

2015 Economic Impact Study of the Museum of Fine Arts, Boston

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Chapter 1. Summary

This report is the technical appendix to the study *The Economic and Community Impacts of the Museum of Fine Arts, Boston*, which highlights both the economic and community development impacts of the Museum of Fine Arts, Boston (MFA). This appendix summarizes the MFA's overall economic contribution to the City of Boston and the Commonwealth of Massachusetts and provides an overview of the methodology used.

The study and this appendix document the economic contribution of the MFA in Fiscal Year (FY) 2014 (July 1, 2013 through June 30, 2014) and the contribution of construction spending during the years FY 2005 through FY 2014. The MFA is a job engine for the City of Boston and the Commonwealth of Massachusetts.

Classification of Impacts

The term “economic impact” is commonly used to describe what is more accurately the “economic contribution” of an organization or activity to local and regional economies. The total economic contribution of the MFA in FY 2014 is the sum of the business activity directly associated with operations of the Museum, the spending of tourists (whose trip to Boston was motivated by visiting the Museum to browse its galleries, patronize a specific exhibition, or attend an event), and construction expenditures of that year. The MFA makes an economic contribution to the City of Boston and the Commonwealth of Massachusetts through three *types* of impacts that together constitute the total contribution of the MFA to the Boston and Massachusetts economies:

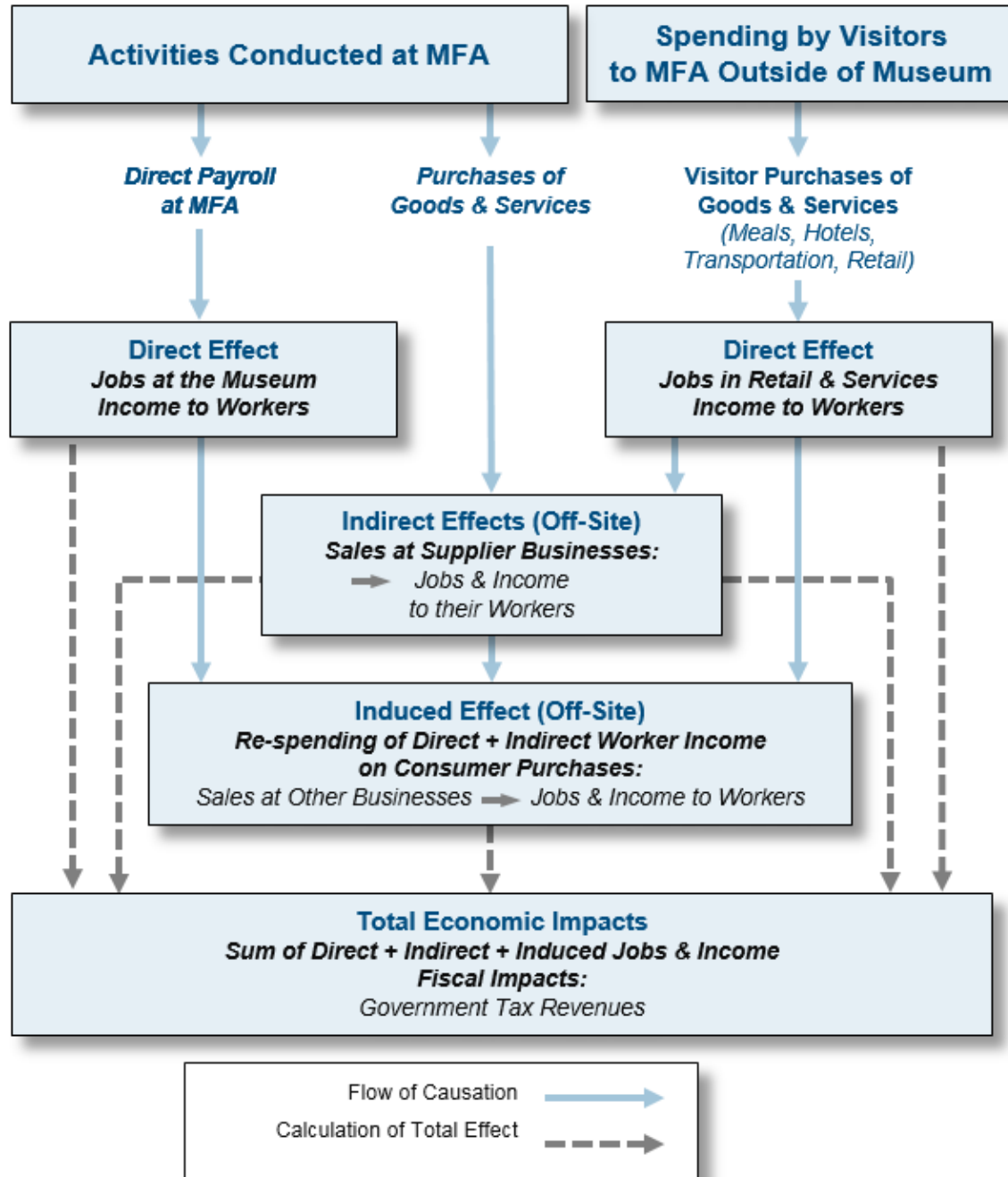
- **Direct effects** refer to business sales/budget expenditures (together, these are referred to as “business activity”), jobs, and labor income earned at the MFA and the School of the Museum of Fine Arts, Boston (SMFA), and spending outside of the MFA in Boston and elsewhere in Massachusetts by visitors to the MFA.
- **Indirect effects** refer to sales of goods and services to the MFA by vendors in Boston and the Commonwealth; subsequent rounds of indirect impacts are generated when those vendors purchase goods and services from other Boston or Massachusetts businesses. For visitor spending, indirect effects are triggered by sales to businesses in the hospitality sectors that serve MFA visitors and subsequently purchase additional goods and services from other Massachusetts businesses.
- **Induced effects** refer to the economic activity generated when MFA employees and employees of the Museum's indirect suppliers spend their wages on household purchases of goods and services in Boston and throughout Massachusetts.

Indirect and induced transactions represent income (i.e., new business sales) to the suppliers of these goods and services, which use a portion of that income to pay their workers and buy additional goods and services from other businesses in the region. In addition, Museum workers and employees of vendors spend their wages on other items such as housing, retail purchases, and services. Those expenditures, in turn, support jobs in those industries, whose workers then spend their salaries in Boston or Massachusetts. These successive rounds of spending and job creation represent the indirect impacts (business-to-business) and induced impacts (spending of wages). This study specifically measured the indirect and induced impacts that occur in the Boston and Massachusetts economies.

Interrelationship of the Elements of Economic Impact Analysis

The jobs and business conducted in relation to the MFA create strong economic stimuli for the City of Boston and Commonwealth of Massachusetts. As shown in this study, the direct business activity and subsequent multiplier effects have a strong overall impact on the economy. The interrelated flows of economic activities that constitute the contribution of the MFA to Boston and Massachusetts are illustrated in Figure 1.

Figure 1. Elements of Economic Impacts and Interrelationships



Source: Economic Development Research Group.

Suppliers of Goods and Services (Indirect Multiplier Effects)

Activities occurring at the MFA generate additional orders for goods and services from suppliers, including orders for:

- Printing and publishing of books and pamphlets for exhibitions
- Banking, insurance, legal, accounting, and technical services to support Museum operations
- Food products for the MFA restaurants
- Wholesale merchandise to be sold by the Museum gift store
- Furniture and equipment for galleries, offices, food services, and the stores located at the MFA

Activities outside the MFA that serve visitors who come to Boston from other Massachusetts communities, other states, and from international destinations to visit the MFA generate additional orders for goods and services from suppliers for:

- Fueling and maintenance services for use by taxis, rental cars, tour buses, and public transportation
- Food products for restaurants off Museum premises
- Wholesale merchandise to be sold by stores scattered throughout Boston
- Furniture and equipment for hotels, restaurants, and stores

Re-Spending of Worker Income (Induced Multiplier Effects)

The workers at the MFA, at non-Museum businesses serving Museum visitors, and at supplier businesses earn income. Most of that income is re-spent on consumer purchases, which support additional jobs in Boston and throughout Massachusetts. Examples of these purchases include:

- Retail purchases of food, clothing, home furnishings, cars, electronic devices, computers, and other products
- Purchases of services spanning cleaning, car repair, and insurance

Streams of Impacts

These streams of impacts are derived from the following activities:

- *Activities Conducted at the Museum.* These include all the direct expenditures by, and employment at, the Museum, including curatorial, administrative, and retail activities, and aspects of the Museum's operation that are outsourced to outside parties (food service, cleaning, and parking operations). It also includes contracting activities, such as temporary employment and construction in FY 2014.
- *Visitor Effects.* These include business activity created by the spending of individuals who specifically visit Boston to visit the MFA. They include the direct spending of visitors and their indirect effects on suppliers.

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These various elements of economic impact are shown in Table 1 and Table 2 in terms of employment, labor income, and output. Throughout this report, these three terms are defined as follows:

- **Output** refers to the economic transactions, including revenues and budget expenditures where the transactions occur. In the case of the MFA, direct output refers to total Museum expenditures in FY 2014 that are raised through admissions, memberships, donations, SMFA tuition, and other means. Output also includes sales from the MFA's retail stores and food services, as well as business revenues from other outsourced operations.

Note that a portion of direct output is used to pay employees of the MFA, the SMFA, and the outsourced enterprises doing business at the MFA. An additional portion of the direct output is used to purchase supplies and services. These latter expenditures represent the *first round* of indirect business sales (or indirect output) by suppliers to the MFA. When these initial suppliers, in turn, purchase supplies and services as consequences of needing to fill orders placed by the MFA, additional rounds of indirect expenditures are triggered until the dollars (represented by successive rounds of business sales) are expelled from Boston and Massachusetts economies.

- **Labor income** is wages and benefits that are paid to workers, and, as noted above, is a portion of output.
- **Employment** represents total number of jobs, including full-time and part-time workers.

Impacts from Museum Operations

In FY 2014, the MFA accounted for nearly \$340 million in business activity (total output) in Boston, which included more than \$165 million in labor income and supported more than 3,400 jobs in the City. The net impact of the MFA to the Massachusetts economy exceeded \$400 million in business activity across the Commonwealth, which supported almost 3,900 jobs and more than \$187 million in labor income.

