



Johns Hopkins Lives Here

CITY OF BALTIMORE

JOHNS HOPKINS

This report was prepared by Appleseed, a New York City-based economic development consulting firm that works with government, corporations and nonprofit institutions to promote economic growth and opportunity.

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JOHNS HOPKINS AS AN ENTERPRISE

The Johns Hopkins Institutions together are Baltimore's largest employer, a major purchaser of goods and services, a sponsor of major construction projects and a magnet for students and visitors. In fiscal year 2010, we estimate that the Johns Hopkins Institutions directly or indirectly accounted for nearly \$4.0 billion in economic output in Baltimore, and more than 49,170 jobs¹ – about one out of every seven wage-and-salary jobs in the city.

- In the spring of 2010, the Johns Hopkins Institutions directly employed 33,618 people at their various locations in Baltimore, 81 percent of whom worked full-time, plus 6,050 student employees.
- About 31 percent of all regular Johns Hopkins employees, and 72 percent of all student employees, live in Baltimore.
- In FY 2010, Johns Hopkins spent \$335 million on purchases of goods and services (excluding construction) from companies in Baltimore, directly supporting approximately 2,102 FTE jobs.
- In FY 2010, Johns Hopkins spent \$257 million on construction and renovation, including \$52.7 million paid to contractors and subcontractors based in Baltimore. This investment directly supported more than 985 FTE jobs with Maryland contractors, including about 325 FTE jobs with Baltimore-based contractors and subcontractors.
- In fiscal year 2010, Johns Hopkins purchased \$141.6 million in goods and services (other than construction) from minority and women-owned businesses and paid \$37.8 million to minority and women-owned construction companies.
- We estimate that spending in Baltimore by Johns Hopkins employees who live outside the city, students and visitors directly generated \$264 million in economic output in the city in FY 2010 and 2,028 FTE jobs.
- Institutions affiliated with Johns Hopkins directly employed 3,874 people in Baltimore in FY 2010. Their spending within the city on purchasing and construction directly generated an additional 345 FTE jobs with other employers in Baltimore.
- Through the “multiplier effect,” spending by Johns Hopkins, its affiliates, its employees, vendors and contractors and by students and visitors indirectly generated \$955 million in economic output and 6,886 FTE jobs in Baltimore.
- Johns Hopkins paid nearly \$14 million in taxes and fees to the city in FY 2010, and withheld more than \$120 million in state and local income taxes from the earnings of employees at its Baltimore locations.

¹ This figure excludes 6,050 students employed part-time by the University.

Table 1:

Economic impact of Johns Hopkins students, visitors and affiliates in Baltimore

	Employment/ payroll	Purchasing/ construction	Indirect/ induced	Total
Johns Hopkins				
Output	\$ 2,083.0 million	\$ 387.6 million	\$ 740.8 million	\$ 3,211.4 million
Employment	33,618 jobs	2,426 FTEs	5,309 FTEs	41,353 FTEs
Affiliate spending				
Output	\$ 244.0 million	\$ 59.2 million	\$ 138.0 million	\$ 441.2 million
Employment	3,874 jobs	345 FTEs	989 FTEs	5,208 FTEs
Commuter				
Output		\$ 34.4 million	\$ 10.0 million	\$ 44.4 million
Employment		247 FTEs	72 FTEs	318 FTEs
Student spending				
Output		\$ 168.2 million	\$ 48.8 million	\$ 216.9 million
Employment		1,207 FTEs	350 FTEs	1,556 FTEs
Visitor spending				
Output		\$ 61.5 million	\$ 17.8 million	\$ 79.4 million
Employment		574 FTEs	166 FTEs	740 FTEs
TOTAL				
Output	\$ 2,327.0 million	\$ 710.9 million	\$ 955.3 million	\$ 3,993.3 million
Employment	37,492 jobs	4,799 FTEs	6,886 FTEs	49,177 FTEs

