



**BOSTON
UNIVERSITY**

The Economic and Community Impacts of Boston University

Fiscal Year 2015



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Boston University Economic Impact Study, FY15

Executive Summary

Boston University (BU) is a private, world-renowned research institution located in Boston, Massachusetts. As a leader in higher education, the University attracts students from around the world to pursue degrees from an expansive choice of offered programs. The University also provides faculty and students the opportunity to pursue pioneering research and work while collaborating with others in their field. As a result of its attraction power as well as the top-tier educational and research programming, Boston University generates notable impacts to the region and state.



Economic Impacts:

As a result of expenditures on goods and services by BU, its faculty, staff, students, and visitors, the overall economic impact of Boston University operations on the Commonwealth of Massachusetts in FY15 was \$2.8 billion (\$1.2 billion in direct impact and \$1.6 billion in indirect and induced impact).

Employment Impacts:

Boston University supports 28,979 jobs within the Commonwealth of Massachusetts. These jobs (both full-time and part-time) include not only direct employment by the university (17,890 jobs), but also indirect and induced jobs (11,089 jobs) created as a result of spending throughout the state by the university, employees, students, families, and visitors.

Government Revenue Impacts:

State and local government revenues attributable to the presence of Boston University totaled more than \$142.5 million in FY15. Through its local spending, as well as direct and indirect support of jobs, the presence of the university stabilizes and strengthens the local and statewide tax base.

Community Impacts:

BU employees and students also generate community impacts on their own time outside of the workday. These include personal financial donations and volunteer hours spent in the community. In FY15, it is estimated that faculty, staff, and students provided a community impact of \$70.8 million to the Commonwealth.

Research activity Impacts:

In FY15, the economic impact of research conducted by BU faculty, staff, and students reached \$382.7 million. The employment impact of the innovative and exciting research going on at BU supported 6,972 jobs throughout the state. Considering the research component of the university on its own, an additional \$19.5 million was generated in state and local government revenue attributed solely to the research activities of the university.

Alumni Impacts:

In academic year 2014-2015, Boston University awarded a total of 9,459 degrees (5,261 undergraduate and 4,198 graduate and advanced). Many of these students remain in the state after graduating and continue to generate impact to the state through increased earning power. For the 2014-15 graduating class, a total of \$44.8 million was generated in the state's economy due to the graduates receiving their higher education degrees from BU and remaining in the state.

About Tripp Umbach

Founded in 1990, Tripp Umbach is a nationally recognized consulting firm that provides comprehensive services ranging from research and strategic planning to economic impact analyses for medical schools, hospitals, non-profit organizations, communities, and corporations throughout the world. Tripp Umbach has completed more than 150 economic impact studies over the past 25 years for clients in North America such as The Association for American Medical Colleges (Washington, D.C, U.S.), Capital Health (Halifax, NS, Canada), Cleveland Clinic (Cleveland, OH, U.S.), GE Healthcare (Waukesha, WI, U.S.), Southlake Regional Hospital (Newmarket, ON, Canada), University of Alberta Faculty of Medicine & Dentistry (Edmonton, AB, Canada), University of Pittsburgh Medical Center (Pittsburgh, PA, U.S.), and University of Washington (Seattle, WA, U.S.). Outside of North America, Tripp Umbach has completed studies recently for Edith Cowan University (Perth, WA, Australia), GE Healthcare Saudi Arabia (Riyadh, Saudi Arabia), and University of Adelaide (Adelaide, SA, Australia).

Tripp Umbach has completed thousands of assignments worldwide and provided the blueprint for its clients to leverage their assets and seize new opportunities.



www.TrippUmbach.com

About Boston University

Boston University (BU), a private, world-renowned research institution and a member of the Association of American Universities, is located in Boston, Massachusetts. As a leader in higher education, the University attracts students from around the world to pursue degrees from an expansive choice of offered programs. The University also provides faculty and students the opportunity to engage in pioneering research and work while collaborating with others in their field. As a result of its attraction power and its top-tier educational and research programming, Boston University generates notable impacts to the region and state.



www.bu.edu

Economic Impact Study Background

Boston University has made concerted efforts to assess and measure its economic impact in the past. To help the University to refine and update its methodology, Tripp Umbach was retained in the fall of 2015 to complete a comprehensive analysis of the overall economic and community impacts of the University. Founded in 1990, Tripp Umbach is a national leader in conducting economic impact analyses, completing more than 150 studies over the past 25 years. The impact analysis for BU was conducted to measure the economic, employment, and government revenue impacts of operations and research of Boston University within the City of Boston, the Town of Brookline, and throughout the Commonwealth of Massachusetts. The influence that BU has on the vitality of the economy in the region and state includes the following impacts:

- Economic impact of the institution
 - Business volume (capital expenditures, operational expenditures, salary data, and state and regional business volumes)
 - Visitors and tourism, students, alumni, and research
 - Out-of-state students on the state and regional economy
 - Out-of-state research funding including research commercialization, patents and licensing, business spinoffs, and the impact of BU's technology transfer efforts
- Direct and indirect employment
- Government revenue at the local and state levels
- University alumni on the economy (wage premiums, job creation, etc.)
- Faculty, staff, and student volunteerism and charitable giving
- Community and cultural impacts in the region

STUDY OVERVIEW

KEY IMPACT FINDINGS OF BOSTON UNIVERSITY REPORTED AT THE FOLLOWING GEOGRAPHIES:

- CITY OF BOSTON
- TOWN OF BROOKLINE
- COMMONWEALTH OF MASSACHUSETTS

IMPACT FINDINGS REPORTED FOR FISCAL YEAR 2015 (FY15)

Methodology Employed in the Economic Impact Study

This economic impact analysis measures the effect of direct and indirect/induced business volume and government revenue impacts for all of BU's operations throughout the City of Boston, the Town of Brookline, and the Commonwealth of Massachusetts. Boston University provided the following primary data used to conduct the analysis: capital expenditures,

operational expenditures, jobs, payroll and benefits, and taxes. The modeling system employed in the calculation of the impacts was IMPLAN.¹ The multipliers used in this study were derived from the IMPLAN software. Tripp Umbach's approach to economic impact analysis is conservative by way of utilizing the industry standard software, IMPLAN, to conduct the impact analysis as well as using conservative assumptions for individual spending patterns. Tripp Umbach bases assumptions of spending on federal per diem rates.

Economic impact begins when an organization spends money. Studies measuring economic impact capture the direct economic impact of an organization's spending, plus additional indirect and induced spending in the economy that results from direct spending. Visitor spending in the region is also a substantial component of the economic impact of an organization; visitors spend on retail, hotels/motels, restaurants, and other goods and services, all of which filter through the economy and support local jobs.

