The last three U.S. Olympic Games, the Los Angeles 1984 Summer Olympics (\$232.5M), the Atlanta 1996 Summer Olympics (\$10M), and the Salt Lake City 2002 Winter Olympics (\$40M), all reported turning a profit.⁵³ These reports specifically refer to the final OCOG expenditures and revenues and do not refer to non-OCOG or other infrastructural spending (which can be extensive and yet hard to compare among past Olympics games). In both the case of Los Angeles and Salt Lake City, OCOG related profits were used to help fund nonprofit organizations dedicated to promoting sports and physical activity in the community (the LA84 Foundation and the Utah Athletic Foundation, respectively).⁵⁴ Second, the context for Olympic spending is not always the same from place-to-place and may vary significantly from year-to-year. For example, the security needs for hosting the Olympics are significantly higher now than for pre-9/11 Olympics. In another example, the 2014 Winter Olympics in Sochi required a level of building and construction activity far beyond what would be necessary in a major U.S. city. Third, the availability of bid information, including the evolution and rationale of budget estimates, is not the same across all host cities.

As mentioned earlier, what is certain about Olympic bids is that the initial budget tends to significantly underestimate the actual final cost of the Games.⁵⁵ In a 2012 working paper out of the Saïd Business School, Flyvbjerg and Stewart examined bid budgets and actual final costs for selected modern Olympic Games.⁵⁶ In each case, the final cost outstripped the original bid estimate. The most notable cost overrun was the Montreal Olympics, which came in at nearly 800 percent over its initial budget. Notable as well was the Barcelona Olympics. These Games were more than 400 percent above the initial bid estimate. Other examples include Atlanta at 147 percent above the initial bid estimate, Sydney at 90 percent above the initial estimate, and the London Games estimated at over 100 percent of the original bid estimate.

⁵³ Abrahamson, Alan, *Salt Lake City Winter Games turns a profit*, Los Angeles Times, April 24, 2002, <http://articles.latimes.com/2002/apr/24/sports/sp-usoc24>

⁵⁴ There could be a similar benefit to the Greater Boston community in the event the OCOG is profitable here as well. Boston 2024 suggests using any operating profits from the 2024 Games to establish a similar legacy foundation around sports participation as were developed in Los Angeles and Utah.

⁵⁵ Both the Will Jennings' 2012 book *Olympic Risk* and Bent Flyvbjerg and Allison Stewart's 2012 working paper entitled *Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2012* showed the initial bid estimate was significantly lower than the final cost of the Games for all modern Olympics. Jennings examined Summer Games dating back to 1976. Flyvbjerg and Stewart examined Winter and Summer Games dating back to 1960.

⁵⁶ Estimated overruns are based on original currencies in real terms.

Table 9 below shows that, on average, Olympics come in at 179 percent higher costs than their original bid. There are substantial differences between Summer and Winter Games as well. Generally speaking, Summer Games tend to be more expensive than Winter Games. Summer Games also tend to have higher cost overruns. Summer Games typically come in at 252 percent above the original bid, compared to 135 percent for the Winter Games.

Table 9: Average and Median Percentage Cost Overruns

Metric	Summer Percentage	Winter Percentage	Total Percentage
Average Cost Overrun	252%	135%	179%
Median Cost Overrun	118%	109%	112%
Maximum Cost Overrun	796%	321%	796%
Minimum Cost Overrun	4%	17%	4%

Source: Flyvbjerg and Stewart, 2012, Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2012

That said, a Boston 2024 Olympic Games might be quite different from past efforts with significant commitments to leverage existing venues and limit the amount of new construction. Thus, it is unlikely that the current bid will experience the same level of cost overruns associated with past Olympic Games hosted in places that required (or promised) extensive new infrastructure and venue construction. To better reflect cities that may have similar context, characteristics and experiences, we selected a sub-set of cities to develop a refined sense of potential cost overruns in Boston. As seen in Table 10 below, both Summer and Winter Games were selected, and overall, we find slightly lower cost overruns with an average of 77 percent and a tighter range of 17 percent in Vancouver to 147 percent in Atlanta.