DEVELOPING HUMAN CAPITAL

- In the fall of 2009, 20,483 students – including 5,932 undergraduates and 14,551 graduate and professional students – were enrolled at Johns Hopkins. About 5 percent of all undergraduates and 15 percent of all graduate and professional students were residents of Baltimore.
- In 2009-10, Johns Hopkins provided more than \$25.7 million in financial aid to students in Baltimore.
- As of the summer of 2010, 11,279 Hopkins graduates – 7.2 percent of all living alumni – lived in Baltimore.
- Part-time graduate programs, such as Whiting School of Engineering’s Engineering for Professionals program, are particularly important for the continued growth of knowledge-based industries in Baltimore and elsewhere in Maryland.
- Johns Hopkins also contributes to the development of human capital in Baltimore through its participation in efforts to improve K-12 education and to expand educational opportunities for young residents of the city.
- The Baltimore Scholars Program provides full-tuition scholarships to city residents who graduate from public high schools in Baltimore and are admitted to Johns Hopkins. Since the program began in 2005, 91 Baltimore Scholars have enrolled at Johns Hopkins and 36 have graduated. To date, the University has awarded a total of \$13.6 million in scholarships through the program.

THE IMPACT OF UNIVERSITY RESEARCH

- During FY 2010, spending on research and related activities at Johns Hopkins totaled \$2.38 billion – an increase of 59 percent since FY 2003. Research conducted by the University’s Baltimore-based schools accounted for about \$1.33 billion of this total.
- Johns Hopkins consistently ranks first in research spending among all U.S. universities – by a wide margin.
- Almost all of this spending is financed from sources outside Baltimore – state and local funds account for less than 1 percent of the total spent by the University’s Baltimore-based schools in FY 2010.

MEETING THE HEALTH NEEDS OF BALTIMORE COMMUNITIES

- Johns Hopkins Medicine is a leading source of high-quality health care for residents of Baltimore. During FY 2010, The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center provided inpatient care to more than 26,600 Baltimore residents.
- Hospital outpatient clinics, the three primary care centers operated in the city by Johns Hopkins Community Physicians and other Johns Hopkins outpatient locations reported a total of approximately 778,000 patient visits in FY 2010 that involved residents of Baltimore.
- As of the end of FY 2010, managed care plans administered by Johns Hopkins Health Care provided comprehensive health care coverage to 60,995 residents of Baltimore – about 9.4 percent of the city’s total population.
- The value of charity care, community-based health care and other benefits provided by The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center in fiscal year 2010 to communities in Maryland totaled nearly \$186 million.

SUPPORTING INNOVATION AND ENTREPRENEURSHIP

- During the past decade, Johns Hopkins has strengthened its commitment to translating the results of its research into new products and services – and in some cases, new businesses.
- In recent years, the pace of technology transfer activity at Johns Hopkins has increased, with the number of patent applications filed up by 57 percent between 2003 and 2010, and the number of new licensing and option agreements up by 46 percent.
- As of 2010, there were at least 25 companies in Baltimore with ties to Johns Hopkins – either engaged in the commercialization of technologies licensed from the university or started by Johns Hopkins faculty, researchers, students or alumni, or some combination of both.
- Through its entrepreneurship education programs, Johns Hopkins is helping to prepare Baltimore’s next generation of innovators and entrepreneurs.

THE IMPACT OF AFFILIATED INSTITUTIONS

- Beyond the impact of the Johns Hopkins Institutions themselves, Baltimore’s economy is strengthened by the presence of six institutions that, were it not for their relationships with Johns Hopkins, might not be in Baltimore: the Space Telescope Science Institute, the Kennedy-Krieger Institute, the Howard Hughes Medical Institute, the Carnegie Institution for Science’s Department of Embryology and research centers operated by the National Institute on Aging and the National Institute on Drug Abuse.
- Together, these six institutions directly and indirectly accounted for more than \$441 million in economic output in Baltimore and more than 5,000 jobs.

- A seventh affiliated institution was added in 2010, with an announcement that the Lieber Institute for Brain development would open a new research center in the Science + Technology Park in East Baltimore.