Total economic impact measures the dollars that are generated within the City of Boston, the Town of Brookline, and Massachusetts due to the presence of Boston University. This includes spending on goods and services with a variety of vendors; the spending of its faculty, staff, students, and visitors; and the business volume generated by businesses within the regions and the state that benefit from BU's spending. It is important to remember that not all dollars spent by a university remain in its home state. Dollars that go out of the state in the form of purchases to out-of-state vendors are not included in the university's economic impact on the state. Therefore, the economic impact values presented in this report include the direct and indirect/induced operational spending, capital spending, research spending, pay and benefits, visitor spending and student spending of BU.

Boston University faculty, staff, and students engage with the community on their own time and in their own personal ways throughout each year. These efforts come in the form of volunteer hours, financial donations, and other community engagements. In building the community impact model, Tripp Umbach utilized a conservative assumption of \$22.14 per hour to account for the value of volunteer services. This amount was calculated by the Point of Lights Foundation, an international nonprofit organization dedicated to engaging more people and resources in solving social problems through voluntary service. The community impact of activities described

¹ Minnesota IMPLAN Group Inc. (MIG) is the corporation that is responsible for the production of IMPLAN (IMpact analysis for PLANning) data and software. IMPLAN is a micro-computer-based, input-output modeling system. With IMPLAN, one can estimate input-output models of up to 528 sectors for any region consisting of one or more counties. IMPLAN includes procedures for generating multipliers and estimating impacts by applying final demand changes to the model.

in this report reflects an estimate of these personal hours and dollars donated as a result of Boston University.

Boston University's overall economic impact value of \$2.8 billion does **not** include the state and local government revenue impacts, alumni impacts, and the community and cultural impacts. These additional impacts are outlined within the report since they are generated as a result of BU's presence in the Commonwealth and the activities of its employees and students, but are not factored into the overall economic impact total.

Key economic impact findings presented within this report include the total (FY15)² impact of BU's operations on the economy and employment in the City of Boston, the Town of Brookline, and the Commonwealth of Massachusetts; as well as the tax revenue impact on state and local governments.

For further information on key impact terms and frequently asked questions related to economic impact analysis, please see Appendices A and B.

² Fiscal Year 2015 represents the period of time from July 1, 2014 to June 30, 2015.

Boston University – Key Impact Findings

Boston University (BU) is a private, world-renowned research institution located in Boston, Massachusetts. As a leader in higher education, the University attracts students from around the world to pursue degrees from an expansive choice of offered programs. The University also provides faculty and students the opportunity to engage in pioneering research and work while collaborating with others in their field.

As a result of its reputation and its top-tier educational and research programming, Boston University generates notable impacts to the region and state. Boston University representatives contacted Tripp Umbach, a leader in conducting economic impact analysis, to complete a university-wide impact analysis to quantify the economic, employment, government revenue and community impacts generated by the university to the region and the Commonwealth of Massachusetts.

Economic impact is generated by a variety of sources: direct spending by the university, its employees, and students to area organizations; indirect spending by means of dollars being re-spent by organizations in the area; and dollars spent in the area by visitors to faculty, staff, students, or events. As a result of these multiple inputs, the impacts of Boston University within the City of Boston, the Town of Brookline, and the Commonwealth of Massachusetts are substantial.

Economic Impact

The operations of Boston University directly or indirectly impact residents throughout the Commonwealth by means of organizational spending, employment opportunities, government revenue generated from spending, research activities, and visitor spending in the region. In FY15, the overall economic impact of Boston University on the Commonwealth of Massachusetts amounted to more than **\$2.8 billion annually**.

ECONOMIC IMPACTS OF BOSTON UNIVERSITY ON THE COMMONWEALTH OF MASSACHUSETTS



Direct: \$1.2 Billion



Indirect/Induced: \$1.6 Billion



Total: \$2.8 Billion

Source: Tripp Umbach, using IMPLAN results from data obtained through Boston University.

The University affects business volume in Massachusetts in three ways:

1. **Direct expenditures** for goods and services by the university, its faculty, staff, students, and visitors. This spending supports local businesses, which in turn employ local individuals to sell the goods and provide the services that university constituencies need.
2. **Indirect spending** within the Commonwealth of Massachusetts. The businesses that receive direct payments re-spend this money within the Commonwealth, thus creating the need for even more jobs.
3. **Induced spending** by households either directly employed by Boston University or its suppliers create a third tier of impact.

As a result of expenditures on goods and services by BU, its faculty, staff, students, and visitors, **the overall economic impact of Boston University operations on the Commonwealth of Massachusetts in FY15 was \$1.2 billion in direct impact and \$1.6 billion in indirect and induced impact.**

Employment Impact

Boston University supports **28,979 jobs** within the Commonwealth of Massachusetts. These jobs (both full-time and part-time) include not only direct employment by the university, but also indirect and induced jobs created by supply and equipment vendors, contractors and laborers for the construction and renovation of University facilities, and jobs created in the community at hotels, restaurants and retail stores in support of the university's workforce and its visitors.

EMPLOYMENT IMPACTS OF BOSTON UNIVERSITY ON THE COMMONWEALTH OF MASSACHUSETTS



Direct: 17,890 Jobs



Indirect/Induced: 11,089 Jobs



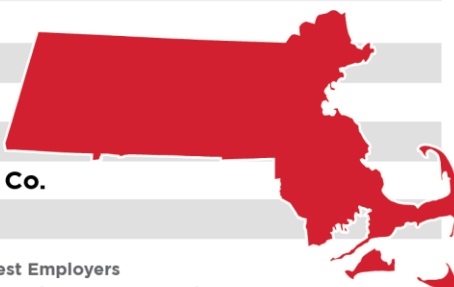
Total: 28,979 Jobs

Source: Tripp Umbach, using IMPLAN results from data obtained through Boston University.

LARGEST EMPLOYERS IN MASSACHUSETTS (2016)

1. Partners HealthCare System
2. University of Massachusetts
3. The Stop & Shop Supermarket Co., LLC
4. Harvard University
5. Steward Health Care System
6. Massachusetts Institute of Technology
7. UMass Memorial Health Care
8. Demoulas Super Markets Inc.
9. Lahey Health
10. Beth Israel Deaconess Medical Center
11. State Street Corp.
12. Boston Children's Hospital
13. Raytheon Co.
14. CVS Health
15. Boston University
16. Southcoast Health
17. Boston Medical Center
18. Atrius Health
19. Liberty Mutual Insurance Co.
20. Tufts Medical Center

BBJ December 2016 Book of Lists, Largest Employers
in MA Ranked by Total Employees Based in the Commonwealth



BU is ranked as the 15th largest employer in the Commonwealth.³ The 17,890 direct jobs at BU translate into spending that supports additional jobs supported across the region and state. The impact of Boston University is felt not only by its direct spending of dollars in the region, but also through its employment of individuals who remain in the state.