Table 10: Cost Overruns for Selected Cities

City	Country	Region	Type	Year	% Cost Overrun
Atlanta	United States	North America	Summer	1996	147%
Sydney	Australia	Oceania	Summer	2000	90%
Salt Lake City	United States	North America	Winter	2002	29%
Vancouver	Canada	North America	Winter	2010	17%
London	United Kingdom	Europe	Summer	2012	101%

Source: Flyvbjerg and Stewart, 2012, Olympic Proportions: Cost and Cost Overrun at the Olympics 1960-2012 and UMDI

There are several reasons why the initial budget estimates for an Olympic Games may be significantly lower than the final overall cost. First, the initial estimates may be overly optimistic in terms of cost and cost controls. These estimates are typically developed in a competitive environment where bidding cities are trying to provide justification and prove competency for hosting the Games. Second, organizing committees make their initial budget estimates some 7-to-10 years before the actual event. As stated in earlier sections of the report, the initial bid book and accompanying budget estimates are a “proof of concept”. As Game plans solidify, some aspects of the budget expand and venue plans are refined. For example, London’s initial security estimates were far lower than was actually needed to execute the

Games.⁵⁷ Olympic budget estimates and costs can also experience “scope creep”, or instances where a project’s budget climbs due to unforeseen circumstances, particularly around design or technical specifications in construction.⁵⁸

In short, there is a long history of initial budget estimates for Olympics being far lower than the actual final cost of the Games. Thus, it seems unlikely that the actual final cost of the Boston 2024 Summer Olympics would actually be the proposed \$9.1 billion. While some of these overruns may not represent direct risks to the public sector and may be covered by expanded funding commitments from the private sector or increases in OCOG revenues, it will be important for elected officials, civic leaders, and Boston 2024 to carefully monitor Olympic costs, particularly with an eye towards protecting the public sector from financial risk.

Boston 2024 does have contingency built in to the overall budget for the Games, at 10 percent of construction and venue operations costs. This would be just under \$430 million. The OCOG budget also has contingency built in to its line-by-line expenditures as part of the \$3.7 billion of non-construction OCOG spending. However, it is unclear if the earmarked contingency could cover the full scope of possible cost overruns, as recent Olympic Games have seen overruns in the multiple billions of dollars.

It should be noted, however, that in early December 2014, the IOC approved the “Olympic Agenda 2020”, a set of recommendations that, in part, aim to rein in costs and encourage the use of existing and temporary facilities. This resolution was designed to help draw in more Olympic host city candidates, particularly from the U.S. and other democratic countries where the cost of hosting the Olympic Games have become a significant concern. This shift in IOC priorities in evaluating Olympic proposals appears to place the Boston 2024 bid in a stronger competitive position and may help to keep costs down compared to previous Games.

In terms of Boston’s overall budget, there are still unknowns to be worked out. Smith College economist Andrew Zimbalist pointed out some of these issues in a recent Boston Globe op-ed.⁵⁹ In particular, Zimbalist states that Boston 2024 is relying on robust private sector participation, to the tune of \$3.4 billion, in building such critical venues as the Olympic Village and the International Broadcasting Center. Detailed budget information provided to UMDI includes private sector expenditures for the Olympic Stadium as well. At this time, though, there is little information about firm commitments from the private sector to contribute to these essential venues. Zimbalist cited an example in London where a private sector company backed out on the Olympic Village, leaving the city with the tab. Second, Zimbalist points out that federal security funding is not guaranteed. There are some murmurs from Congressional representatives about not wanting federal dollars committed to such an event, though this outcome is unlikely given the size and stature of the Summer Olympics.⁶⁰ Boston 2024 officials have recently met with members of the Massachusetts Congressional Delegation to discuss federal support for the Games, including security funding. Several member of the Congressional Delegation expressed support for the Games at that time.⁶¹ Lastly, the balance between OCOG revenues and expenses is delicate and assumes that the Games can operate on the proposed budget and that revenues will match that budget. A deviation on either side of the ledger can put the public sector at risk of covering shortfalls or budget overruns. All of the above are issues

⁵⁷ Jennings, Will. 2012. “Why Costs Over-Run: Risk, Optimism and Uncertainty in Budgeting for the London 2012 Olympic Games.” *Construction Management and Economics* 30(6): 455-62.