Table 1 and Table 2 present overviews of the contributions of the MFA to Boston and Massachusetts.¹ The tables show that the effect of off-site visitor spending in Boston is higher than visitor spending in Massachusetts. This is because the Boston totals include visitors from other cities and towns in Massachusetts. These visitors spend money in Boston during their day trips, but do not bring additional dollars into the Commonwealth.

¹ Note that ten employees of the Museum during FY 2014 were stationed outside of Boston. Two employees worked in an art storage facility in Randolph, MA, and eight employees worked in a warehouse in Avon, MA. (The warehouse was closed and its functions transferred to the MFA in Boston at the end of FY 2014.) To ensure privacy, these employees and their labor income, as well as associated output, are included in Boston tabulations.

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Table 1. Summary of the FY 2014 Economic Contribution of the MFA in Boston

Impact Type	Employment	Labor Income	Output
Museum Operations, Including Retail, Food Service,* Cleaning,* Parking,* and Construction Wages	1,128	\$52,822,000	\$125,981,000
School of the Museum of Fine Arts	217	\$11,834,000	
Off-Site Spending by Visitors to the Museum and by Students	1,596	\$59,818,000	\$121,887,000
<i>Direct Total</i>	2,941	\$124,474,000	\$247,868,000
Indirect Effects: Suppliers of Goods and Services	301	\$26,876,000	\$58,275,000
Induced Effects: Re-Spending of Labor Income	199	\$14,213,000	\$31,998,000
<i>Indirect and Induced Total</i>	500	\$41,089,000	\$90,273,000
Total Contribution	3,441	\$165,563,000	\$338,141,000

* Outsourced contracts for work at the MFA

Dollars are rounded to the nearest thousand: columns may not add due to rounding.

The full multiplier effect of purchases of goods and services from Boston-based suppliers and re-spending of labor income by workers accounts for more than \$90 million of sales (output) for City businesses. This supports 500 jobs and \$41 million in labor income (\$26.9 million indirect and \$14.2 million induced). The allocation of multiplier effects in terms of Museum operations (including construction expenditures and the SMFA) and off-site spending (including spending by visitors to the MFA, student spending, and guests at graduation) is:

- Museum Spending, including construction—194 jobs, \$16 million in labor income, and \$32 million in business sales
- Off-Site Visitor and Student Spending—306 jobs, \$25 million in labor income, and \$58 million in business sales

Table 2. Summary of the FY 2014 Economic Contribution of the MFA in Massachusetts (including Boston)

Impact Type	Employment	Labor Income	Output
Museum Operations, Including Retail, Food Service,* Cleaning,* Parking,* and Construction Wages	1,128	\$52,822,000	\$125,981,000
School of the Museum of Fine Arts	217	\$11,834,000	
Off-Site Spending by Visitors to the Museum and by Students	1,464	\$54,381,000	\$114,889,000
<i>Direct Total</i>	2,809	\$119,037,000	\$240,870,000
Indirect Effects: Suppliers of Goods and Services	546	\$39,282,000	\$93,595,000
Induced Effects: Re-Spending of Labor Income	517	\$29,205,000	\$74,566,000
<i>Indirect and Induced Total</i>	1,063	\$68,487,000	\$168,161,000
Total Contribution	3,872	\$187,524,000	\$409,031,000

* Outsourced contracts for work at the MFA

Dollars are rounded to the nearest thousand: columns may not add due to rounding.

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The full multiplier effect of purchases of goods and services from suppliers throughout Massachusetts and the re-spending of labor income by workers throughout the state accounts for more than \$168 million of sales (output) for state businesses, which support 1,063 jobs and \$68 million in labor income (\$39.3 million indirect and \$29.2 million induced). The allocation across Massachusetts of multiplier effects in terms of Museum operations (including construction expenditures and the SMFA) and off-site spending (including spending by visitors to the MFA, student spending, and guests at graduation) is:

- Museum Spending, including construction—690 jobs, \$41 million in labor income, and \$101 million in business sales
- Off-Site Visitor and Student Spending—372 jobs, \$27 million in labor income, and \$67 million in business sales

Table 1 and Table 2 describe the FY 2014 economic impacts of the MFA in economic terms, by direct effects (economic activities at the Museum, including construction and spending outside of the MFA by visitors and students), and secondly by multiplier effects, which include sales by suppliers to support direct effects and re-spending of workers' wages for household purchases. FY 2014 economic impacts of the MFA in Boston and Massachusetts can also be summarized by three main drivers of expenditure: Museum operations, visitor and student spending, and construction. Sections below in this Technical Report describe the impacts of visitor and student spending, as well as those of construction activities. Museum operations during FY 2014 generated a total of \$143,465,000 in spending in Boston and \$210,565,000 across Massachusetts, not including construction impacts and impacts of visitor and student spending. The calculations are summarized in Table 3, below.

Table 3. Total Museum-Generated Output in FY 2014 by Main Drivers of Expenditures

	Reference in Technical Report	Direct & Multiplier Effects	
		Boston	Massachusetts
Total Output	Table 1 for Boston and Table 2 for MA	\$338,141,000	\$409,031,000
Less			
Construction	Table 25 for Boston and Table 27 for MA	\$15,063,000	\$16,261,000
Visitor and Student Spending	Sum of Tables 16 and 20 for Boston, and Tables 17 and 21 for MA	\$179,613,000	\$182,204,000
Museum Operations (including outsourced and temporary staff)		\$143,465,000	\$210,565,000

Dollars are rounded to the nearest thousand; columns may not add due to rounding.

The total Boston and Massachusetts FY 2014 output shown in Table 1 and Table 2 represents the total economic activity of the MFA in the City and Commonwealth and accounts for the direct labor income and supplier purchases paid by the Museum, construction outlays, visitor spending impact, and further indirect and induced multiplier impacts. Output represents the gross level of activities that flow from the MFA and does not account for where employees live or the locations of vendors who fill orders placed by the Museum, and is shown by component in Table 4. Location of vendors and places of residence of workers are discussed in subsequent sections of this report. In addition, the economic role and impacts of MFA operations, visitor and student spending, and construction impacts are found below in chapters two, three, and five.

Table 4. Components of MFA Output in Boston and Massachusetts

	Boston	Massachusetts
Labor income		
Museum & Retail	\$42,478,000	\$42,478,000
SMFA	\$11,834,000	\$11,834,000
Outsourced Services	\$6,580,000	\$6,580,000
Construction in FY 2014	\$3,765,000	\$3,765,000
<i>Subtotal Labor income</i>	<i>\$64,657,000</i>	<i>\$64,657,000</i>
Vendor Purchases by MFA	\$61,324,000	\$61,324,000
Direct Visitor Spending	\$121,887,000	\$114,889,000
Other Indirect Effects*	\$58,275,000	\$93,595,000
Induced Effects	\$31,998,000	\$74,566,000
TOTALS	\$338,141,000	\$409,031,000

*Includes rounds of indirect sales by vendors in Boston and Massachusetts who fill orders from first-round vendors, all indirect sales from construction outlays, and visitor spending made in the City and Commonwealth.

Dollars are rounded to the nearest thousand; columns and rows may not add due to rounding.

Sources: Data provided by MFA. Calculations for visitor spending and induced effects by Economic Development Research Group using the IMPLAN, LLC multiplier package.

Direct output, in regards to MFA operations, includes more than \$61 million expended by the MFA in FY 2014 for goods and services, including purchases of art. These purchases are made to vendors across the globe, but more than one-quarter of the value of vendor sales in support of Museum operations is made to suppliers located in Boston, and more than three-quarters are made throughout Massachusetts, including the City (see Table 5). These expenditures by the MFA represent the first round of indirect output in FY 2014.

Table 5. Purchases of Goods and Supplies by the MFA in FY 2014

Location of Vendors	Goods and Supplies for Operations	Art Purchases	Total
Boston	\$14,738,000	\$343,000	\$15,081,000
Rest of MA	\$24,903,000	\$574,000	\$25,477,000
TOTAL MA	\$39,641,000	\$917,000	\$40,558,000
Outside of MA	\$13,742,000	\$7,025,000	\$20,766,000
Total Purchases	\$53,383,000	\$7,941,000	\$61,324,000
<i>Percent Boston</i>	28%	4%	25%
<i>Percent Rest of MA</i>	47%	7%	42%
<i>Percent MA</i>	74%	12%	66%
<i>Percent Outside of MA</i>	26%	88%	34%

Dollars are rounded to the nearest thousand; columns and rows may not add due to rounding.

Source: Data provided by MFA.

Impacts from Taxes and Other Public Revenue

The economic activities generated by the MFA in FY 2014 also returned \$21.8 million in revenues to the City of Boston and the Commonwealth of Massachusetts from the state income tax, sales tax, hotel tax, meals tax, and payments made by the MFA to the City and the Commonwealth. The state hotel and meals taxes, in addition to the portion that goes to the state, include a local portion that provides revenue to Boston (including a hotel fee that is dedicated to the Boston Convention Center). The public revenue analysis is detailed in Chapter 4 of this report. Overall, FY 2014 revenues accrued to the Commonwealth and City are estimated to be \$18.1 million to Massachusetts and \$3.7 million to Boston.

Impacts from Ten Years of Capital Investments

This report also includes the annual economic impacts in Boston and Massachusetts of the MFA's capital investment program, from FY 2005 through FY 2014. Over these ten years, the MFA has invested almost \$500 million in constant 2014 dollars (the same nominal annual capital outlay—not adjusted for inflation—is almost \$450 million).