Boston University directly and indirectly employed 28,979 people during FY15. BU supports thousands of jobs statewide in virtually every sector of the economy, such as construction, business and professional services,

restaurants and hotels, information technology, security, and temporary employment companies. These indirect/induced jobs (11,089 jobs) support the more than 17,890 jobs held by Massachusetts residents directly employed by the university.

State and Local Government Revenue Impact

It is a common misperception that non-profit universities do not generate tax revenue. However, state and local government revenues attributable to the presence of Boston University totaled more than **\$142.5 million** in FY15. State and local government revenue is generated by a series of avenues that include: BU spending, employee spending, student spending, visitor spending, and supplier spending (when BU purchases goods and services from suppliers). Therefore, the following table outlines the indirect taxes generated as a result of the spending of BU and its employees, students, visitors, and suppliers.⁴ Through its local spending, as well as direct and

³ Boston Business Journal: Massachusetts' Largest Employers;
<http://www.bizjournals.com/boston/news/2016/07/08/the-list-health-care-higher-ed-dominate-bay-state.html>

⁴ Direct payments by Boston University to state and/or local governments, such as property taxes and payments in lieu of taxes, are not included in the figures on this table. The figures on this table represent indirect taxes only as calculated using IMPLAN.

indirect support of jobs, the presence of the university stabilizes and strengthens the local and statewide tax base. Boston University is an integral part of the state's economy – generating revenue, jobs, and spending.

BOSTON UNIVERSITY STATE AND LOCAL GOVERNMENT REVENUE IMPACT, 2015

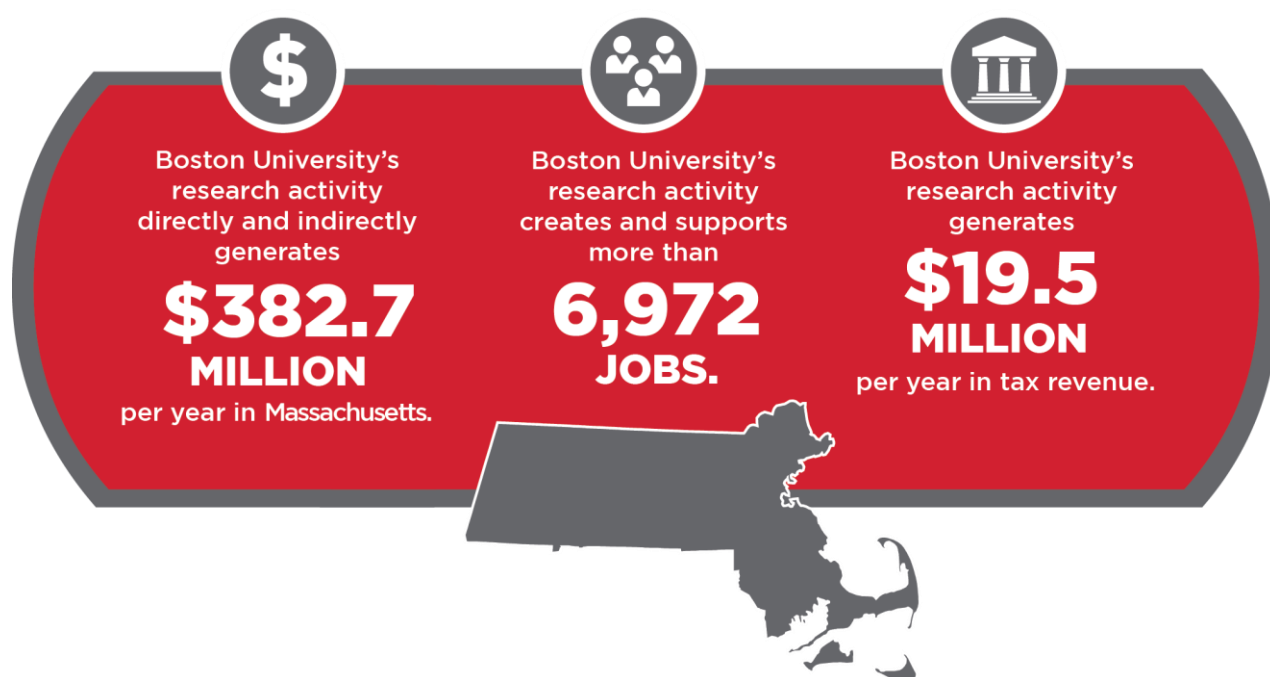
Description	Employee Compensation	Tax on Products and Imports	Households	Corporations
Dividends				\$306,596
Social Ins Tax- Employee Contribution	\$856,253			
Social Ins Tax- Employer Contribution	\$1,672,369			
Indirect Bus Tax: Sales Tax		\$29,956,389		
Indirect Bus Tax: Property Tax		\$49,796,472		
Indirect Bus Tax: Motor Vehicle Lic		\$646,757		
Indirect Bus Tax: Severance Tax				
Indirect Bus Tax: Other Taxes		\$3,886,513		
Indirect Bus Tax: S/L NonTaxes		\$94,677		
Corporate Profits Tax				\$7,307,464
Personal Tax: Income Tax			\$42,678,208	
Personal Tax: NonTaxes (Fines- Fees)			\$3,450,723	
Personal Tax: Motor Vehicle License			\$1,005,865	
Personal Tax: Property Taxes			\$734,964	
Personal Tax: Other Tax (Fish/Hunt)			\$119,139	
TOTAL STATE AND LOCAL TAX	\$2,528,622	\$84,380,809	\$47,988,899	\$7,614,060
TOTAL: \$142,512,390				

Source: Tripp Umbach, using IMPLAN results from data obtained through Boston University.

Leader in Global Research

As a member of the Association of American Universities, Boston University is on the leading edge of innovation, scholarship, and solutions that contribute to the nation's economy, security, and well-being.⁵ In FY15, the University was awarded \$326.5 million in research grants.⁶ Over the years, as a whole, discoveries made at Boston University have led to over 200 companies being developed that are now providing goods and services across the country.