⁵⁸ Ibid

⁵⁹ See the January 24th, 2015 op-ed entitled, *A look at Olympics budget points to overruns*,

<http://www.bostonglobe.com/opinion/2015/01/23/look-olympics-budget-points-overruns/J10U9MAq4K5MUnYtynnlIJ/story.html>

⁶⁰ Myers, Bierman, and Lane, *Security for Boston Olympics may need \$1B in U.S. funds*, Boston Globe, January 13, 2015,

<http://www.bostonglobe.com/news/nation/2015/01/13/boston-will-need-congress-help-olympic-bid/Agie20hL41ai4TbsgJ7VJ/story.html>

⁶¹ Bender, Bryan, *Boston 2024 team starts D.C. push for political support*, Boston Globe, February 13th, 2015,

<http://www.bostonglobe.com/news/nation/2015/02/12/boston-olympics-organizers-visit-washington-build-support-for-costly-security-measures/agMzmtkiz1vFDbjOp5bl/story.html>

that will need to be closely monitored in order to ensure the public sector is protected from extensive financial commitments.

Olympic Committee Insurance Policy

There are many risks associated with hosting the Olympic Games from completing preparations for the Games in a timely manner, to construction cost overruns, or even the possibility of event cancellations. Because of this, the IOC requires both the Boston Olympic Organizing Committee (which would be Boston 2024 in the event Boston is awarded the Games) and the City of Boston to both commit to a Host City Contract, which includes how the Games will be staged. Boston 2024 has stressed that the City of Boston and the Commonwealth of Massachusetts will not have any direct financial responsibilities for construction and hosting of the Olympics.

In order to protect the City from cost overruns and other financial risks, Boston 2024 is proposing to purchase insurance coverage in the name of the City, with the City as a beneficiary. Boston 2024 states the City would not pay anything for the insurance, as the premiums would be paid for with Olympic revenues. However, since the insurance will be in the City's name and the City would be a beneficiary, Boston's historically strong credit rating will be a relevant factor in determining insurance premiums. Boston 2024 insists it will fully indemnify the City of Boston for all of its possible financial obligations.

Boston 2024 has already purchased one layer of such insurance protecting the City.⁶² Currently, the City is required to pay the USOC \$25 million dollars if it decides to remove itself from consideration for hosting the Games. Boston 2024 purchased insurance protecting the City from this potential expense. Likewise, if the City is awarded the bid in 2017 and then decides to no longer go forward with hosting the Games, Boston would agree to pay the IOC \$100 million. Boston 2024 plans to purchase insurance to protect the City from this potential cost as well.

Details are still being worked out on other types of insurance, particularly as it relates to public sector risks associated with cost overruns and budgetary shortfalls. These details will certainly be influenced by bid specifics that will be developing over the next couple of years. Boston 2024 suggests insurance will likely include payment and performance bonds typical for large projects, insurance to cover costs (if any) not shifted completely to contractors under fixed price contracts, capital replacement insurance or insurance to protect against additional costs due to delays in construction, and liability and indemnity policies for event cancellation. This would supplement insurance provided by the IOC and the USOC.

This insurance issue is an important point in planning the Games and protecting the public sector from unforeseen costs. To date, using insurance to protect a host city from cost overruns has not been used extensively. Insurance coverage was part of the failed Chicago 2016 bid. The 2010 Vancouver Winter Olympics used some capital replacement insurance to help with the construction of their Olympic Village. Otherwise, this is a fairly novel concept. It will be important for local officials to understand the full extent of insurance coverage and public sector liabilities as it relates to cost overruns.

⁶² Mayor Marty Walsh referred to this insurance as “a starting point”. Specific details on the \$25 million were light in the local new coverage, but for more information see the January 9th, 2015 Boston Globe article *Walsh: Boston won't pay for Olympic venues*, <http://www.boston.com/business/news/2015/01/09/walsh-public-money-for-olympic-venues/p6USPgKbyFFfJ8ysxh5D6J/story.html>

Displacement of Existing Businesses

A very tangible concern related to the Boston 2024 Olympic bid is the displacement of existing businesses to accommodate Olympic venues.⁶³ For example, the Newmarket area of South Boston is a 20-acre site of meat and seafood wholesalers. It appears that the current proposed stadium location would displace some if not all of these businesses. The New Boston Food Market cooperative employs about 700 workers and has estimated revenues of \$1 billion in 2014. Although the cooperative has not been interested in the numerous past attempts by private developers to purchase the land (assessed at \$21 million), in 2001 the MBTA considered taking the land through eminent domain, but quickly dropped the idea when then-Mayor Thomas Menino objected.⁶⁴ Boston 2024 would need to make an offer to purchase the land, but the 18 shareholders would need to unanimously agree. The impact of such a purchase and displacement is hard to determine at this time and would be dependent on how and where New Boston Food Market businesses would be relocated to and how they are compensated for their potential move. That said, many of these businesses use large refrigeration and freezing equipment that would be difficult to relocate. In addition, some of these businesses are smaller operations and may choose to close shop after being compensated for their land, rather than move to a new location. The New Boston Food Market is one of many business areas that could be impacted depending on Olympic venue placement. The potential relocation of businesses and industries that provide employment, goods, and services throughout the region and state need to be carefully considered prior to Boston 2024 progressing with venue construction planning.