REVITALIZING EAST BALTIMORE

- Johns Hopkins is collaborating with East Baltimore Development Inc, the city, the state, the Annie E. Casey Foundation and other partners in an ambitious effort to redevelop an 88-acre site in the heart of East Baltimore and to revitalize the surrounding community.
- Johns Hopkins is already a major participant in the local economy, employing more than 5,400 residents of six East Baltimore ZIP codes, as well as nearly 2,400 student employees who live in the area.
- The construction of Johns Hopkins Hospital's new clinical building is also having a major impact in East Baltimore. Through June 2010, 24 percent of all those hired to work on this \$1.1 billion project were city residents, including 7 percent who were residents of the six East Baltimore ZIP codes.
- Johns Hopkins is partnering with Forest City on the development of the East Baltimore Science + Technology Park – by serving as an anchor tenant in the Park's first research building, through the creation of Johns Hopkins-related start-up companies that have rented space in the building and by helping to attract tenants who can benefit from proximity to Johns Hopkins.
- Johns Hopkins is also supporting the development of graduate student housing in the project area and working with EBDI to support the continuing development of the new East Baltimore Community School.

ENGAGEMENT WITH BALTIMORE COMMUNITIES

- Beyond its involvement in improving K-12 education, providing health care and revitalizing East Baltimore, Johns Hopkins is engaged in a variety of other efforts to strengthen Baltimore neighborhoods and to meet the needs of community residents.
- Johns Hopkins is an active participant in the work of several organizations that are engaged in the revitalization of communities in which it operates, including the Greater Homewood Community Corporation, the Historic East Baltimore Community Action Coalition and the Central Baltimore Partnership.
- Johns Hopkins also seeks to strengthen neighborhoods through its Live Near Your Work program, which provides grants to encourage Johns Hopkins employees to purchase homes near its principal locations in Baltimore. In FY 2010, the program provided grants totaling \$416,000 to 70 employee homebuyers.
- The Center for Social Concern, located on the Homewood campus, provides a base for more than 50 student-run programs that serve Baltimore communities, ranging from after-school tutoring to Habitat for Humanity to GED preparation for female inmates at the Baltimore City Jail. In 2009-10, more than 1,500 students performed more than 79,700 hours of volunteer work in programs based at CSC.
- At the East Baltimore campus, SOURCE – the Student Outreach Resource Center – provides a focal point for community engagement for students in the School of Medicine, the School Nursing and the School of Public Health. SOURCE estimates that in 2009-10, students at the three schools performed at least 19,500 hours of community service work – either as volunteers or through service learning courses.

- Students participating in service learning courses in the Carey Business School and the School of Education performed more than 16,000 and 17,000 hours of community service work, respectively.
- Johns Hopkins employees are also actively engaged in the community. In 2009-10, through its Johns Hopkins Takes Time for Schools program and other efforts, 193 Johns Hopkins employees regularly worked as volunteers in Baltimore public schools; together they accounted for 37 percent of all registered volunteers in the city's school system.
- Johns Hopkins also contributes to the quality of life in Baltimore through its cultural programs, such as concerts and other performances at the Peabody Institute – which in 2009-10 drew a total audience of more than 12,000 – and performances by the JHU Theater.

JOHNS HOPKINS AND THE FUTURE OF BALTIMORE'S ECONOMY

Johns Hopkins is and will remain a valuable partner in Baltimore's strategy to rev up its economy and further strengthen its communities. It is the city's largest private employer and its largest research institution; it is a leading provider of high-quality health care and a leading educator of the city's professional workforce. It is a headquarters for ideas and innovation and a wellspring of new businesses and economic activity.

Johns Hopkins recognizes that, just as it depends on Baltimore to foster an environment where ingenuity can thrive, Baltimore depends on Johns Hopkins to apply that ingenuity for the common good. The futures of Johns Hopkins and the city that has been its home for 135 years are inextricably linked.



The Johns Hopkins Institutions – including the Johns Hopkins University and various institutions and organizations that together comprise the Johns Hopkins Health System – play a central role in the Baltimore economy. They are a major enterprise in themselves and also contribute to the vitality of the city’s economy through activities related to their mission – education, research, health care, technology transfer and service to the communities in which they operate.

This report assesses and, where possible, quantifies the impact of the Johns Hopkins Institutions on the Baltimore economy. Part One provides a brief overview of Johns Hopkins and – to provide a context for the analysis that follows – briefly discusses recent economic trends in Baltimore. Part Two analyzes the impact of Johns Hopkins as an enterprise – a major employer, purchaser of goods and services and sponsor of construction projects; and analyzes as well the impact of spending in Baltimore by students at and visitors to Johns Hopkins.