As a result of research activity and spending by Boston University, there are economic, employment, and government revenue impacts generated in the region and state that would otherwise not be present if not for the significant research activity of the university. In FY15, the economic impact of research conducted by BU faculty, staff, and students reached **\$382.7 million**. The employment impact of the innovative and exciting research going on at BU supported **6,972 jobs** throughout the state. Considering the research component of the university on its own, an additional **\$19.5 million** was generated in state and local government revenue attributed solely to the research activities of the university.



⁵ The Association of American Universities (AAU) is a nonprofit 501(c)(3) organization that comprises 62 leading public and private research universities in the United States and Canada. Founded in 1900 to advance the international standing of U.S. research universities, AAU today focuses on issues that are important to research-intensive universities, such as funding for research, research policy issues, and graduate and undergraduate education; <https://www.aau.edu/about/default.aspx?id=58>

⁶ Fast Facts and Figures; <http://www.bu.edu/research/our-research/facts-figures/>

Distinguished Workforce and Alumni

Boston University is a world-renowned institution that contributes a significant amount to the advancement of society. Graduates from BU work in numerous countries around the world, which allows the University's reach to be felt on a global scale. BU alumni play a major role in both the domestic and international economies. By educating the next generation of highly-educated, global citizens, the University is shaping a skilled workforce that will transform and lead an emerging global economy.

BU Enriches the Current and Future Workforce

On average, BU confers approximately 9,500 degrees each year for undergraduate and graduate students, which positions the University to provide quality education to the next generation of leaders. By educating students, BU adds to the talent pool of human capital throughout the world. A degree from Boston University increases a graduate's value, productivity and earning potential in the job market.

Based on data on median annual earnings for university graduates, a bachelor's degree earned at a university increases a graduate's salary compared with a high school diploma by an average of about \$21,100 a year (from \$35,400 to \$56,500), while a Master's degree earned at a university increases a graduate's salary compared to a bachelor's degree by an average of about \$13,500 a year (from \$56,500 to \$70,000 for Master's, and \$91,000 for Doctoral).

SALARY COMPARISON BY DEGREE TYPE



High School Diploma: \$35,400

Bachelor's Degree: \$56,500

Master's Degree: \$70,000

Doctoral Degree: \$91,000

In academic year 2014-2015, Boston University awarded 5,261 undergraduate degrees. More than 30% of BU graduates remain in the Commonwealth to work after completing their degree. For the undergraduate class of 2015, the increased earning power in their first year of employment equates to the creation of **\$32.7 million in salary**. A similar analysis applied to the 4,198 graduate and advanced

Source: U.S. Department of Commerce, Bureau of Economic Analysis 2008

degrees awarded in academic year 2014-2015 equates to another **\$19.8 million** of value created for their first year of employment.

Therefore, on an annual basis, BU creates **\$52.5 million** of additional earning power for members of each graduating class. This impact is in addition to the impact of the university's operations.

SALARY IMPACTS OF BOSTON UNIVERSITY ON THE COMMONWEALTH OF MASSACHUSETTS



Undergraduate: \$32.7 Million



Graduate: \$19.8 Million



Total: \$52.5 Million

Alumni Continue to Generate Impact for the Region

Tripp Umbach analysis from data obtained through Boston University

The contributions of BU graduates are critically important to the economic vitality of the Commonwealth, across the United States and internationally. The university's alumni number more than 315,000 and reside in all 50 states, the District of Columbia, and virtually every country in the world. Given that more than 30% of the alumni of Boston University stay in Massachusetts after graduating, this equates to approximately 95,000 BU alumni living, working, and generating impact within the Commonwealth.

Over a lifetime of employment (40 years), BU undergraduate alumni, who remain in the Commonwealth, generate **\$37.1 billion** that would have otherwise been unachieved if these students did not pursue an undergraduate degree at BU. Likewise, over a lifetime of employment, BU graduate alumni that remain in the Commonwealth generate **\$19.5 billion**, that would have otherwise been unachieved if these students did not pursue a graduate degree.⁷

In total, all BU alumni currently living in the Commonwealth of Massachusetts generate an increased earning power of **\$56.6 billion over 40 years**. By teaching and retaining students within the Commonwealth of Massachusetts that utilize their education, graduates of BU are generating impacts every day.

⁷ Accounting for forgone income while attending the University, future periods of unemployment, time out of the labor force for child rearing, and other life events, total earning power over 40 years of employment was adjusted down by 80%.

Boston University: A Community Pillar

Boston University's students, faculty, and staff members are tightly woven into the fabric of the surrounding community. Community service combined with the University's extensive direct financial contributions – in support of initiatives from public works projects to scholarships for public school students – are part of the mission laid out by BU's third president, Lemuel Herbert Murlin (1911-24), who described Boston University as “in the heart of the city, in the service of the city.”

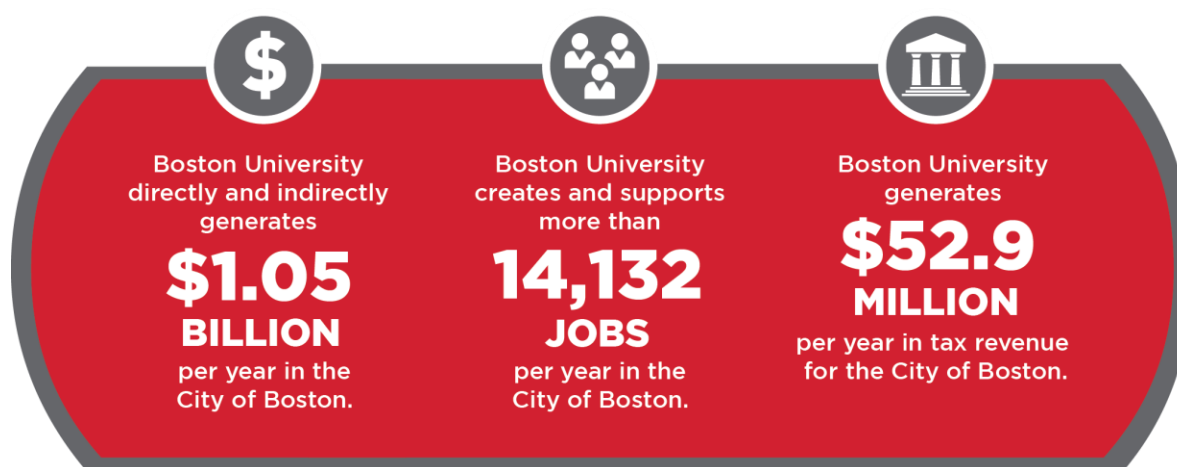
Beyond the millions of dollars that it contributes to the local economy, the BU community also provides hundreds of social programs and other benefits that serve Massachusetts residents and Bostonians. Detailed information about Boston University's community benefits and engagement can be found on the University's Government & Community Affairs website: <http://www.bu.edu/community/>.