Transportation

As noted earlier, transportation is a major issue when hosting the Olympics, requiring careful planning and acknowledgement about transportation improvements that may be needed. Fortunately, the Greater Boston area has a very mature transportation system with one of the most extensive and heavily used transit systems in the country.⁶⁵ While it's true that Boston has an aging infrastructure and significant traffic congestion, the same can be said for most major cities around the world. However, in recent weeks the aging transportation infrastructure, particularly as it relates to public transit has come under increased scrutiny. The massive snowstorms experienced in Greater Boston during the early part of 2015 exposed some of the glaring needs for maintenance and system updates. While it is unlikely that extreme weather will impact transportation during the Summer Olympics, the recent snowstorms highlight some of the difficulties the transportation infrastructure has in responding to additional stress on the system.

Many of the transportation improvements that Boston 2024 has identified as being important to support the Olympics are well on their way to funding, construction, and operations. Multiple projects are likely to be completed with or without the Olympics as they serve long-identified mobility needs for the city and region. For example, the Transportation Bond Bill includes line item procurements for new Orange and Red Line cars for the MBTA. Construction on these cars will begin later this year in Springfield, MA, with the first batch completed in 2018.⁶⁶ In another example, the planned Green Line extension into Somerville and Medford has received significant federal funding commitments, plans are in final design, and the current schedule estimates project completion in 2021. Another project that could be critical to support

⁶³ Borchert, Callum, *Olympic bid adds to worries at food complex*, Boston Globe, December 2nd, 2014, <http://www.bostonglobe.com/business/2014/12/02/new-boston-food-market-fears-olympics-plans/APeChC66hVygMDVwzOtqXI/story.html>

⁶⁴ Ibid

⁶⁵ According to the 2013 American Public Transportation Association (APTA) Factbook, the Boston metro area has the 6th highest transit ridership in the U.S. and the 10th largest population – Table 4: <http://www.apta.com/resources/statistics/Documents/FactBook/2013-APTA-Fact-Book.pdf>

⁶⁶ For more information see the February 20th, 2015 MassLive article *MBTA car factory prep continues in Springfield as Boston winter woes underscore need for new cars*, http://www.masslive.com/business-news/index.ssf/2015/02/mbta_car_factory_prep_continues_in_sprin.html#incart_river

Olympics venues in the Allston/Harvard Stadium area is West Station, near the old Beacon Park Yard of CSX. The earlier Patrick Administration made commitments to that project and our research indicates a mix of public, private, and institutional funding is very likely to make that transit improvement a reality (again, with or without the Olympics).

That said, there are a number of projects that may be deemed important to the Olympics that are much less certain in terms of funding, timing, or prioritization. Furthermore, potential risks are that: a) because of the Olympics, Boston area transportation projects will be prioritized over transportation improvements in the rest of the state; and/or b) pressure from the IOC and/or USOC to complete a more ambitious set of projects could force the City and Commonwealth to use greater public funding to accelerate transportation enhancements. Each of those risks needs to be monitored over time.

Boston 2024 is smart to try and link the Olympics will already planned transportation improvements that will serve and benefit the region for years to come and, thus, limit the building of any newly identified projects solely for the Games. In particular, it simply does not make sense to implement fixed guideway (rail, subway, stations) improvements with the sole purpose of serving a month-long event such as the Olympics. As regional transportation experts noted to our research team, there are likely smarter ways to serve a relatively short-duration event such as through expanded/new bus service or dedicated bus lanes.