Major Sources Used in This Study

The discussion of the total economic contribution of the MFA to Boston and Massachusetts is based on the following sources and methods:

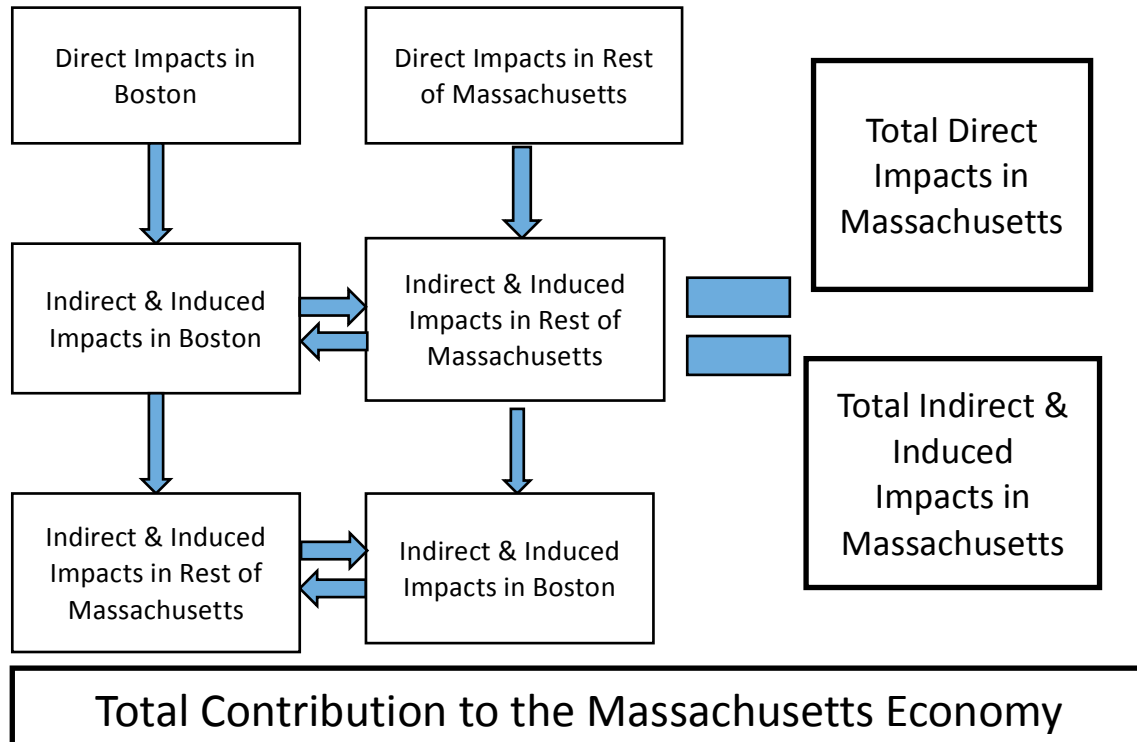
1. The MFA provided data that included employment, employee wages, and revenues of the MFA in FY 2014. Employment, wages, and benefits were provided by job category and by place of worker's residence. The MFA also provided the complete list of goods and services the Museum purchased by type, vendor, category, and location. Lastly, MFA staff provided annual construction expenditures and construction contracts by vendor, type of vendor, and location for a ten-year period.
2. A survey of 12,000 visitors collected and provided by the MFA identified the visitors who came to Boston in order to visit the MFA.² Given the breadth of the survey, respondents could be divided into Boston residents, Massachusetts residents (outside of Boston), domestic visitors from states outside of Massachusetts, and international visitors. Boston residents were not counted for the purposes of visitor spending because they do not bring additional dollars to the City of Boston. Similarly, the spending impacts of visitors from elsewhere in Massachusetts were counted toward only city impacts (but not in terms of statewide impacts) because, while they add to the Boston economy, they do not bring additional dollars to Massachusetts. Other domestic and international visitors contribute both to the City and the Commonwealth.
3. The amounts of visitor spending were based on data supplied by the Greater Boston Convention and Visitors Bureau and Massachusetts Office of Travel and Tourism.
4. Econometric models for Boston and the rest of Massachusetts are based on the multi-regional input-output (MRIO) function of the IMPLAN Economic Model System.³ Direct impacts of the MFA and Boston-based suppliers were linked to the rest of Massachusetts to calculate the "spillover" to the rest of the Commonwealth. Similarly, suppliers in the rest of Massachusetts were linked to Suffolk County to estimate spillover from the rest of the Commonwealth to the City of Boston. The MRIO function of IMPLAN was used to derive multiplier effects, including

² Visitor Experience Survey.

³ Distributed by IMPLAN Group, LLC.

business orders to suppliers generated by the MFA, non-Museum businesses serving visitors to the MFA, and business sales generated by the spending of the additional workers' income on consumer purchases. IMPLAN was also used to estimate jobs and labor income that are derived from visitor spending, spending by SMFA students, and spending by SMFA visitors for graduation. The flows of direct effects and multiplier effects using the MRIO are illustrated in Figure 2, below.

Figure 2. Circulation of Direct, Indirect, and Induced Economic Effects of the MFA in Boston and the Rest of Massachusetts



The following sections provide detail to the economic analysis discussed above. **Chapter 2** provides a review of the operation of the MFA and its components. **Chapter 3** discusses spending in Boston and Massachusetts outside of the MFA that can be attributed to the MFA as a primary visitor attraction, spending by SMFA students, and spending by family and friends who attend SMFA's graduation. **Chapter 4** is an assessment of public revenues that accrue to the City of Boston and Commonwealth of Massachusetts due to the MFA. Finally, **Chapter 5** looks at the impact of the MFA's capital investment program over the past ten years (FY 2005–FY 2014).

Chapter 2. Ongoing Museum Operations

Unlike industries such as manufacturing, which generally require large amounts of equipment and materials to produce goods, museum operations are relatively labor intensive. Because daily operations at the MFA rely on large amounts of labor, a significant portion of the MFA’s total budget is spent on wages, salaries, and benefits.

The MFA, including its outsourced components and the Museum School (SMFA), directly provides more than 1,300 jobs in Massachusetts, which pay \$60.9 million in annual wages. Slightly more than three-quarters of the jobs are permanent, while 23 percent are temporary. More than 70 percent of permanent jobs at the MFA are full time and almost 30 percent are part time. If the temporary and outsourced workers are included, the MFA ranks as one of the largest private employers in the City of Boston.⁴

Table 6. Full-Time, Part-Time, and Temporary Employees by Category at the MFA and SMFA

	Full Time	Part Time	Permanent	Temporary	Total
Museum (including Retail)	461	139	600	227	827
Food Service*	126	79	205	0	205
Cleaning*	11	24	35	0	35
Parking*	5	24	29	0	29
Total Museum	603	266	869	227	1,096
SMFA	106	31	137	80	217
Total	709	297	1,006	307	1,313

* Outsourced services (not Museum staff)
Totals do not include construction workers.
Source: Data provided by MFA.

Employment of Boston Residents

Another way to look at MFA’s direct impacts on Boston and Massachusetts is to examine where Museum employees live (see Table 7). As one of the largest employers in Boston, the MFA is an important source of employment for many city residents. About 43 percent of all MFA staff (including outsourced services employees) are residents of the City of Boston and about 95 percent reside within the Commonwealth of Massachusetts.

⁴ The Largest Private Employers in the City of Boston: November 2013, <http://www.bostonredevelopmentauthority.org/getattachment/7ced9a9e-cb5c-4d6b-a840-2a0042f68ce5/>

Table 7. MFA Employment by Place of Residence

Division	Employment by Residence				
	Boston	Rest of MA	Total MA	Outside MA	TOTAL MFA
Museum (including Retail)	321	469	790	37	827
SMFA	76	117	193	24	217
Food Service*	123	72	195	10	205
Cleaning*	22	13	35	0	35
Parking*	23	5	28	1	29
TOTALS	565	676	1,241	72	1,313
Percent of Total	43%	52%	95%	5%	100%

* Outsourced services (not Museum staff)

Totals do not include construction workers.

Columns and rows may not add due to rounding.

Source: Data provided by MFA.

The geography of worker salaries is important, because MFA employees not only spend their wages in Boston before, during, and after the workday, but also in the communities in which they live. Table 8 shows the breakdown in earnings by place of residence and MFA function.

Table 8. MFA Payroll by Place of Residence

Division	Payroll By Residence				
	Boston	Rest of MA	Total MA	Outside MA	TOTAL MFA
Museum (including Retail)	\$15,454,000	\$26,156,000	\$41,610,000	\$868,000	\$42,478,000
SMFA	\$4,046,000	\$6,158,000	\$10,204,000	\$1,630,000	\$11,834,000
Food Service*	\$3,354,000	\$1,973,000	\$5,327,000	\$68,000	\$5,395,000
Cleaning*	\$425,000	\$394,000	\$819,000	\$0	\$819,000
Parking*	\$173,000	\$137,000	\$310,000	\$56,000	\$366,000
TOTALS	\$23,452,000	\$34,818,000	\$58,270,000	\$2,622,000	\$60,892,000
Percent of Total	39%	57%	96%	4%	100%

* Outsourced services (not Museum staff)

Totals do not include construction workers.

Columns and rows may not add due to rounding.

Source: Data provided by MFA.

Types of Employment

Museum operation is a complex undertaking. Of the 1,313 jobs at the Museum, 737 jobs are permanent staff at the MFA or SMFA, with 307 temporary jobs and 269 jobs at the MFA that are outsourced to other companies for food services, cleaning, and parking.

The permanent and temporary jobs are assigned to six major divisions and are further divided into 28 departments. The major divisions are: curatorial, external relations, financial, retail, the SMFA, and the director's office. Within the curatorial division, for example, are departments dedicated to curatorship,

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education, conservation, facilities and administration, communications, and visitor experience. Furthermore these top-level departments are themselves divided into different functional units. An example is “administration” within the curatorial division, which is divided into: curatorial administration, exhibitions and design, intellectual property, publications, documentary archives, and libraries and archives.

A summary of permanent Museum jobs by function is found in Table 9. Note that the functional categories have been consolidated for the purposes of this report.

Table 9. Assignment of Permanent Museum Staff by Function

	Full Time	Part Time	Total
Curatorial and Conservation	185	25	210
External Relations	57	2	59
Director’s Office	5	0	5
Facilities	37	0	37
Protective Services	68	84	152
Retail	23	14	37
Other Administration (Finance, IT, Human Resources)	57	1	58
Membership and Visitor Services	29	13	42
SMFA	106	31	137
Total Permanent Museum Staff	567	170	737

Source: Data provided by MFA.