Part Three discusses the University’s role in the development of Baltimore’s “human capital.” Part Four examines how its role as one of the nation’s leading research institutions contributes to the city’s economy; and Part Five discusses the role of Johns Hopkins in meeting the health care needs of the city’s residents. Part Six of the report focuses on the commercialization of technologies initially developed at Johns Hopkins and more

broadly on the development of new businesses in Baltimore with ties to the Johns Hopkins Institutions. Part Seven briefly describes several Baltimore institutions that are affiliated with Johns Hopkins and their contributions to the local economy.

Part Eight of the report highlights the role of the Johns Hopkins Institutions in the revitalization of East Baltimore – one of the most ambitious redevelopment projects in the city’s history; and Part Nine provides some examples of other ways in which the institutions are engaged in meeting the needs of Baltimore communities.

Finally, Part Ten explores several reasons why Johns Hopkins could play an especially valuable role during the next decade as a partner in the rebuilding of the city’s economy.



BEALBY INSTITUTE

When Johns Hopkins, a Baltimore merchant, died in 1873, he left behind a gift of \$7 million, to be divided between a new university and a new hospital, both of which were to bear his name. Three years later, when the Johns Hopkins University opened its doors, President Daniel Coit Gilman declared the new university's commitment to "the encouragement of research...and the advancement of individual scholars who by their excellence will advance the science they pursue and the society where they dwell." The Johns Hopkins Hospital opened in 1889, and the Johns Hopkins University School of Medicine four years later. Within twenty years of his death, Hopkins's vision had led to the creation of America's first real research university and its first academic medical center.

More than a century later, the merchant's vision endures. The Johns Hopkins University perennially ranks first among U.S. universities in total research spending; and The Johns Hopkins Hospital has been rated by *U.S. News and World Report* as the best hospital in the U.S. for twenty consecutive years.

THE JOHNS HOPKINS UNIVERSITY

The Johns Hopkins University is comprised of nine schools (Table 2) with a total enrollment of more than 20,000 undergraduate, graduate and professional students, along with the Applied Physics Laboratory – a division of the University whose primary mission is to conduct scientific and technological research for federal agencies on topics related to national and homeland security and space exploration.

These major divisions of the University operate at four principal locations in Baltimore, and at several other locations in Maryland and the District of Columbia.

- The *Homewood campus*, located in north Baltimore's Charles Village neighborhood, is the University's headquarters, and home to the Krieger School of Arts and Science, the Whiting School of Engineering and the School of Education.
- The *East Baltimore campus* is home to the School of Medicine, the School of Nursing and the Bloomberg School of Public Health.
- The *Peabody Institute* is located in Baltimore's Mount Vernon neighborhood, near many of the city's leading cultural institutions and organizations. The Institute is also a partner in a national music conservatory in Singapore.
- The *Carey Business School* occupies four floors of the Legg Mason building in the city's Harbor East area.
- The *Mount Washington campus*, located on the northern edge of the city, houses Johns Hopkins administrative offices and several research programs as well as a variety of other non-profit and commercial tenants. The campus also includes a conference center that is owned by Johns Hopkins and managed by a private contractor.

Table 2:
Johns Hopkins University – Major divisions

School	Year founded	Principal location	Enrollment, Fall 2009
Krieger School of Arts & Science	1876	Homewood	7,019
Whiting School of Engineering	1912	Homewood	4,250
Carey Business School	2007	Harbor East	1,676
School of Education	1909	Homewood	2,006
School of Medicine	1893	East Baltimore	1,378
School of Nursing	1889	East Baltimore	699
Bloomberg School of Public Health	1916	East Baltimore	2,056
Peabody Institute	1857	Mount Vernon	682
School of Advanced International Studies	1943	Washington, D.C.	717
Total			20,483
Applied Physics Laboratory	1942	Laurel, Md.	