In addition to these direct contributions and concrete programs, the value of personal financial donations and volunteer time contributed by BU students, faculty, and staff outside of the BU work- or school-day is also a measure of Boston University's community impact. **In FY15, it is estimated that faculty, staff, and students contributed \$70.8 million in this type of community impact,**⁸ in the form of donations to organizations such as the United Way or YMCA, as well as through volunteer activities such as academic tutoring for adolescents.

⁸ In building the community impact model, Tripp Umbach utilized a conservative assumption of \$22.14 per hour (an estimate provided by the Points of Light Foundation) to account for the value of volunteer services.

Boston University Impacts in the City of Boston

Boston University is located in the City of Boston, the largest city in the Commonwealth of Massachusetts with an approximate population of 617,500.⁹ Faculty, staff, students, and area residents working and traveling to Boston as a result of BU's presence generate economic, employment, and tax impacts within the City. Dollars spent in Boston translate to jobs in the area and across the state as those dollars are re-spent by residents or organizations.



Economic Impact

Boston University generates a substantial amount of value in economic spending in the City of Boston. In FY15, BU produced a total of **\$1.05 billion** in economic impact in the City of Boston, including the direct spending of the organization in the City (\$394.8 million), as well as the indirect spending that occurs in the City as a result of the university's presence (**\$661.2 million**).

Employment Impact

In FY15, BU directly employed a total of 8,724 individuals who reside in the City of Boston, ranking the University as the third largest private employer in Boston. By employing these individuals, BU increases

LARGEST PRIVATE EMPLOYERS IN BOSTON (2016)

1. Massachusetts General Hospital
2. Brigham and Women's Hospital
3. Boston University
4. Children's Hospital
5. State Street Bank & Trust Company
6. Beth Israel Deaconess Medical Center
7. Harvard University Graduate Schools
8. Northeastern University
9. Fidelity Investments
10. Boston Medical Center

Source: Bureau of Economic Analysis; American Hospital Association; National Center for Education Statistics; BPDA Research Division Analysis. Estimates reflect most recent available data.



⁹ Suburban Stats, Population Demographics for Boston, Massachusetts;
<https://suburbanstats.org/population/massachusetts/how-many-people-live-in-boston>

its footprint in the total employment impact that it brings to the area. For instance, these directly employed individuals spend dollars in the region and, therefore, support additional employment. In addition, university spending on capital projects, development and planning projects, and spending on suppliers all support additional jobs. After all of these avenues of employment are accounted for, BU supports a total of **14,132 jobs** in the City of Boston.

State and Local Government Revenue Impact

As a result of spending in the City of Boston, employees and supported individuals living in the Boston, and visitors coming to Boston, BU generates a significant amount of state and local tax revenue that goes directly back to the area. In FY15, BU operations in the City of Boston generated a total of **\$52.9 million** in direct and indirect/induced tax payments for the state and local governments.¹⁰ The state and local tax impacts of Boston University are in addition to the total economic impact of the university on the county.

Community Impacts

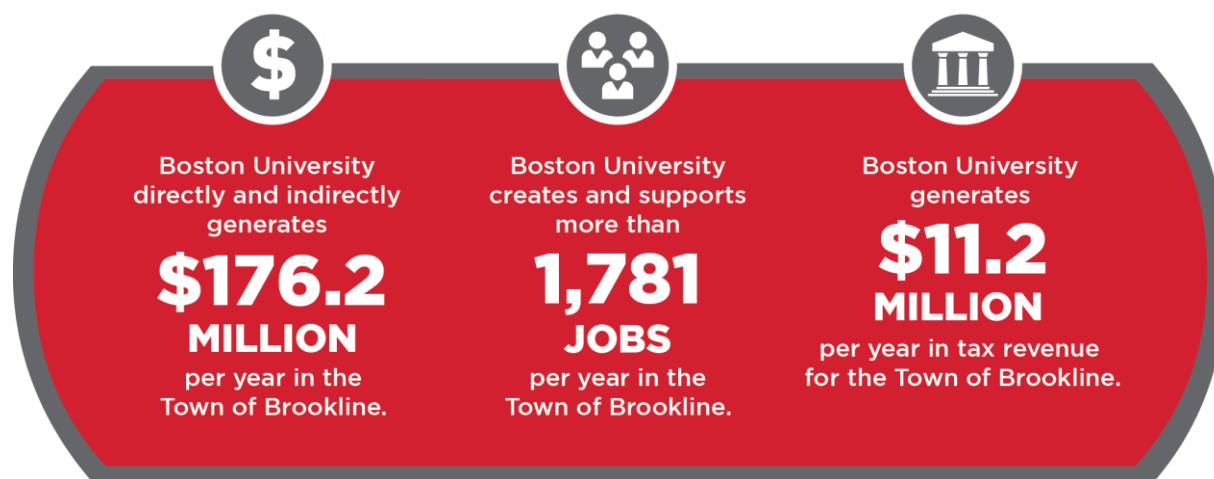
In addition to the economic, employment, and state/local revenue generation, BU provides a community impact to the City of Boston by means of volunteer work completed in the region; dollars donated by faculty, staff, and students; and events that the university hosts that support local residents and the region.

For fiscal year 2015, the estimated dollar amount of community impact from personal volunteer hours and dollars donated to local non-profits amounted to approximately **\$57.2 million in total community benefit impact in the City of Boston.**

¹⁰ Direct payments by Boston University to state and/or local governments, such as property taxes and payments in lieu of taxes, are not included. The data represent indirect taxes only as calculated using IMPLAN.

Boston University Impacts on Brookline

The Town of Brookline, Massachusetts has an approximate population of 59,000¹¹ and offers BU students, faculty, and staff the opportunity to enjoy a multitude of amenities and a budding cultural district. Additionally, the town provides a place for BU students, faculty, and staff to live, work, and play. As a result of BU's presence, these activities generate economic, employment, and tax impacts. Dollars spent in Brookline translate to jobs in the area and across the state as those dollars are re-spent by residents or organizations.



Economic Impact

Boston University generates a substantial amount of value in economic spending in Brookline. In FY15, BU produced a total of **\$176.2 million** in economic impact in Brookline, including the direct spending of the organization in the town (\$95.4 million), as well as the indirect spending that occurs as a result of the University's presence (**\$80.8 million**).