Purchases of Goods and Services from Outside Suppliers

As shown in Table 5, the MFA spent more than \$61 million for goods and services during FY 2014, with more than \$40 million paid to Massachusetts vendors (including \$15 million to Boston-based vendors). These purchases reflect how the Museum is an economic stimulus for industries across the Commonwealth, including:

- Utilities (including electricity, water, sewage, and other systems)
- Landscaping services
- Maintenance and repair, as well as building materials, furniture, electronics, and equipment
- Professional services, which include legal services, accounting, and business support services
- Multiple technology-related services
- Printing and publishing
- Shipping services
- Health care
- Educational services
- Entertainment services

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As shown in Table 7 and Table 8, above, the day-to-day operation of the MFA supports 1,313 workers who earn almost \$61 million of labor income. These jobs include full time and part time workers, as well as employees who are permanent and temporary, but do not include capital investments made in FY 2014 or impacts associated with visitor or student spending. The day-to-day operation of the Museum generates \$117 million in direct output and a total contribution of \$143 million in Boston (Table 10) and \$211 million throughout Massachusetts (Table 11). The impacts of visitor and student spending and of construction are discussed in chapters three and five, respectively.

Table 10. Contribution of the Operation of the MFA to Boston's Economy

Type of Effect	Employment	Labor Income	Output
Direct Effects of MFA Operations	1,313	\$60,892,000	\$116,771,000
Indirect Effects—Supplier Sales	101	\$8,169,000	\$16,566,000
Induced Effects—Wage Re-Spending	61	\$4,591,000	\$10,128,000
Total	1,475	\$73,652,000	\$143,465,000

Does not include impacts of construction or visitor spending

Source: Modeling by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County and rest of Massachusetts.

Table 11. Contribution of the Operation of the MFA to the Massachusetts Economy

Type of Effect	Employment	Labor Income	Output
Direct Effects of MFA Operations	1,313	\$60,892,000	\$116,771,000
Indirect Effects—Supplier Sales	311	\$19,381,000	\$45,967,000
Induced Effects—Wage Re-Spending	341	\$18,186,000	\$47,827,000
Total	1,965	\$98,459,000	\$210,565,000

Does not include impacts of construction or visitor spending

Source: Modeling by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County and rest of Massachusetts.

Chapter 3. The Economic Impact of Visitors to the Museum and SMFA Students and Guests Attending Graduation

The purpose of this chapter is to examine the extent to which the MFA attracts visitors who spend money outside of the MFA in Boston (and, to a lesser extent, elsewhere in Massachusetts). During FY 2014, the MFA hosted more than 1.1 million visitors. The spending by these visitors supports jobs and wages in Boston’s and Massachusetts’ hospitality sectors.

These FY 2014 Museum visitors included organized community, school, and adult groups; individual free admissions in addition to paid general admissions; Museum members and affiliated groups; and people who come to the MFA to attend concerts, lectures, films, and special events. About 24 percent of the visitors in FY 2014 paid regular admissions and about 37 percent were members (or represented University Members or other University Member Groups). Another large group of MFA visitors are categorized as “free admissions.” These visitors, along with others who attend on free Wednesday nights, with school groups, and with adult groups, come to the Museum as part of special community outreach efforts. In addition, the Museum attracts many visitors through its special programming, most notably its films, lectures, and concerts that attracted almost 60,000 attendees in FY 2014.

Table 12. Profile of Museum Admissions in FY 2014

Classification of Visitor	Percent of Admissions
Members	37%
Paid Admissions	24%
Free Admissions	14%
Public Programming and Education	10%
Adult and School Groups	7%
Wednesday Evenings	5%
Other	3%
Total Attendance	100%

Source: Data provided by MFA.

From the perspective of economic impacts, Boston residents who visit the MFA and spend money at area establishments during the same trip do not add to the local economy because residents are not bringing new money into either Boston or Massachusetts. However, the MFA does generate an economic benefit to Boston from other Massachusetts residents who come to the city for the purpose of visiting the MFA, and to Massachusetts (as well as Boston) from visitors who come from out of state. Table 13 provides a visual explanation of which visitors contribute to either the economies of the City, the Commonwealth, or both.

In-state visitors to the MFA from outside of the City of Boston may dine outside the MFA or patronize non-Museum retail establishments. The Massachusetts residents, while bringing dollars to Boston and impacting the economy of the City, do not add to the economy of the Commonwealth since they are already residents and would spend their money elsewhere in Massachusetts either in, or close to, their cities, towns, or villages. However, out-of-state visitors, whether from elsewhere in the US or from international locations, contribute to both the Boston and Massachusetts economies by obtaining hotel

rooms (or other lodging), purchasing food, retail spending, using a variety of local transportation options, and by engaging in entertainment outside of the MFA during what are often multi-day stays in the Boston area.

Table 13. Economic Impacts of Visitor Spending by Visitor Origins

Visitor to the MFA from:	Visitors Deliver Economic Impacts to:	
	Boston	Massachusetts
Boston	No	No
Massachusetts, excluding Boston	Yes	No
US, excluding Massachusetts	Yes	Yes
International	Yes	Yes

Keeping these points in mind is important in order to estimate visitor spending because the first step is separating those Museum attendees who are likely not spending dollars outside of the MFA from visitors who may be spending dollars outside of the Museum. To be conservative in estimating the extent of visitor spending, it is assumed that visitors who are attending the MFA by means of group visits (including school, adult, and community groups; and university member groups, which are faculty-led visits of ten or more students) and university members (undergraduate students who receive free admission) are unlikely to spend money outside the Museum as part of their trips. In total, we assume from the onset that more than 235,000 Museum visitors do not patronize hospitality or retail businesses in the community during their visits. This leaves roughly 897,000 patrons who are likely to spend money outside of the Museum in addition to what they may spend in the MFA (of the total 1.1 million visitors to the Museum in FY 2014). These include general paid attendance visitors, individuals who were admitted for free,⁵ members, visitors on tourist passes, visitors who are asked to make donations, and others who attended concerts, films, lectures, and special events.

The MFA conducted a 12,000-person *Visitor Experience Survey* that identified respondents by place of residence and motivation for coming to the MFA. Data from this survey was used to further cull visitors whose spending outside the Museum can be attributed to their visit to the MFA.

The *Visitor Experience Survey* listed six motivations that led Museum guests to visit the MFA. For the purposes of this study, it is assumed that visitors drawn to the city specifically to visit the MFA answered that they sought to see a specific exhibition or attend a specific event. It was further assumed that other individuals who decided to visit the Museum while in the area were not drawn to visit Boston because of the MFA.

The survey questions did not directly ask visitors why they made their trips to Boston, and therefore respondents were not able to clearly state that their trips to Boston were made in order to visit the MFA. There are, however, two distinct reasons why the 2014 *Visitor Experience Survey* was used to identify Museum attendees counted in the visitor spending analysis. First, the FY 2014 *Visitor Experience Survey* is the best data available for FY 2014 for understanding why visitors were motivated to make their trips. Second, surveys of MFA visitors conducted in 1999 and 2000 identified the percent of visitors who were in Boston primarily to visit the Museum, and the analysis of the FY 2014 *Visitor Experience*

⁵ Free admissions include courtesy passes to employees of other museums, VIP passes, passes available through libraries, and others.

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Survey provided similar results regarding the percent of visitors from outside the City that were drawn to Boston to visit the MFA as the 1999–2000 surveys.

The findings of the *Visitor Experience Survey* were used to estimate the proportion of Museum attendees who were most likely drawn to Boston in order to visit the MFA. Using the *Visitor Experience Survey* and based on the full extrapolation to 897,000 visitors, an estimated 146,000 visitors were from Boston and did not add to the City’s economy. The remaining respondents are classified by their place of residence (i.e., Massachusetts other than Boston, other US states, and international). Then each classification of visitor is calculated by the extent that they were drawn to the MFA to see a specific exhibition and/or learn about a specific topic, or attend a specific program, lecture, course, concert, class, and/or film. As shown in Table 14, it is assumed that almost 448,000 attendees are likely to spend money outside of the Museum before and/or after their visit.

Table 14. Number of Visitors for Visitor Spending Calculation

Place of Residence	Pool of Potential Spenders	Estimated Visitors for Visitor Spending Analysis
Massachusetts Residents other than Boston	525,000	341,000
US Visitors Outside of Massachusetts	203,000	102,000
International	23,000	5,000
Boston Residents	146,000	N/A
Totals	897,000	448,000

Sources: Visitor Experience Survey and annual count of visitors, both provided by the MFA. Visitors by places of residence and totals are rounded to the nearest thousand. Calculations by Economic Development Research Group.

In the absence of a spending survey that is directly related to MFA visitors, the level of spending outside of the Museum by visitors is based on data collected by the Greater Boston Convention and Visitors Bureau and the Massachusetts Office of Travel and Tourism.⁶

Dividing total visitor spending by the number of visitors to produce average spending per visitor, it is estimated that Massachusetts visitors spend \$64 per day trip, domestic visitors from out-of-state spend \$389 per day trip, and international visitors spend \$411 per day trip. It is assumed that out-of-state (domestic) and international visitors visited the MFA as part of an overnight trip. Domestic visitors were assumed to have spent more on transportation (\$15 per day trip) than international visitors (\$7 per day trip), given their likelihood of driving to and having a car in Boston. These visitors were assumed to have spent about the same on lodging (\$160–165 per night), food, entertainment, and retail (\$214–239 per night).

Table 15 details calculated visitor spending levels and the impact of this spending on Boston and Massachusetts. The spending in the local economy represents about 40 percent of the 1.1 million visitors to the MFA in FY 2014 (448,000 of 1.13 million total visitors).

⁶ <http://www.massvacation.com/wp-content/uploads/2015/03/2014-annual-report1.pdf> and <http://www.massvacation.com/wp-content/uploads/2015/02/2013-annual-report.pdf> for person trips; <http://www.bostonusa.com/partner/press/statistics/> for average length of stay.

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Because some visitors likely spent dollars outside the City of Boston for hotels, food, and other items, visitor spending is allocated to Boston and the rest of Massachusetts using an 86:14 Boston to rest-of-Massachusetts ratio. This ratio is based on Boston’s share of the total number of hotel employees in Boston, Brookline, Cambridge, and Somerville combined (a proxy for Boston’s share of the tourism market).