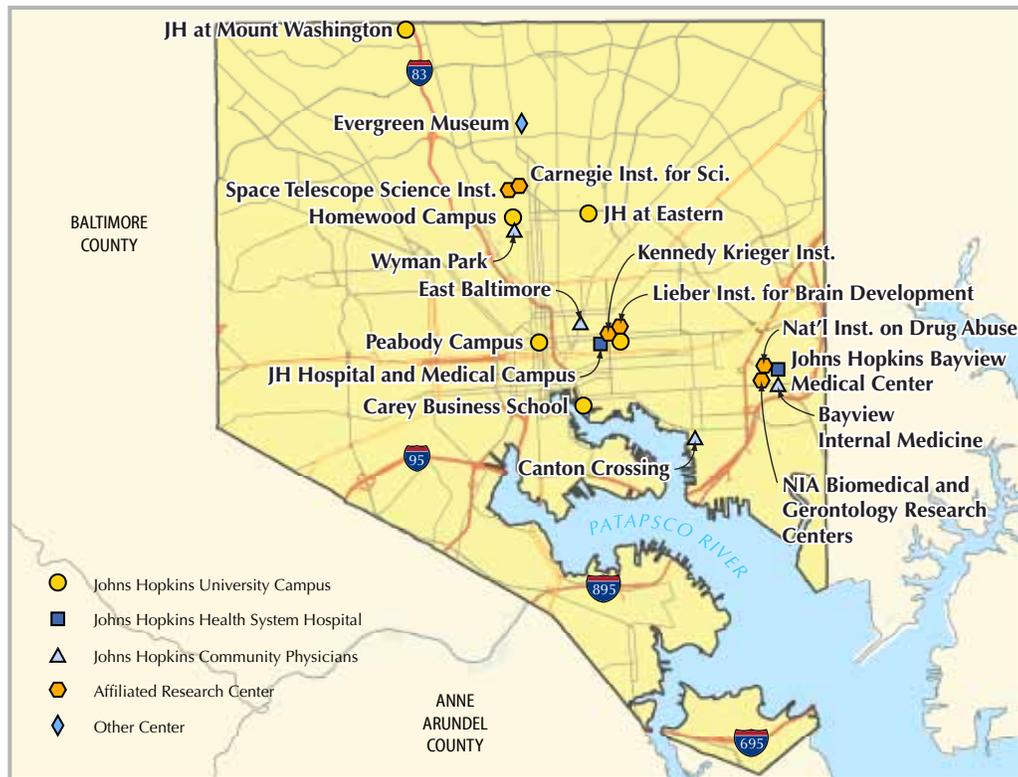
- The *Applied Physics Laboratory* (APL) is located on a 399-acre campus in Laurel, Maryland, halfway between Baltimore and Washington, D.C. The APL also leases space in an adjoining office park and has field offices at three sites in Maryland (Fort Meade, Silver Spring and Patuxent River) and 18 other sites throughout the U.S.
- The *School of Advanced International Studies* (SAIS) and the University's D.C. Center, which offers a variety of academic programs, are located in Washington, D.C. SAIS also has programs located in Bologna, Italy and Beijing, China.
- The 36-acre *Montgomery County Campus*, located in Rockville, Maryland, offers programs in the arts and sciences, engineering, business and education; it also includes a 108-acre site nearby that is being developed as a research campus for the University and for other non-profit, corporate and government research partners.
- The *Columbia Center*, located in Columbia, Maryland, offers a range of programs for working adults, with a particular focus on teachers and other education professionals.

THE JOHNS HOPKINS HEALTH SYSTEM

The Johns Hopkins Health System is similarly comprised of multiple divisions operating at multiple locations.

- *The Johns Hopkins Hospital*, founded in 1889 and located in East Baltimore, is a 994-bed acute care facility that serves as the principal teaching hospital for the Johns Hopkins University School of Medicine and as a major center for medical research. The Johns Hopkins Hospital has been cited by U.S. News & World Report as the best hospital in the U.S. for 20 consecutive years.
- *Johns Hopkins Bayview Medical Center* is the current incarnation of a hospital that was founded in 1773 – making it one of the oldest continuously operating hospitals in the U.S. For many years this facility functioned as a municipal hospital and was named City Hospitals.

Figure 1:
Map of Johns Hopkins facilities in Baltimore



The city transferred ownership to Johns Hopkins in 1984. Today it is a 348-bed acute care hospital with particular strengths in geriatric medicine, neonatal intensive care and alcohol and substance abuse as well as Maryland's only adult burn center.

Other facilities located on the Medical Center's 130-acre campus include the Johns Hopkins Bayview Care Center, a 276-bed long-term care facility and several biomedical research buildings.

- **Howard County General Hospital**, located in Columbia, Maryland, was founded in 1973 as a short-stay facility for members of the Columbia Health Plan. Today it is a 238-bed comprehensive acute care facility serving residents of Howard County. The hospital affiliated with the Johns Hopkins Health System in 1998.