Employment Impact

In FY15, BU directly employed a total of 1,138 individuals who reside in Brookline, MA. By employing these individuals, BU has a larger footprint in the total employment impact that it brings to the area. These directly employed individuals spend dollars in the region and, therefore, support additional employment. In addition, university spending on capital projects, development and planning projects, and spending on suppliers all support additional jobs. After all of these avenues of employment are accounted for, BU supports a total of **1,781 jobs** in the Town of Brookline.

¹¹ Suburban Stats, Population Demographics for Brookline, Massachusetts;
<https://suburbanstats.org/population/massachusetts/how-many-people-live-in-brookline>

State and Local Government Revenue Impact

As a result of spending in the region, employees and supported individuals living in the region, and visitors coming to the region, BU generates a significant amount of state and local tax revenue that goes directly back to the area. In FY15, BU operations in Brookline, MA generated a total of **\$11.2 million** in direct and indirect/induced tax payments for the state and local governments. The state and local tax impacts of Boston University are in addition to the total economic impact of the university.

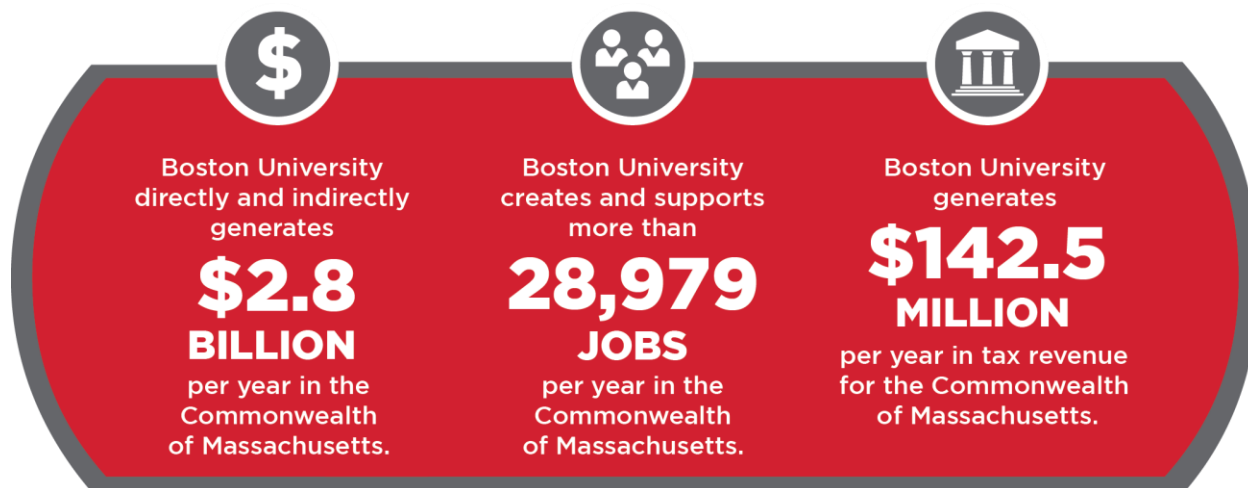
Community Impacts

In addition to the economic, employment, and state/local revenue generation, BU provides a community impact to the Town of Brookline by means of volunteer work completed in the region; dollars donated by faculty, staff, and students; and events that the university hosts that support local residents and the region.

For fiscal year 2015, the estimated dollar amount of community impact from personal volunteer hours and dollars donated to local non-profits amounted to approximately **\$3.6 million in total community benefit impact in the Town of Brookline.**

Boston University Impacts on the Commonwealth

Boston University is located in the City of Boston, Massachusetts. Residents, students, staff, faculty, and visitors working and traveling into the Commonwealth of Massachusetts as a result of BU's presence generate economic, employment, and tax impacts. Dollars spent in Massachusetts translate to jobs across the state as those dollars are re-spent by residents or organizations.



Economic Impact

Boston University generates a substantial amount of value in economic spending in the Commonwealth of Massachusetts. In FY15, The University produced a total of **\$2.8 billion** in economic impact in the Commonwealth, including the direct spending of the organization in Massachusetts (\$1.2 billion), as well as the indirect spending that occurs as a result of the university's presence (\$1.6 million).

Employment Impact

In FY15, BU directly employed a total of 17,890 individuals who reside in the Commonwealth of Massachusetts. By means of employing these individuals, BU has a larger footprint in the total employment impact that it brings to the state. These directly employed individuals spend dollars throughout the state, and therefore, support additional employment. In addition, university spending on capital projects, development and planning projects, and spending on suppliers all support additional jobs. After all of these avenues of employment are accounted for, BU supports a total of **28,979 jobs** in the Commonwealth of Massachusetts.

LARGEST PRIVATE EMPLOYERS IN BOSTON (2016)

1. Massachusetts General Hospital
2. Brigham and Women's Hospital
3. Boston University
4. Children's Hospital
5. State Street Bank & Trust Company
6. Beth Israel Deaconess Medical Center
7. Harvard University Graduate Schools
8. Northeastern University
9. Fidelity Investments
10. Boston Medical Center

Source: Bureau of Economic Analysis; American Hospital Association; National Center for Education Statistics; BPDA Research Division Analysis. Estimates reflect most recent available data.



State and Local Government Revenue Impact

As a result of spending in the Commonwealth, employees and supported individuals living in Massachusetts, and visitors coming to the state, BU generates a significant amount of state and local tax revenue that goes directly back to it. In FY15, BU operations in the Commonwealth of Massachusetts generated a total of **\$142.5 million** in direct and indirect/induced tax

payments for the state and local governments. The state and local tax impacts of Boston University are in addition to the total economic impact of the university on the Commonwealth.

Community Impacts

In addition to the economic, employment, and state/local revenue generation, BU provides a community impact to the Commonwealth by means of volunteer work completed in the region; dollars donated by faculty, staff, and students; and events that the university hosts that support local residents and the region.

For fiscal year 2015, the estimated dollar amount of community impact from volunteer hours and dollars donated to local non-profits amounted to approximately **\$70.8 million in total community benefit impact in the Commonwealth of Massachusetts.**

Boston University Medical Campus Impact

Boston University Medical Campus (BUMC) is located in the historic South End of Boston and comprises the Boston University School of Medicine (BUSM), the Boston University School of Public Health (SPH), the Henry M. Goldman School of Dental Medicine (GSDM), and the Division of Graduate Medical Sciences at the BU School of Medicine. Boston Medical Center (BMC) is the primary teaching affiliate of the BU School of Medicine. The Solomon Carter Fuller Mental Health Center, a state mental health facility, is also located on the campus.