In this preliminary report, it is not possible to construct a detailed, comprehensive assessment of transportation for the Olympics, but we suggest that stakeholders and the public consider the following criteria when judging plans for transportation infrastructure:

- Which transportation improvement projects are necessary for a competitive bid and successful hosting of the Olympics? For example, the plans to focus on a compact geographic area for the games suggests that enhanced service options in the city's urban core (including Cambridge and Somerville) may be more relevant than more distant projects such as South Coast Rail to Fall River and New Bedford.
- Which projects would actually be necessary to host the Games? For example, roadway and intersection improvements near UMass Boston and the Bayside Expo Center (planned location for the Athlete's Village) may be necessary, whereas but new bus rapid transit (BRT) and rail connections in the urban core area may be useful but not required.
- Of the necessary projects, which ones have secure funding plans already in place (i.e., already in the five-year Capital Improvement Program) versus projects that are planned and desired but not yet funded? Related, while a number of projects are identified in the multi-billion dollar Transportation Bond Bill, the actual composition of projects funded through that initiative are not certain until fully approved and authorized. Some projects (like South Station expansion) only include partial funding. Related, how will the recently passed referendum to eliminate gas tax inflation indexing limit the availability of future transportation resources? For projects deemed critical to the Olympics but where funding is not yet certain, how will those projects be funded, prioritized and completed in time for the Olympics? And is the public in agreement about that use of funds?

We think it is instructive to highlight a few transportation projects that may be deemed critical to the Olympics (keeping in mind that actual venue locations are still being determined) but where funding and completion plans still need to be determined:

- **South Station Expansion.** One of the larger-scale and more complex transportation projects in the Commonwealth may also be one of the more important projects to the Olympics given its central

location in Boston, multiple modes of connection and proximity to the potential Olympic Stadium. This project is likely to spur significant long-term benefits and based on current capacity constraints, is necessary to implement various proposed commuter and inter-city rail enhancements to the rest of the state and region.^{67, 68} That said, based on our research, the \$325 million identified in the bond bill for this project is primarily to help purchase the United States Postal Service (USPS) building and to move USPS operations to South Boston. The actual costs to complete the entire South Boston project are likely to exceed \$1 billion. As of this writing, no detailed funding plan has been developed and it's likely that the Commonwealth will seek significant federal funding. An additional consideration is timing, as this project is so complex that completion in time for a 2024 Olympics is far from certain. To complete this project and accelerate the long-term mobility benefits to the broader region will likely require prioritization and focus from the Baker Administration.

- **Dorchester Avenue Expansion and Improvement to Olympic Stadium.** One element of the South Station expansion project is to re-open a section of Dorchester Avenue along Fort Point Channel. Boston 2024 Olympics plans also include an extension and improvement to this corridor beyond the South Station area to Widett Circle and the potential Olympic Stadium as a connecting Olympic boulevard. This project, as far as we know, is not included in current transportation plans, and thus it will be necessary to carefully consider the costs of this project and how it would be funded.
- **Kosciuszko Circle and Roadway Improvements near Planned Athlete's Village.** Another set of projects that could be directly related to the Olympics is the Kosciuszko Circle and nearby roadway improvements near UMass Boston and the Bayside Expo Center related to the planned Athlete's Village. Based on recent media reports⁶⁹ and our independent research, this project would likely require planning, design, and funding that have not yet been developed.

While there may be valid reasons to complete these projects for broad-based mobility needs, the deadlines inherent in hosting the Olympics will provide greater motivation to accelerate long-delayed projects. However, there remain uncertainties about the mix of local/state public funding that may be needed as well as how these projects would be prioritized over transportation needs in the rest of the state.

⁶⁷ More information on the project can be found at: <http://www.massdot.state.ma.us/southstationexpansion/home.aspx>

⁶⁸ In full disclosure, one of the study's authors contributed to an earlier benefit-cost analysis of this project for MassDOT that found the project's benefits would exceed estimated costs.

⁶⁹ For example, see <http://www.dotnews.com/2015/vital-olympic-transit-projects-not-state-bond-bill> and <http://www.bostonglobe.com/metro/2015/01/10/devil-details-transportation-projects/Us0Qd8f7gXQp6JW0BJcleI/story.html>

Summary of Findings

Boston 2024 and the Greater Boston region are in the beginning stages of planning for the possibility of hosting the 2024 Summer Olympics. Once Boston was selected as the U.S. nominee for hosting the 2024 Games, the Boston 2024 Partnership and local elected officials pledged to engage the larger community in a transparent and open dialogue regarding the planning and potential impact of the Games if selected by the International Olympic Committee (in 2017).

While the Boston 2024 proposal is a working document and should be thought of as a “proof of concept” rather than a concrete plan, there are still several components of the proposal that can be evaluated at this time, as well as key issues in planning an event like the Olympics that need careful consideration. This report contributes to the public discourse by providing a preliminary assessment of measuring the quantitative economic impacts of hosting the 2024 Summer Olympic Games in Boston. In addition, this report highlights several of the potential opportunities, challenges, and risks associated with hosting the Olympic Games that are difficult to quantifiably measure at this time, but require attention from Boston 2024, local elected officials, and civic leaders as Boston’s Olympic proposal evolves over the next couple of years.