- **Suburban Hospital**, founded in 1943, is a 222-bed community hospital located in Bethesda, Maryland, primarily serving residents of Montgomery County. Suburban affiliated with the Johns Hopkins Health System in 2009.
- **Johns Hopkins Community Physicians** provides health services to Maryland residents through a network of 26 primary care centers, including four in Baltimore City and 22 in other communities throughout the state.
- In addition to JHCP's primary care centers, JHHS operates **health care and surgery centers**, which provide a wide range of specialty services on an outpatient basis, at three locations in the Baltimore suburbs.

- *Johns Hopkins Home Care Group*, founded in 1983, is a full-service home health care agency owned jointly by the Johns Hopkins University School of Medicine and JHHS. It provides comprehensive home care services (including medical equipment and supplies) for both adults and children in Baltimore City and in the six-county Greater Baltimore area, and a more limited range of services in six other Maryland counties.
- *Johns Hopkins HealthCare LLC*, a joint venture of the School of Medicine and JHHS created in 1995, manages three health care plans.
 - » *Priority Partners Managed Care Organization* provides health care for recipients of Medicaid and other publicly-funded health care programs in Maryland.
 - » *Johns Hopkins Employer Health Programs* provides health care for employees of the Johns Hopkins Health System and several partner institutions.
 - » *Johns Hopkins U.S. Family Health Plan* provides health care to military families living in Maryland and in adjoining areas in several other states.

In November 2010, JHHS added another institution to its network – *Sibley Hospital*, a 328-bed acute care facility in Washington D.C.

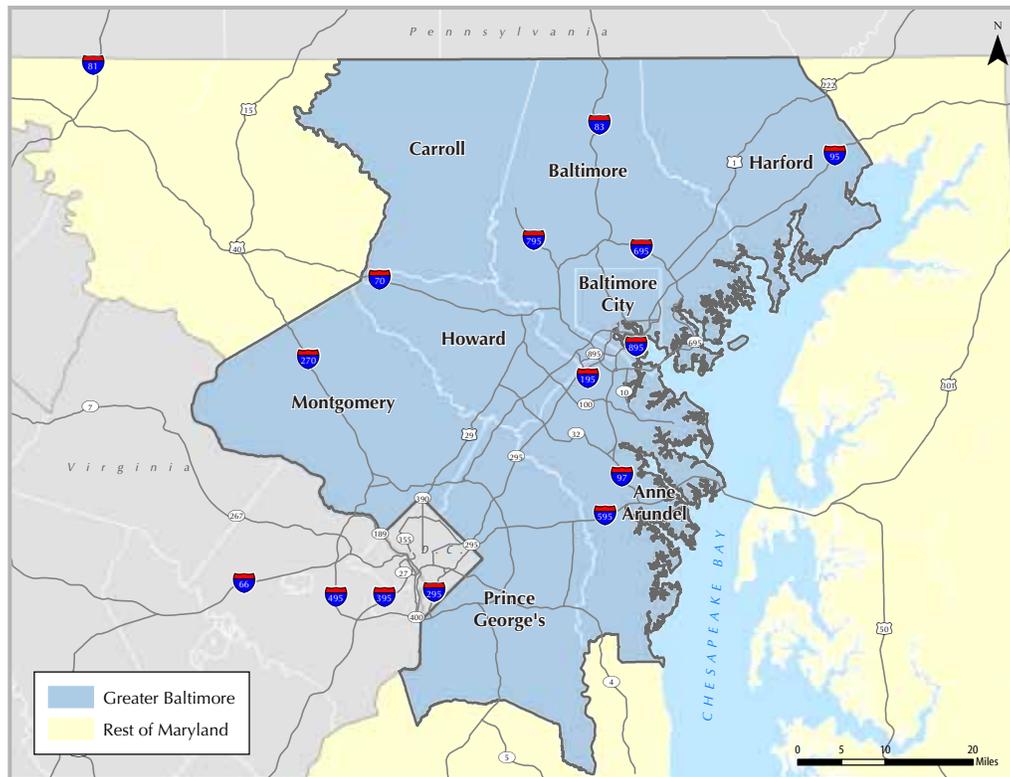
In addition to the institutions that are part of the JHHS network, Johns Hopkins owns a 50 percent interest in Mount Washington Pediatric Hospital in Baltimore, which is governed by a board that includes representatives of Johns Hopkins and the facility's other co-owner, the University of Maryland Medical System. Johns Hopkins Medicine also maintains affiliations with two other non-JHHS institutions – the Greater Baltimore Medical System and the Anne Arundel Medical Center.