Renowned for the quality of teaching, research, and service to the community, these schools provide education and training in the most current thinking and techniques in their fields, with a particular focus on serving disadvantaged, underserved, and indigent populations. Together, the schools employ more than 1,300 faculty members, many of whom are leading experts in their fields, and train a diverse group of more than 3,000 students.



Economic Impacts

In fiscal year 2015, the economic impact of the BUMC amounted to **\$712.2 million**. Specifically, BUMC generated \$298.8 million in direct economic impact to the state with an additional \$413.4 in indirect and induced impacts generated throughout the state.

Employment Impacts

The Boston University Medical Campus employs faculty, staff, and students to conduct the educational and research components necessary to train health care leaders of the future. This employment fuels additional employment throughout the Commonwealth. In FY15, BUMC had an **employment impact of 6,400 jobs** supported internally at the university, as well as externally through supported industries.

State and Local Government Revenue Impacts

BUMC generates a substantial amount of state and local government revenue as a result of its operations. In addition to this impact, BUMC also generates its own impact at the local and state levels. In FY15, BUMC **generated more than \$35.5 million in tax revenue** that goes directly back to the Commonwealth.

The Boston University Medical Campus generates a substantial impact to the Commonwealth of Massachusetts by spending dollars in the region, supplying jobs to individuals in research and teaching capacities, spending by visitors to the area, and the groundbreaking academic medical research occurring that is translated into practice by researchers, physicians, and students at the medical center.

BOSTON UNIVERSITY MEDICAL
CAMPUS DIRECTLY AND
INDIRECTLY GENERATES
\$712.2 MILLION
PER YEAR IN MASSACHUSETTS.

BOSTON UNIVERSITY MEDICAL
CAMPUS CREATES AND
SUPPORTS MORE THAN
6,400 JOBS
IN MASSACHUSETTS.

BOSTON UNIVERSITY MEDICAL
CAMPUS OPERATIONS GENERATE
\$35.5 MILLION
PER YEAR IN TAX REVENUE.



Boston University Operations Impact

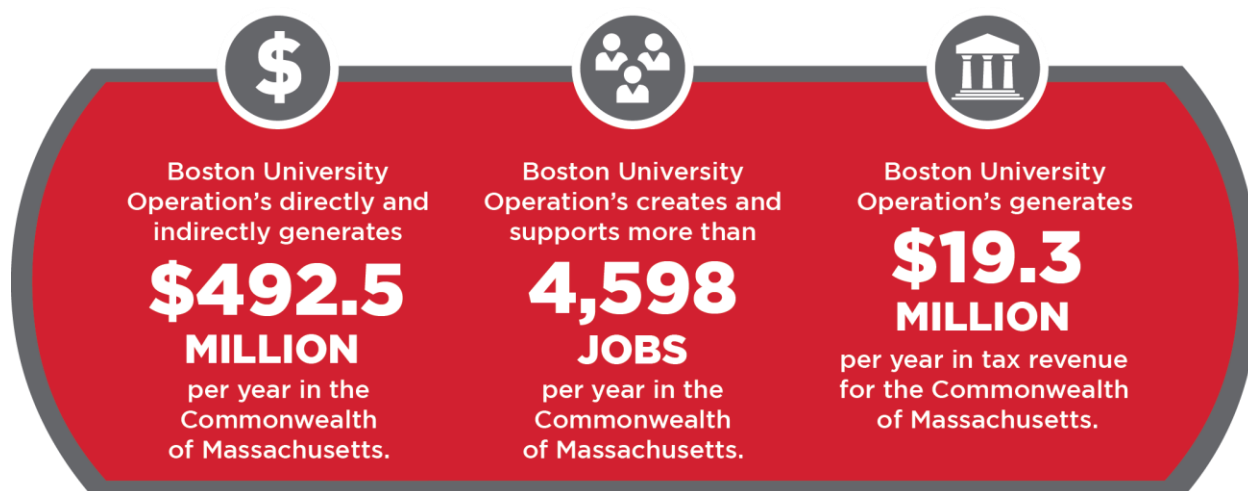
Boston University Operations is a broad category that relates to overall functioning of the University. Departments that fall under this category, include: Auxiliary Services; Budget & Capital Planning; Facilities Management & Planning; Medical Campus Administration; and Real Estate Planning & Services. Each of these services report through the Senior Vice President of Operations at BU. Additionally, these areas significantly contribute to purchasing and payroll each year.

Economic Impacts

In fiscal year 2015, the economic impact of BU Operations amounted to **\$492.5 million**. Specifically, the BU Operations generated \$195.7 million in direct economic impact to the state with an additional \$296.8 in indirect and induced impacts generated throughout the state.

Employment Impacts

Boston University Operations employs faculty, staff, and students to perform purposeful tasks to maintain the University's daily functioning. This employment fuels additional employment throughout the Commonwealth. In FY15, the University Operations had an **employment impact of 4,598 jobs supported** internally at the university, as well as externally through supported industries.



State and Local Government Revenue Impacts

Boston University's Operations generate a substantial amount of state and local government revenue. In FY15, BU Operations **generated more than \$19.3 million in tax revenue** that goes directly back to the Commonwealth.

Boston University Economic Impact Conclusions

Situated in one of America's oldest cities, Boston University has been educating leaders of the future for more than 170 years. Boston University attracts students and faculty from afar to learn and teach with leaders in their fields. Through its strong reputation, Boston University is regarded as one of the top-tier universities in the country.

Not only does Boston University maintain its high-quality stature among peer institutions, through its spending as well as attraction power of faculty, staff, students, families, and visitors, Boston University also generates substantial economic, employment, and government revenue impacts for the city, region, and state. Every year, spending by the university, its employees, students, families, and visitors generate billions of dollars that stay within the state to support employment as well as a diverse economy. The university also provides a variety of high-quality employment opportunities to local residents. In addition to these impacts, Boston University provides impacts to the area and Commonwealth by means of community involvement, volunteer work, donations to local non-profits, and cultural offerings.

- Boston University, in fiscal year 2015, generated more than **\$2.8 billion** in economic impact to the Commonwealth of Massachusetts.
- More than **28,979 jobs** were supported in FY15 throughout Massachusetts either directly or indirectly as a result of the operations of Boston University, students to the region, and friends and families visiting.
- Boston University generated more than **\$142.5 million** in state and local government revenue in fiscal year 2015.
- Faculty, staff, and students generate impacts at the local and state level through community volunteer work and dollars donated to non-profits. In fiscal year 2015, the community benefit impact of faculty, staff, and students was **\$70.8 million**.