As mentioned previously, these totals represent spending only by visitors coming to Boston (and Massachusetts) for the express purpose of visiting the MFA. As such, the draw of exhibitions and events at the MFA is responsible for almost \$114 million being added to the Boston economy—not including spending at the MFA itself.⁷ As only US tourists from out of state and international visitors add to the Massachusetts economy, \$107 million of visitor spending represents dollars brought into the Commonwealth as result of MFA attractions.

Table 15. MFA-Generated Visitor Spending in Boston and Massachusetts

Type of Visitors to the MFA	Total Visitor Spending in Boston	Total Visitor Spending in the Rest of Massachusetts	Total Visitor Spending in Massachusetts
Day Trips by Massachusetts Residents	\$22,000,000	—	—
Visits by Out of State US Tourists	\$71,425,000	\$11,724,000	\$83,149,000
Visits by International Tourists	\$20,415,000	\$3,351,000	\$23,766,000
Totals	\$113,940,000	\$15,075,000	\$106,915,000

Sources: <http://www.massvacation.com/wp-content/uploads/2015/03/2014-annual-report1.pdf> and <http://www.massvacation.com/wp-content/uploads/2015/02/2013-annual-report.pdf> for person trips; <http://www.bostonusa.com/partner/press/statistics/> for average length of stay. Calculations by Economic Development Research Group.

The final step to quantify the MFA’s business sales impact on the City was to estimate the impact of visitor spending in terms of resulting jobs and labor income, as well as total business activity in Massachusetts after multiplier activities were applied. The approximately \$114 million in visitor spending is estimated to have supported nearly 1,800 jobs in Boston’s economy—including jobs in hotels, other entertainment venues, non-Museum restaurants, local transportation (car rental, cabs, and mass transit), and retail establishments (excluding the MFA store). In FY 2014, these jobs generated an estimated \$80 million in wages and benefits to Boston workers. Overall, including indirect and induced multiplier effects in the City, a conservative view of off-site visitor spending indicates that over \$168 million of business sales (output) in the City are supported by the attraction of out-of-city visitors to the MFA.

⁷ There were no data available to differentiate where in metro Boston out-of-state (including international) visitors stayed and spent their tourist dollars. Out-of-Boston spending and rest-of-Massachusetts spending was assumed to be commensurate with the relationship of hotel employees in Suffolk and Middlesex counties (85.9 percent and 14.1 percent, respectively)

Table 16. Contribution of Visitor Spending to Boston’s Economy

Type of Effect	Employment	Labor Income	Output
Direct Visitor Spending	1,508	\$56,067,000	\$113,940,000
Indirect Effects—Supplier Sales	168	\$15,343,000	\$35,220,000
Induced Effects—Wage Re-Spending	119	\$8,316,000	\$18,895,000
Total	1,795	\$79,726,000	\$168,055,000

Sources: Visitor Experience Survey and annual count of visitors, both provided by the MFA. <http://www.massvacation.com/wp-content/uploads/2015/03/2014-annual-report1.pdf> and <http://www.massvacation.com/wp-content/uploads/2015/02/2013-annual-report.pdf> for person trips; <http://www.bostonusa.com/partner/press/statistics/> for average length of stay. Calculations by Economic Development Research Group. Modeling by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County and rest of Massachusetts.

Net impacts in Massachusetts are based on the roughly \$107 million that is new money to the Commonwealth, after excluding the \$22 million spent by non-Boston Massachusetts residents who traveled to the City of Boston to visit the MFA. As previously noted, it is assumed that these Massachusetts residents traveling to Boston do not spend money on hotel rooms or other entertainment and spend very lightly on transportation, retail, and dining outside the MFA. Therefore, in addition to the amount of spending, the different categories of spending between Massachusetts residents, out of state, and international visitors generate different configurations of multiplier impacts than based on spending by Massachusetts’ residents. Lastly, impacts of spending in Boston by non-Massachusetts residents yield multiplier effects throughout the Commonwealth, as well as in the City. Table 17 shows the net impacts to Massachusetts of the dollars that were brought into the Commonwealth by visitors whose trip was primarily motivated by the purpose of attending the MFA.

Table 17. Contribution of Visitor Spending to the Massachusetts Economy

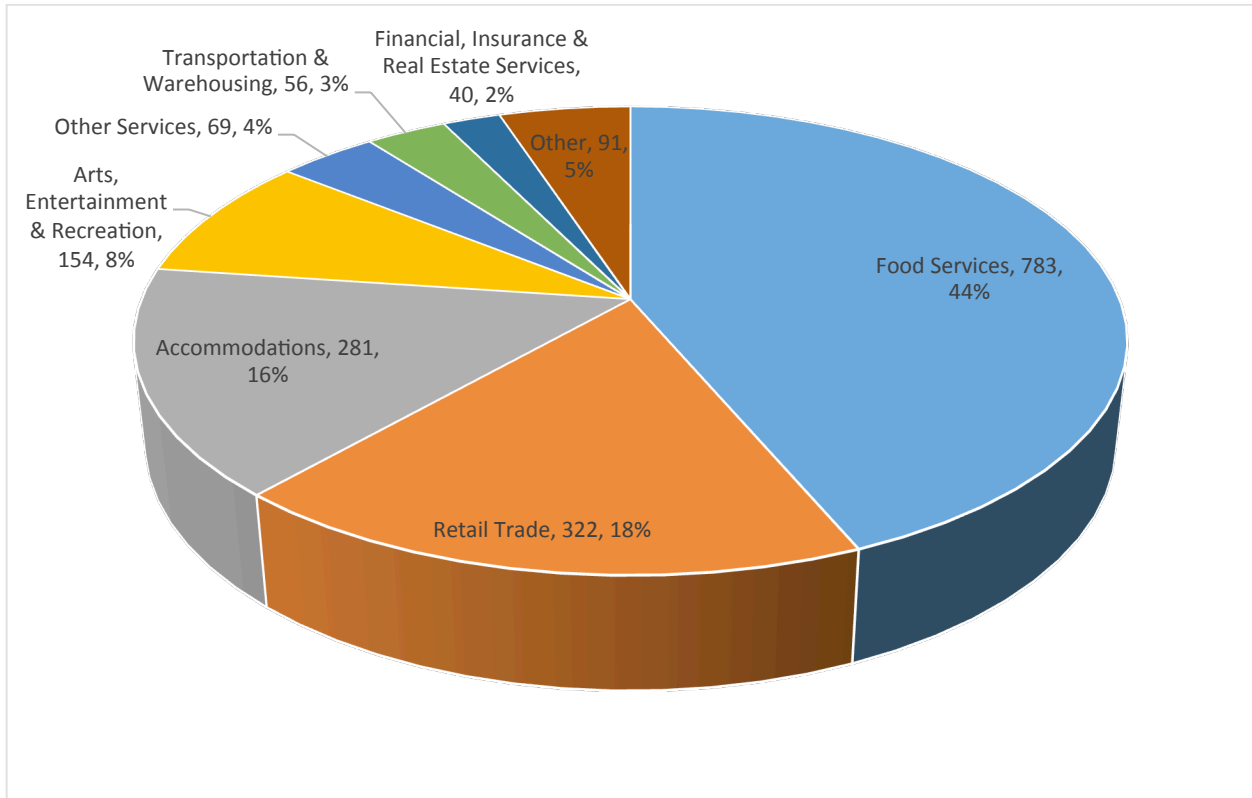
Type of Effect	Employment	Labor Income	Output
Direct Visitor Spending	1,375	\$50,619,000	\$106,915,000
Indirect Effects—Supplier Sales	196	\$16,042,000	\$39,686,000
Induced Effects—Wage Re-Spending	153	\$9,520,000	\$23,202,000
Total	1,724	\$76,182,000	\$169,803,000

Dollars are rounded to the nearest thousand; columns may not add due to rounding. Sources: Visitor Experience Survey and annual count of visitors, both provided by the MFA. <http://www.massvacation.com/wp-content/uploads/2015/03/2014-annual-report1.pdf> and <http://www.massvacation.com/wp-content/uploads/2015/02/2013-annual-report.pdf> for person trips; <http://www.bostonusa.com/partner/press/statistics/> for average length of stay. Calculations by Economic Development Research Group. Modeling by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County and rest of Massachusetts.

Categories of Visitor Spending in Boston

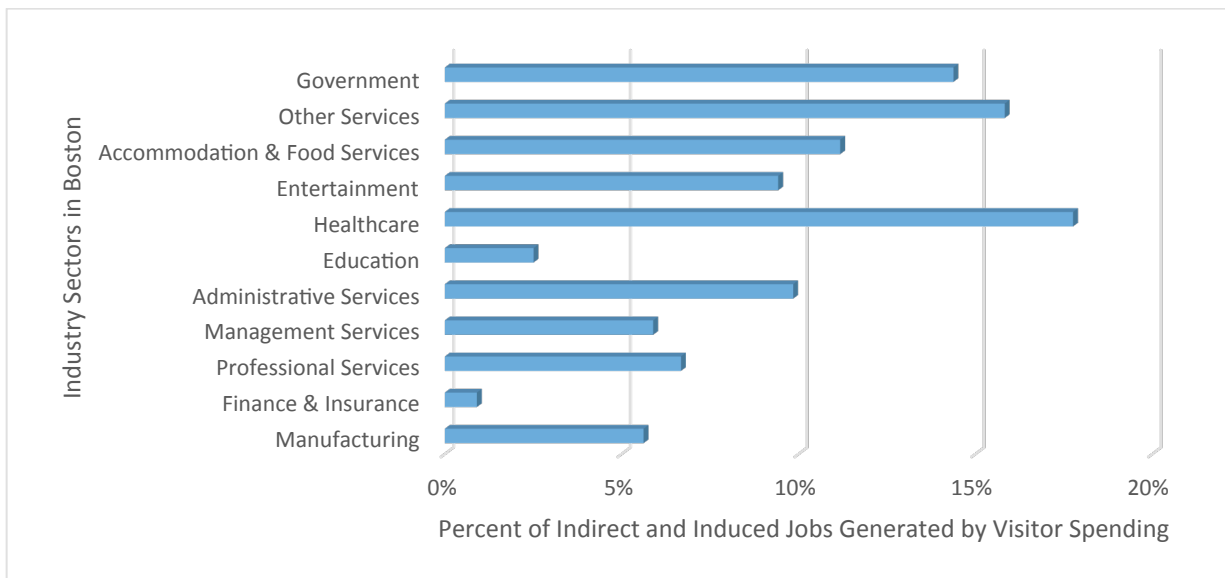
The jobs generated by direct and multiplier effects are most heavily observed in the hospitality sector where the direct impacts of spending are made (see Figure 3). Roughly 68 percent of total job impacts in Boston are in three hospitality sectors (accommodations; arts, entertainment, and recreation; and food services). As shown in Figure 4, Museum visitor spending supports jobs of many industries in Boston through direct and induced multiplier effects.