Our analysis is focused on estimating the *net* short-term economic impacts of the proposed 2024 Boston Olympics and reflects a considerable review of research findings on past Olympics, as well as the current assumptions and plans for Boston. For construction and Olympic operational spending, we attempt to isolate only those dollars that would be “new” to the Massachusetts economy (i.e., funding and investment that would not otherwise occur in Massachusetts). We focused on economic activity that would be spent on Massachusetts firms and workers while reflecting potential crowding out effects. For example, our tourism impact analysis focuses on short-term incremental tourist spending that may occur for the Olympics while accounting for any possible displacement of visitors avoiding the region because of the Games.

With regard to construction impacts, we assumed that \$2.1 billion of the estimated \$3.8 billion in construction activity would represent new activity benefiting Massachusetts firms. Over a construction period lasting approximately six years (2018-2023), we estimate construction spending associated with the Olympics will create or support over 24,000 job-years in Massachusetts, or roughly 4,100 jobs annually during the construction period.⁷⁰ Construction activity will have a total impact of nearly \$4 billion dollars to the state economy over a six-year period. This indicates a multiplier effect of 1.87, meaning that for every dollar spent on Olympic construction an additional 87 cents is spent on supplier and support industries and other forms of consumer spending.

In terms of Olympic operational impacts, such as spending on venue management, security, IT support, and ceremonies, we assumed that \$2.9 billion of the estimated \$5.3 billion in operational spending would be new activity benefiting Massachusetts firms. We estimate that in the year of the Games, Olympic operational spending will create or support over 50,000 jobs in Massachusetts. Olympic operational

⁷⁰ As noted earlier, the seasonal and temporary nature of construction lead to construction jobs typically being reported in “job-years”. This can be understood as the number of full-time jobs that will be supported for a year through construction related spending. To estimate the more commonly understood concept of a “job”, one needs to divide job-years by the length of the project(s). In this case, we divided job-years by six as most Olympic construction activities will happen over a six year time period. Note however, that construction activity will not occur evenly throughout the six years. Some years will have more construction jobs than others.

spending activity will have a total impact of over \$5 billion dollars in the state economy during the year of the Olympics. This indicates a multiplier effect of 1.96, meaning that for every dollar spent on Olympic operations an additional 96 cents is spent on support industries and other forms of consumer spending.

In terms of tourist spending, knowing Greater Boston is already a popular tourist destination, we used conservative estimates of the proportion of spending that can be directly attributed to the Olympics, assuming 70% of visitor spending occurring during the Olympics would have happened in the region regardless of the Games. Based on that assumption, we estimate that Olympic spectators, media members, athletes, and officials will add a one-time net increase of \$300 million in spending to the Massachusetts economy in 2024. In the year of the Olympics, we estimate visitor spending will create or support nearly 4,300 jobs in Massachusetts. Olympic operational spending activity will have a total impact of nearly \$514 million dollars in the state economy. This indicates a multiplier effect of 1.76, meaning that for every dollar spent on Olympic construction an additional 76 cents is spent on support industries and other forms of consumer spending.

While we understand that it may be tempting for readers of this report to try to add up the estimated economic impacts, we advise against doing that for two reasons. First, the three short-term impact concepts estimated in this study reflect different time periods and different dynamics, which makes the seemingly simple addition more complex. For example, the construction-related economic impacts will occur over multiple years in the lead up to the Olympics while operations spending and tourism impacts would occur in the year of the games (2024). Second, our intent is to present results for these three *potential* economic impacts in a clear and transparent analysis that recognizes various uncertainties and past research and thus are best understood individually rather than in aggregate.

While our estimates show the Olympic would have a positive short-term impact on the local and Massachusetts statewide economy, it should be noted that there are still several significant aspects regarding the Olympics that are unclear or uncertain. A continued close examination of the following issues is necessary for the region to fully understand the potential benefits and risks associated with hosting the Olympics.