With a strong focus on research, Boston University generates a plethora of economic and community impacts to the region. Boston University continues to be committed to educating students to be reflective, resourceful individuals ready to live, adapt, and lead in an interconnected world, while also remaining dedicated to conducting groundbreaking research across many industries. In FY15, BU research activity generated **\$382.7 million** in economic impact, supported **6,972 jobs**, and generated **\$19.5 million** in state and local government revenue impact.

Boston University has a prestigious reputation that is deeply rooted in global advancements of cultural awareness and scientific research that attracts faculty, students, and researchers from across the globe. The impacts of BU are far-reaching and continue to grow, contribute to, and support the future for all.

Appendix A: Definition of Terms

Study Year	Fiscal Year 2015: July 1, 2014 – June 30, 2015
Total Economic Impact	The total impact of an organization is a compilation of the direct impact, the indirect impact, and the induced impact generated in the economy as a result of the organization.
Direct Economic Impact	Direct impact includes all direct effects the organization has on the regional area due to the organizational operations. These items include direct employees, organizational spending, employee spending, as well as spending by patients and visitors to the organization.
Indirect Economic Impact	The indirect impact includes the impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value added. The impacts are calculated by applying direct effects to the Type I Multipliers.
Induced Economic Impact	The response by an economy to an initial change (direct effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not leakage to the regional economy. This money is recirculated through the household spending patterns causing further local economic activity.

Multiplier Effect	The multiplier effect is the additional economic impact created as a result of the organization's direct economic impact. Local companies that provide goods and services to an organization increase their purchasing by creating a multiplier.
Direct Tax Payments	Direct tax payments made by an organization to a unit of government
Indirect Tax Payments	Government revenue that is collected by governmental units in addition to those paid directly by an organization, including taxes paid directly by employees of the organization, visitors to the organization, and vendors who sell products to the organization
Direct Employment	Total number of employees, both full-time and part-time, at the organization based, on total jobs. Total headcount of individuals that receive a paycheck from the organization. This includes all faculty, staff, and graduate and undergraduate students.
Indirect Employment	Indirect employment is the additional jobs created as a result of the organization's economic impact. Local companies that provide goods and services to an organization increase their number of employees as purchasing increases, thus creating an employment multiplier.

Appendix B: FAQs Regarding Economic Impact Assessment

What is Economic Impact?

Economic impact begins when an organization spends money. Economic impact studies measure the direct economic impact of an organization's spending, plus additional indirect spending in the economy as a result of direct spending. Direct economic impact measures the dollars that are generated within Massachusetts due to the presence of BU. This includes not only spending on goods and services with a variety of vendors within the Commonwealth, and the spending of its employees and visitors, but also the business volume generated by businesses within Massachusetts that benefit from spending by BU. It is important to remember that not all dollars spent by BU stay in Massachusetts. Dollars that "leak" out of the state in the form of purchases from out-of-state vendors are not included in the economic impact that BU has on the Commonwealth of Massachusetts.

The total economic impact includes the "multiplier" of spending from companies that do business with BU. Support businesses may include lodging establishments, restaurants, construction firms, vendors, temporary agencies, etc. Spending multipliers attempt to estimate the ripple effect in the state economy where the spending occurs. For example, spending by BU with local vendors provides these vendors with additional dollars that they re-spend in the local economy, causing a "multiplier effect."

What is the multiplier effect?

Multipliers are a numeric way of describing the secondary impacts stemming from the operations of an organization. For example, an employment multiplier of 1.8 would suggest that for every 10 employees hired in the given industry, eight additional jobs would be created in other industries, such that 18 total jobs would be added to the given economic region. The multipliers used in this study range from 1.8 to 2.0.

The Multiplier Model is derived mathematically using the input-output model and Social Accounting formats. The Social Accounting System provides the framework for the predictive Multiplier Model used in economic impact studies. Purchases for final use drive the model. Industries that produce goods and services for consumer consumption must purchase products, raw materials and services from other companies to create their products. These vendors must also procure goods and services. This cycle continues until all the money is leaked from the region's economy. There are three types of effects measured with a multiplier: the direct, the indirect and the induced effects. The direct effect is the known or predicted change in the local economy that is to be studied. The indirect effect is the business-to-business transactions

required to satisfy the direct effect. Finally, the induced effect is derived from local spending on goods and services by people working to satisfy the direct and indirect effects.

- **Direct effects** take place only in the industry immediately being studied.
- **Indirect effects** concern inter-industry transactions. Because Boston University is in business, it has a demand for locally produced materials needed to operate.
- **Induced effects** measure the effects of the changes in household income. Employees of BU and suppliers purchase from local retailers and restaurants.
- **Total Economic Impacts** are the total changes to the original economy as a result of the operations of Boston University (i.e., Direct effects + Indirect effects + Induced effects = Total Economic Impacts).

What methodology was used in this study?

IMPLAN (IMpact analysis for PLANning) data and software were used. Using classic input-output analysis in combination with regional specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users. The IMPLAN database contains county, state, zip code and federal economic statistics, which are specialized by region, not estimated from national averages, and can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity.

What is employment impact?

Employment impact measures the direct employment (employees, staff, faculty, administration) plus additional employment created in the economy as a result of the operations of BU.

Indirect and induced employment impact refers to other employees throughout the region that exist because of the university's economic impact. In other words, these are jobs related to the population – city services (police, fire, EMS, etc.), employees at local hotels and restaurants, clerks at local retail establishments, or residents employed by vendors used by BU.

What is the difference between direct and indirect taxes?

Direct tax dollars include sales taxes and net corporate income taxes paid directly by the institution to the state, while indirect taxes include taxes paid to the state by vendors that do business with BU and individuals.

Is this a one-time impact, or does the impact repeat each year?

The results presented in the Boston University economic impact study are generated periodically. The economic impact in future years can either be higher or lower based on number of employees, students, capital expansion, increases in external research and state appropriations.

Appendix C: Tripp Umbach Qualifications

Tripp Umbach is the national leader in providing economic impact analysis to leading health care organizations, universities and academic medical centers. We have completed more than 150 economic impact studies over the past 20 years for clients such as The Pennsylvania State University, The Ohio State University, the University of Washington, The University of Iowa, The University of Alabama at Birmingham, the Cleveland Clinic, the University of Florida Health Shands Hospital, the University of North Carolina Hospitals, the University of Pennsylvania Health System, the University of Pittsburgh Medical Center and The Ohio State University Medical Center.