Figure 3. Jobs in Boston Supported by Spending of Museum Visitors from Direct, Indirect, and Induced Effects, by Number and Percent



Source: Calculations by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County.

Figure 4. Spread of Indirect and Induced Jobs among Industries in Boston



Source: Calculations by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County.

Economic Impacts of SMFA Students and Guests

Students attending the SMFA also generate economic impacts in Boston and throughout the Commonwealth through spending on rent, utilities, books and school supplies, food, health insurance, and transportation. In FY 2014 there were 719 students enrolled at SMFA, approximately 658 of whom lived off-campus. These off-campus students spent an estimated \$650 per month on housing, \$53 per month on utilities, and \$3,000 per academic year on food. These estimates are based on figures in the SMFA 2013 Housing Guide (rent), apartmentratings.com (utilities), and the SMFA Student Housing website (food). In each academic year, it is assumed that all 719 students spend nearly \$1,600 for health insurance, \$1,600 on books and supplies, and \$2,000 on both local (traveling around Boston) and interstate transportation (traveling home to visit family by out of state students). As shown in Table 18, estimated student spending amounted to over \$7.7 million in FY 2014.

Table 18. Estimated Student Spending in Boston by Category in FY 2014

Category	Spending
Rent	\$384,400
Utilities	\$35,000
Food	\$2,432,700
Health Insurance	\$1,148,000
Books & Supplies	\$1,150,400
Transportation	\$1,438,000
Other	\$1,150,000
Total	\$7,738,500

Source: Enrollment provided by MFA; calculations by Economic Development Research Group. Student spending includes purchases at Café Des Arts.

Guests of graduating students are associated with an additional \$209,000 in Boston spending and \$237,000 in total Massachusetts spending. An estimated 580 visitors attended the graduation of 220 students in May 2014. Ten percent of SMFA students are from Boston, 29 percent from Massachusetts but not Boston, 49 percent from other states, and 13 percent from out of the country. Based on the residence of students, it was assumed that 10 percent of the guests of students at graduation were from Boston (and thus assumed to add no net new spending), 29 percent of guests were from Massachusetts but not Boston, 49 percent of guests were from other states, and 13 percent of guests were international. During graduation weekend, these visitors spent an estimated \$209,000 in Boston and nearly \$28,000 in the rest of Massachusetts on transportation, lodging, restaurants, entertainment, and retail.

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Table 19. Estimated Graduation Spending in Boston and Massachusetts by Category in FY 2014

Category	Boston Spending	Rest of Massachusetts Spending	Total MA Spending
Transportation	\$8,000	\$1,000	\$9,000
Lodging	\$74,000	\$11,000	\$85,000
Restaurants	\$70,000	\$8,000	\$78,000
Entertainment	\$19,000	\$3,000	\$22,000
Retail	\$38,000	\$5,000	\$43,000
Total	\$209,000	\$28,000	\$237,000

Source: Attendance estimated by MFA; calculations by Economic Development Research Group. Dollars are rounded to the nearest thousand; columns may not add due to rounding.

The combined \$7.9 million in spending throughout the Boston economy (\$7.7 million from students and \$209,000 from their guests during graduation) is estimated to have supported more than 100 jobs in Boston’s restaurants, retail establishments, entertainment venues, and local transportation services (see Table 20). In FY 2014, these jobs generated an estimated \$5.3 million in wages and benefits to Boston workers and \$11.6 million of business sales (output).

As shown in Table 21, including the additional \$28,000 that guests had spent in the rest of Massachusetts during graduation, total impacts throughout the Commonwealth are estimated at 111 jobs, \$5.6 million in associated wages and benefits, and \$12.4 million in total output.

Table 20. Contribution of Student and Guest Spending to the Boston Economy

Type of Effect	Employment	Labor Income	Output
Direct Visitor Spending	88	\$3,751,000	\$7,947,000
Indirect Effects—Supplier Sales	10	\$968,000	\$2,198,000
Induced Effects—Wage Re-Spending	9	\$620,000	\$1,413,000
Total	107	\$5,339,000	\$11,558,000

Source: Modeling by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County and rest of Massachusetts.

Table 21. Contribution of Student and Guest Spending to the Massachusetts Economy

Type of Effect	Employment	Labor Income	Output
Direct Visitor Spending	88	\$3,762,000	\$7,973,000
Indirect Effects—Supplier Sales	13	\$1,152,000	\$2,782,000
Induced Effects—Wage Re-Spending	10	\$700,000	\$1,646,000
Total	111	\$5,614,000	\$12,401,000

Source: Modeling by Economic Development Research Group using IMPLAN, LLC Modeling Package for Suffolk County and rest of Massachusetts.

Note that this analysis is conservative as data related to family spending when attending open houses for prospective students, bringing new students to campus, picking up and dropping off students, and attending students’ art exhibitions were not available to use for this analysis.

Total Impacts in Massachusetts of MFA Visitor Spending, SMFA-Related Student and Guest Spending

In total, visitors to the MFA, SMFA students and graduation guests brought almost \$115 million into Massachusetts in FY 2014, exclusive of spending in Boston by other Massachusetts residents. This \$115 million supported multiple sectors in the Commonwealth's economy, including:

- Hotels and other Lodging—\$41.2 million
- Food and Beverage—\$37.4 million
- Retail—\$17.4 million
- Local Transportation—\$5.3 million
- Entertainment—\$12.1 million
- Other, including Off-Campus Housing, Utilities, and Health Insurance—\$1.6 million

In Boston, visitor and student spending includes dollars spent by residents of the Commonwealth who live outside the City, as well as visitors and students from out of state. Together, spending by Massachusetts residents (but not Bostonians) and out-of-state residents accounted for nearly \$122 million that was brought into the City's economy during FY 2014. The sectors supported by this spending include:

- Hotels and other Lodging—\$35.4 million
- Food and Beverage—\$47.8 million
- Retail—\$20 million
- Local Transportation—\$6.5 million
- Entertainment—\$10.5 million
- Other, including Off-Campus Housing, Utilities, and Health Insurance—\$1.6 million

Chapter 4. Tax Impacts

In FY 2014, the MFA generated almost \$22 million in public revenues for the City of Boston and Commonwealth of Massachusetts. The multiple revenue streams generated by the MFA are based on, in part, activities in the Museum, operation of the MFA as an ongoing non-profit corporation, and by spending of visitors and students on retail goods, meals, hotels, and other taxable items, as noted below.

- The MFA's employment of workers leads directly to payments of personal income taxes. The MFA's restaurant operator also pays corporate excise taxes. As a result of the MFA's purchases of goods and services from various vendors, as well as the re-spending of worker income, additional taxes are generated from retail sales and meal purchases, as well as from the Commonwealth's state income tax. For its overall operation, the Museum further provides the City of Boston "payments in lieu of tax (PILOT)," and pays a variety of fees to the City of Boston and Commonwealth of Massachusetts.
- Out-of-Museum spending by visitors who come to Boston specifically to go the MFA generates additional public revenues in general sales, meals, and hotel taxes. It also helps generate public revenues from the incomes of workers in the hospitality sector and employees of companies that supply the hospitality sector with goods and services.

The analysis below provides further explanation of the sources of public revenues generated by the MFA—tax revenues (income, sales, meals, and hotel taxes) and other payments.

State Income Tax Revenues. Wages are generated for workers associated with the MFA, at the Museum's suppliers that are in Massachusetts, at other Massachusetts businesses catering to the MFA's outside visitors and students, and other businesses in the city and state that serve visitors. These wages were taxed by the Commonwealth at a rate of 5.25 percent for 2013 earnings and 5.20 percent for 2014 earnings.⁸ Based on data from the Massachusetts Department of Revenue (DOR), which reports total state income tax revenue collections, and the U. S. Bureau of Economic Analysis (BEA), which reports total personal and labor income for Massachusetts, an effective rate of 4.44 percent on labor income is estimated, which accounts for deductions and exemptions.⁹ The labor income impact in Massachusetts generated by the MFA, including those from MFA operations, construction, and visitor and student spending, is estimated to be \$187.5 million (Table 2). Applying the 4.44 percent average effective tax rate indicates that the MFA generates \$8.3 million in annual state income tax revenues for the Commonwealth of Massachusetts.

State Sales Tax Revenues. General spending on retail merchandise and retail spending for meals and snacks (excluding grocery store spending) are subject to a 6.25 percent state sales tax. Sales tax revenues are generated from three streams of MFA-related sales. First, during FY 2014, the MFA

⁸ <http://taxfoundation.org/article/state-individual-income-tax-rates>

⁹ Calculated by dividing total state income tax revenues collected in 2013 by the total labor income in Massachusetts that year. The source for state tax revenue is the *Massachusetts Department of Revenue Annual Report FY13* (the most recent year available as of the writing of this report). The source for total state labor income is the US Bureau of Economic Analysis, Table SA4 Personal Income and Employment by Major Component for Massachusetts, Updated March 25, 2014.