- First, proponents of the Olympics tout the legacy impact of hosting the Games in terms of economic development and tourism. For economic development, more needs to be known about the future of possible venue sites and their development potential. For example, Boston 2024 touts how building a temporary stadium in South Boston will set that area up for future economic and housing development. This may, in fact, be true, but, it is hard to predict at this time and the economic displacement of current productive economic activity also needs to be considered. Long-range tourism benefits are also difficult to predict. There is an extensive debate in the academic and popular literature about long-range tourism benefits from hosting major events. These effects are challenging to quantify. More importantly, there is enough disagreement on this issue that it is impossible to say for certain that hosting the Olympics will actually lead to more long-range tourism to Greater Boston; especially given that the region is already a popular tourist destination.
- Second, community leaders need to be mindful about the real possibility of cost overruns. There is extensive research suggesting modern Olympic Games go significantly over budget. Boston 2024 insists that they will not need any public dollars (save for infrastructure) to execute hosting the 2024 Summer Games. This assumption will need to be closely monitored over time. That said, most Olympics have had cost overruns in the multi-billions of dollars compared to original budgets. While some of these cost overruns may not directly represent risks to the public sector, contractual agreements with the IOC typically expose the host city to financial obligations related to cost overruns and budget shortfalls. Boston 2024 does plan to purchase insurance to protect the City

from having to cover cost overruns or budget shortfalls, but this is a fairly novel concept. Boston 2024 still needs to work out details on such insurance coverage such as the amount of coverage that can realistically cover the extent of possible overruns to shield the City (and public) from financial risks. In addition, the recently passed IOC *Olympic Agenda 2020* provides some hope that future Olympic Games can be more cost effective than their predecessors, namely through the use of existing and temporary sport venues. Use of such facilities is an important part of Boston's current bid. In any event, the proposed budget hinges on revenue generation assumptions from various external sources (e.g., large private sponsorship, the IOC, federal government). As shown in this report, the actual mix of locally generated funding (a re-distribution of spending) versus new non-local sources (generative economic spending) is critical in determining *net* economic effects, and would result in lower economic benefits if revenue projections fall short and/or costs exceed budget expectations.

- Third, transportation and public infrastructure represent other complex challenges in terms of funding, what is needed for the Olympics, and investment priorities locally and statewide. While many of the transportation projects identified by Boston 2024 as being necessary for the Olympics are already funded in the Commonwealth's Capital Investment Plan or identified in the State's Transportation Bond Bill, there are a number of projects that are much less certain with regard to funding, timing or prioritization, most notably the South Station expansion. Key questions regarding transportation infrastructure as 2024 approaches include: a) because of the Olympics, will Boston area transportation projects be prioritized over transportation improvements in the rest of the state?; and b) could pressure from the IOC and/or USOC to complete a more ambitious set of projects force the City and the Commonwealth to use greater public funding to accelerate transportation enhancements? Each of those risks needs to be monitored over time.

The possibility of hosting the 2024 Summer Olympics is an exciting proposition for our region and does have the potential to unlock underutilized areas for redevelopment and help press forward on long-sought infrastructure improvements. Preparation for the Games will provide regional leadership a goal in developing long-range plans for the metropolitan region. It is clear that Olympic construction and spending activity will likely have a significant economic impact on the state, especially as it draws on otherwise untapped sources of funding from the private sector or external sources. That said, substantive questions still remain regarding the bid and the fiscal realities of the budget forecast. As Boston's Olympic bid continues to evolve in the coming years, further research will be necessary to fully understand the impact of a possible Summer Olympics held in Boston. This will include revisiting any changes to the bid or planned venues over the next two years. As more is understood about budget and insurance protection, careful consideration should be paid to public sector contributions, partnerships, and risks. These are also issues that are either not fully understood at this time or it is too early to predict outcomes, but are significant factors in determining the true economic and fiscal impact of hosting the Olympics in Greater Boston. Lastly, as the final bid takes form, future research should more fully consider neighborhood impacts (such as job displacement) and long-term legacy effects associated with hosting the Games.