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generated \$354,000 in sales tax at the Museum.¹⁰ Second, the employees of the MFA and workers outside the Museum whose income is generated by visitor and student spending purchase taxable items from their wages. Comparing state sales tax revenues to Massachusetts (from DOR) and personal income (from BEA) indicates that sales tax revenues equal 1.47 percent of labor income in the Commonwealth. Applying this percentage to the \$187.5 million in labor income generated by the MFA (shown in Table 2) indicates that about \$2.8 million of sales tax revenue is paid out of labor income earned due to the MFA. Third, the analysis of visitor and student spending includes a retail component of nearly \$17.4 million. Applying the state sales tax rate to this spending yields a further \$1.1 million. In total, MFA activity generated \$4.2 million in sales tax revenue for the Commonwealth in FY 2014.

State Meals Tax Revenues. Meals are subject to a 6.25 percent state tax and a 0.75 percent local option tax in Boston. Food purchases at the MFA generated more than \$548,000 (\$490,000 to the Commonwealth and \$59,000 to the City based on the state and local option tax rates).¹¹ In addition, our analysis of visitor and student spending shows that roughly \$47 million was spent in Boston restaurants and a net of \$36 million was added to the Massachusetts economy after deducting meals expenditures by visitors who live in Massachusetts.¹² In total, purchases of meals and drinks by visitors and students yield revenues of \$2.3 million to Massachusetts and \$355,000 to Boston.

State and Local Hotel Taxes. Hotel taxes contribute to the general funds of Massachusetts and Boston, and a portion of tax revenues from hotel occupancy is dedicated to the convention center in Boston. The state portion of hotel taxes is 5.7 percent, the City portion is 6.0 percent, and the convention center surcharge is 2.75 percent. Our analysis shows that hotels and lodging places receive \$41.2 million from out-of-state visitor spending and from out-of-state family and friends who attend graduation of students. Tax revenues from these hotel transactions totaled \$5.4 million to Boston and the Commonwealth in FY 2014, including \$2.3 million in state revenues, \$2.1 million in City revenues, and close to \$1 million that is dedicated to Boston's Convention Center.

Fees paid by the MFA. Because it is an operating non-profit corporation in Boston, the MFA does not pay property taxes; however, it does pay a series of licenses and fees to the City and Commonwealth that totaled \$597,000 in FY 2014. The MFA paid \$154,000 to Boston, including about \$82,000 in PILOT and other property taxes to Boston, and \$72,000 in payments for items such as fees for inspections by the City's Inspectional Service Department and Fire Department, and other permits. In addition, the MFA paid \$443,000 to Massachusetts agencies, primarily to the Department of Revenue, for corporate excise taxes (\$103,000), the Executive Office of Labor and Workforce Development/Unemployment Insurance program (\$153,000), and for MBTA passes for staff and students of the Museum and SMFA (\$182,000).

¹⁰ Source: Data provided by MFA.

¹¹ The Museum collected and paid \$548,000 in meals taxes in FY 2014. The \$490,000 and \$59,000 is the calculated division of the state portion of the tax (6.25 percent) and the remission to Boston of the local share of the tax (0.75 percent), respectively. Note that the Commonwealth collects the full 7 percent meals tax and remits the 0.75 percent local share to the City.

¹² Boston totals include Café Des Arts at the SMFA, which is not counted in Museum-reported food services. The 0.75 percent local option meal tax that accrues to Boston is based on the portion of food and beverage of visitor spending estimated to occur in the City. The net Massachusetts total for restaurant spending excludes state residents from outside of Boston who travel to the City in order to visit the Museum.

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It is noteworthy that the \$22 million might be a significant undercount of the ways that labor income and business sales generated by the Museum come back in the form of taxes and other public revenues. For example, municipal property taxes are not considered, even though part of the wages earned by MFA workers is paid in city property taxes to their communities either directly by homeowners or indirectly through rental payments. Secondly, this report does not estimate business taxes paid by suppliers of goods and services to the MFA or in the hospitality sector.

Chapter 5. Ten-Year Construction Impacts in the Boston and the Massachusetts Economy, FY 2005–FY 2014

In FY 2005 through FY 2014, the MFA cumulatively spent more than \$449 million for construction, which is equivalent to \$496 million in 2014 dollars. The \$496 million of MFA construction activity during this period is estimated to have supported:

- 2,086 total direct temporary construction-related jobs (each temporary job represents one year of full- or part-time labor)
- \$244 million (in 2014 dollars) in direct labor income

Over the ten-year period, the total impacts of capital investment by the MFA, after considering multiplier effects, include an estimated 3,397 temporary jobs, \$373 million in associated labor income, and \$748 million in total output (business sales). Impacts across Massachusetts (including Boston) include an estimated 5,018 temporary jobs, \$470 million in associated labor income and more than \$1 billion in output.¹³

Approach to Ten-Year Analysis of the Economic Impact of Construction at the MFA

Calculating the economic impacts of the MFA’s capital investment program required working interactively with MFA staff to identify the value and schedule of annual construction expenditures from FY 2005 through FY 2014. After expenditures were tallied, an economic input-output (I-O) analysis was conducted to estimate the economic impacts expected as a result of construction-related spending. For this analysis, the project team used a multi-region I-O model available through IMPLAN Group, LLC. Regions of impact included Boston and the rest of Massachusetts. Impacts are presented for Boston, the rest of Massachusetts, and the entire state. A more detailed review of the methodology follows.

Economic Model

Economic impacts are expressed as jobs, dollars of sales, and dollars of labor income. The “direct” dollars of sales are annual construction expenditures in Boston and the rest of Massachusetts. An economic *input-output analysis* (I-O) was conducted (using the product provided by IMPLAN Group, LLC) to estimate the resulting economic impacts from construction-related spending at the MFA.

The portion of the “direct effect” fulfilled by Boston or Massachusetts businesses (through supplier transactions) is considered the “indirect effect.” These supplier sales were provided by the MFA, broken out by year. The I-O model was used to calculate indirect employment and labor income that were supported by these supplier transactions, as well as the induced impacts from the indirect labor income earned by these workers.

The number of additional local jobs, as well as labor income, value added, and business sales supported through these ‘multiplier cycles’ reflects the health and diversity of industries in Boston and Massachusetts and their ability to meet construction contractors’ supply chain requirements and local household spending needs. While not everything a business needs or a household consumes is likely to

¹³ All dollars are in 2014 value.

be available 100 percent of the time in Boston (or even in Massachusetts), a diversified industry mix keeps dollars circulating longer locally instead of dollars immediately leaking from the Massachusetts economy.

FY 2014 Economic Impacts of MFA Construction Spending

Construction spending in FY 2014 is part of the economic contribution made by the MFA during that fiscal year to Boston and to Massachusetts. As displayed in Table 22 and Table 23, total capital investment made in FY 2014 was \$9 million, which, including multipliers, generated 63 temporary construction jobs in the City and 70 temporary jobs in the Commonwealth.

Table 22. FY 2014 Construction Impacts to the Boston Economy

Type of Effect	Employment	Labor Income	Output
Direct Effects	32	\$3,765,000	\$9,210,000
Indirect—Supplier Sales	22	\$2,396,000	\$4,291,000
Induced—Wage Re-Spending	10	\$686,000	\$1,562,000
Total	63	\$6,846,000	\$15,063,000

Dollars are rounded to the nearest thousand; columns and rows may not add due to rounding.

Table 23. FY 2014 Construction Impacts to the Massachusetts Economy

Type of Effect	Employment	Labor Income	Output
Direct Effects	32	\$3,765,000	\$9,210,000
Indirect—Supplier Sales	26	\$2,711,000	\$5,160,000
Induced—Wage Re-Spending	12	\$800,000	\$1,891,000
Total	70	\$7,275,000	\$16,261,000

Dollars are rounded to the nearest thousand; columns and rows may not add due to rounding.

Economic Impacts of MFA Construction Spending, FY 2005–FY 2014

As noted above, MFA construction spending in Massachusetts totaled \$496 million from FY 2005 through FY 2014, adjusted to 2014 dollars. Including indirect and induced multiplier impacts, total business sales generated by MFA construction are estimated at \$748 million in Boston and more than \$1 billion throughout Massachusetts, including Boston (in 2014 dollars). Based on this economic activity, an estimated 2,086 direct temporary construction-related jobs were generated. Additionally, another 1,311 (Boston) and 2,932 (statewide) temporary indirect and induced jobs were supported over the ten-year period. Overall, these jobs provided an estimated \$470 million in associated labor income.

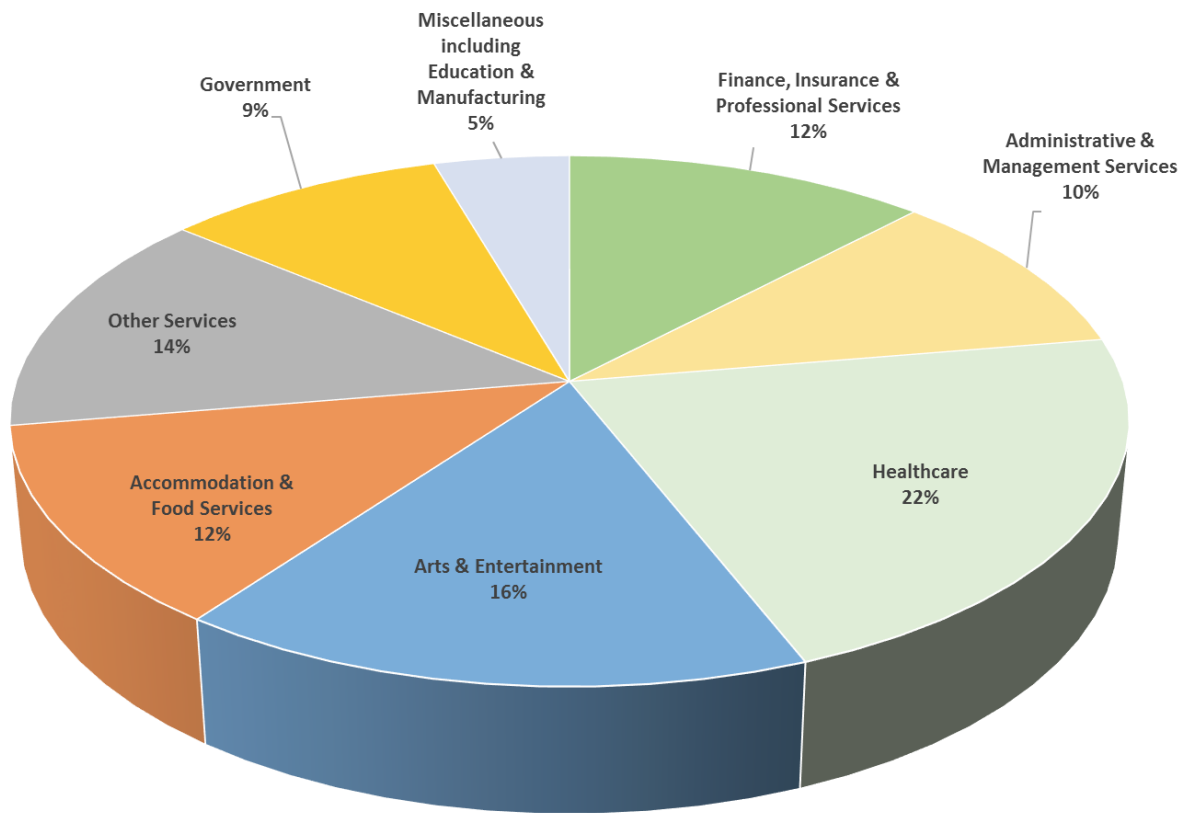
While all direct construction impacts occurred at the MFA, the indirect and induced spinoff effects occurred throughout the economies of Boston and the rest of Massachusetts. Figure 5 illustrates the temporary jobs supported by the spin-off effects in Boston. These effects include orders of business supplies and services by companies engaged in direct construction activities (indirect impacts) and spending of wages by workers of firms who benefit from both the direct and indirect impacts (induced

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impacts). Within Boston, the sectors that benefited most by these spin-offs include healthcare, arts and entertainment, accommodation and food services, professional services, and administrative services.

Impacts vary by year, based on the schedule of construction expenditures and the annual mix of expenditures. Table 24 illustrates this variation in terms of direct jobs and total jobs (including multiplier effects) in Boston. Table 25 presents detailed results of annual impacts, by year, for Boston; Table 26 shows the same for the rest of Massachusetts; and Table 27 shows the same for all of Massachusetts. Impacts should be interpreted by year; total impacts are a summation of labor years and dollar impacts estimated to have materialized.

Figure 5. Distribution of Spin-off Jobs by Sector in Boston



Source: Calculations by Economic Development Research Group using the IMPLAN modeling package.

Table 24. Total Jobs for MFA Construction by Year in Boston

Year	Direct Jobs	Spin-Off Jobs (indirect & induced)	Total Jobs
2005	116	83	199
2006	96	105	201
2007	170	195	365
2008	736	267	1,003
2009	554	327	881
2010	276	170	446
2011	41	64	105
2012	52	54	106
2013	13	15	28
2014	32	31	63
Total	2,086	1,311	3,397

Columns and rows may not add due to rounding

Sources: Direct spending by year provided by the MFA. Calculations by Economic Development Research Group using the IMPLAN modeling package.

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Table 25. Impacts of MFA Construction by Year and Total of All Years in Boston (dollars in 2014 value)

Impact Type	Year	Employment	Labor Income	Output
	2005			
Direct		116	\$13,653,000	\$28,746,000
Indirect & Induced		83	\$9,115,000	\$16,401,000
TOTAL		199	\$22,769,000	\$45,147,000
	2006			
Direct		96	\$11,275,000	\$23,961,000
Indirect & Induced		105	\$11,747,000	\$20,642,000
TOTAL		201	\$23,022,000	\$44,603,000
	2007			
Direct		170	\$19,851,000	\$38,948,000
Indirect & Induced		195	\$21,612,000	\$39,618,000
TOTAL		365	\$41,463,000	\$78,566,000
	2008			
Direct		736	\$86,095,000	\$175,441,000
Indirect & Induced		267	\$24,074,000	\$48,675,000
TOTAL		1,003	\$110,169,000	\$224,116,000
	2009			
Direct		554	\$64,836,000	\$128,681,000
Indirect & Induced		327	\$30,164,000	\$63,556,000
TOTAL		881	\$95,001,000	\$192,237,000
	2010			
Direct		276	\$32,279,000	\$61,333,000
Indirect & Induced		170	\$15,475,000	\$32,015,000
TOTAL		446	\$47,753,000	\$93,348,000
	2011			
Direct		41	\$4,814,000	\$10,656,000
Indirect & Induced		64	\$6,875,000	\$13,149,000
TOTAL		105	\$11,689,000	\$23,805,000
	2012			
Direct		52	\$6,093,000	\$14,057,000
Indirect & Induced		54	\$5,387,000	\$9,184,000
TOTAL		106	\$11,480,000	\$23,241,000
	2013			
Direct		13	\$1,512,000	\$5,199,000
Indirect & Induced		15	\$1,371,000	\$2,769,000
TOTAL		28	\$2,883,000	\$7,968,000
	2014			
Direct		32	\$3,765,000	\$9,210,000
Indirect & Induced		31	\$3,081,000	\$5,853,000
TOTAL		63	\$6,846,000	\$15,063,000
TOTAL (2005–2014)				
Direct		2,086	\$244,174,000	\$496,232,000
Indirect & Induced		1,311	\$128,902,000	\$251,862,000
TOTAL		3,397	\$373,076,000	\$748,094,000

Numbers may not add due to rounding.

Sources: Direct spending by year provided by the MFA. Calculations by Economic Development Research Group using the IMPLAN modeling package.

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Table 26. Impacts of MFA Construction by Year and Total of All Years in the Rest of Massachusetts (dollars in 2014 value)

Impact Type	Year	Employment	Labor Income	Output
	2005			
Direct		0	\$0	\$0
Indirect & Induced		50	\$3,047,000	\$7,615,000
TOTAL		50	\$3,047,000	\$7,615,000
	2006			
Direct		0	\$0	\$0
Indirect & Induced		42	\$2,769,000	\$6,658,000
TOTAL		42	\$2,769,000	\$6,658,000
	2007			
Direct		0	\$0	\$0
Indirect & Induced		136	\$8,210,000	\$23,044,000
TOTAL		136	\$8,210,000	\$23,044,000
	2008			
Direct		0	\$0	\$0
Indirect & Induced		415	\$25,031,000	\$68,751,000
TOTAL		415	\$25,031,000	\$68,751,000
	2009			
Direct		0	\$0	\$0
Indirect & Induced		589	\$35,070,000	\$98,856,000
TOTAL		589	\$35,070,000	\$98,856,000
	2010			
Direct		0	\$0	\$0
Indirect & Induced		296	\$17,207,000	\$48,676,000
TOTAL		296	\$17,207,000	\$48,676,000
	2011			
Direct		0	\$0	\$0
Indirect & Induced		56	\$3,433,000	\$9,171,000
TOTAL		56	\$3,433,000	\$9,171,000
	2012			
Direct		0	\$0	\$0
Indirect & Induced		23	\$1,386,000	\$3,757,000
TOTAL		23	\$1,386,000	\$3,757,000
	2013			
Direct		0	\$0	\$0
Indirect & Induced		8	\$499,000	\$1,335,000
TOTAL		8	\$499,000	\$1,335,000
	2014			
Direct		0	\$0	\$0
Indirect & Induced		6	\$429,000	\$1,197,000
TOTAL		6	\$429,000	\$1,197,000
TOTAL (2005–2014)				
Direct		0	\$0	\$0
Indirect & Induced		1,621	\$97,081,000	\$269,060,000
TOTAL		1,621	\$97,081,000	\$269,060,000

Numbers may not add due to rounding.

Sources: Direct spending by year provided by the MFA. Calculations by Economic Development Research Group using the IMPLAN modeling package.

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Table 27. Impacts of MFA Construction by Year and Total of All Years in All Massachusetts (dollars in 2014 value)

Impact Type	Year	Employment	Labor Income	Output
	2005			
Direct		116	\$13,653,000	\$28,746,000
Indirect & Induced		133	\$12,162,000	\$24,016,000
TOTAL		249	\$25,816,000	\$52,762,000
	2006			
Direct		96	\$11,275,000	\$23,961,000
Indirect & Induced		147	\$14,516,000	\$27,300,000
TOTAL		243	\$25,791,000	\$51,261,000
	2007			
Direct		170	\$19,851,000	\$38,948,000
Indirect & Induced		331	\$29,822,000	\$62,662,000
TOTAL		501	\$49,673,000	\$101,610,000
	2008			
Direct		736	\$86,095,000	\$175,441,000
Indirect & Induced		682	\$49,105,000	\$117,426,000
TOTAL		1,418	\$135,200,000	\$292,867,000
	2009			
Direct		554	\$64,836,000	\$128,681,000
Indirect & Induced		916	\$65,234,000	\$162,412,000
TOTAL		1,470	\$130,071,000	\$291,093,000
	2010			
Direct		276	\$32,279,000	\$61,333,000
Indirect & Induced		466	\$32,682,000	\$80,691,000
TOTAL		742	\$64,960,000	\$142,024,000
	2011			
Direct		41	\$4,814,000	\$10,656,000
Indirect & Induced		120	\$10,308,000	\$22,320,000
TOTAL		161	\$15,122,000	\$32,976,000
	2012			
Direct		52	\$6,093,000	\$14,057,000
Indirect & Induced		77	\$6,773,000	\$12,941,000
TOTAL		129	\$12,866,000	\$26,998,000
	2013			
Direct		13	\$1,512,000	\$5,199,000
Indirect & Induced		23	\$1,870,000	\$4,104,000
TOTAL		36	\$3,382,000	\$9,303,000
	2014			
Direct		32	\$3,765,000	\$9,210,000
Indirect & Induced		38	\$3,510,000	\$7,050,000
TOTAL		70	\$7,275,000	\$16,261,000
	TOTAL (2005–2014)			
Direct		2,086	\$244,174,000	\$496,232,000
Indirect & Induced		2,932	\$225,982,000	\$520,922,000
TOTAL		5,018	\$470,156,000	\$1,017,154,000

Numbers may not add due to rounding.

Sources: Direct spending by year provided by the MFA. Calculations by Economic Development Research Group using the IMPLAN modeling package.