APPENDIX

IMPLAN Description

The economic impacts and job effects were estimated specifically for the State of Massachusetts. To conduct this analysis, we used a customized IMPLAN input-output model⁷¹ for the State to estimate the direct, indirect, and induced effects of the Boston 2024 Summer Olympics, in terms of employment, labor income, business sales (output), value added, and state revenue. The results are generated and reported for the following:

- **Job impacts** represent a change in average annual jobs for the year indicated.
- **Labor income** consists of total employee compensation (wage and salary payments, as well as health and life insurance benefits, retirement payments and any other non-cash compensation) and proprietary income (payments received by self-employed individuals as income).
- **Value added** represents total business sales (output) minus the cost of purchasing intermediate products and is roughly equivalent to gross state/domestic product (commonly referred to as GSP or GDP). Value added is the enhancement a company gives its products before offering the product to customers. For example, an oil refinery takes crude petroleum as an input and then transforms it into refined gasoline. Simplistically, the “value added” in this instance is the difference between the greater value of refined gasoline and the lower value of crude petroleum.
- **Output** is a broader measure that consists of total business or industry sales. It includes sales to final users (e.g., the sale of gasoline at a service station) as well as intermediate good sales (e.g., the sale of crude petroleum that is required to produce the gasoline).

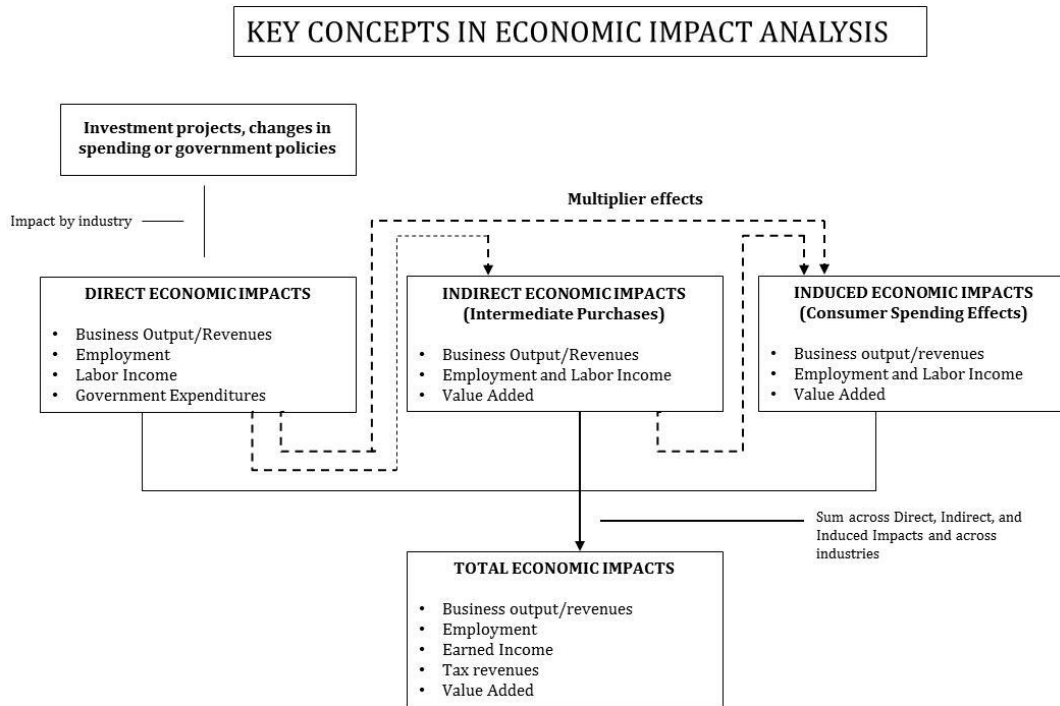
The **total economic impacts** as estimated by the IMPLAN model are the sum of direct, indirect, and induced impacts.

- **Direct impacts** are only those associated specifically with activities taking place at Boston 2024 Summer Olympics, whether during the Games events or activities leading up to the Games. The direct impacts of Boston 2024 Olympics include the Olympic-related employees, their payroll, and the revenues (sales) associated with the Games and activities during and leading up to the Olympics.
- **Indirect impacts** are generated when material, equipment, or other intermediate purchases are made to support the direct activity. For the Boston 2024 Olympics, indirect impacts come from the businesses supplying goods and services to help the State and Greater Boston host the Olympics such as electronic equipment, building materials, specialized services, etc.
- **Induced impacts** are generated by the local consumer spending, primarily from workers and employees spending their earnings in the local economy. For example, spending by local Massachusetts employees supports jobs in local stores, restaurants, hair salons, etc.

⁷¹ For more information on IMPLAN, see <http://www.implan.com/>

The higher levels of economic activity emanating from the Boston 2024 Olympics will translate to more dollars available to consumers for spending. The economic impact analysis includes estimates of the direct and total (sum of direct, indirect, and induced) economic impacts of Boston 2024 Olympics.

Figure 4. Economic Impact Analysis Methodology



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