AFFILIATED INSTITUTIONS

In addition to the schools, research centers and health care providers that are formally part of the Johns Hopkins University and the Johns Hopkins Health System, there are several other institutions that are closely affiliated with Johns Hopkins.

- The *Space Telescope Science Institute* manages scientific research, education and public outreach programs for the Hubble Space Telescope and the new James Webb Space Telescope (scheduled to become operational in 2014). The Institute, which was founded in 1981, is located on the University's Homewood campus; it is managed by a consortium of major universities (the Association of Universities for Research in Astronomy) under a contract with NASA.
- The *Kennedy Krieger Institute*, founded in 1937, serves children and adolescents with developmental disabilities through an array of programs that includes health care, special education, research and professional development. The Institute's facilities are located adjacent to the Johns Hopkins East Baltimore campus, in the city's Greenspring neighborhood and in Montgomery County.
- The *Howard Hughes Medical Institute*, a non-profit foundation created in 1953, is one of the world's leading biomedical research organizations. The Institute employs about 345 senior scientists and 700 post-doctoral researchers, who along with about 1,000 graduate students work primarily in laboratories located at 70 leading U.S. universities, hospitals and other research centers. HHMI's headquarters is located in Chevy Chase, MD.
- The *National Institute on Aging* (NIA) conducts most of its in-house research at two NIA centers that are located on the Johns Hopkins Bayview campus – the *Biomedical Research Center* and the *Gerontology Research Center*.

Figure 2:
Map of the Greater Baltimore area



- The principal in-house research center for the *National Institute on Drug Abuse* is also located on the Bayview campus.
- The *Carnegie Institute for Science's Department of Embryology* – a leading center of research in developmental biology – has been affiliated with Johns Hopkins since 1913. It is located on the Homewood campus and its researchers work closely with the University's Department of Biology.
- The *Lieber Institute for Brain Development* – the newest Johns Hopkins affiliate – is a non-profit research foundation specializing in neuroscience. In June 2010 the Institute announced that it will be moving into the new Science + Technology Park in East Baltimore – a location that the Institute chose in part due to the opportunities it offers for collaboration with researchers at Johns Hopkins.

All of these institutions are important contributors to Baltimore's role as a major center for scientific research – and their presence (and the scale of their operations) in Baltimore is to a great extent a function of their relationships to Johns Hopkins.

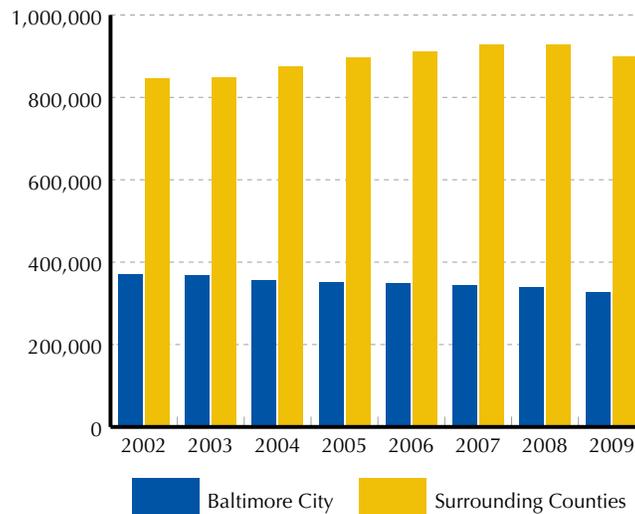
JOHNS HOPKINS IN CONTEXT: THE BALTIMORE ECONOMY

Understanding the Johns Hopkins Institutions' impact on Baltimore's economy requires an understanding of the context within which they operate.

As is true in many of America's older metropolitan areas, recent economic trends and conditions in the Greater Baltimore area highlight the diverging fortunes of the city and the suburban counties that surround it.

Figure 3:

Average annual employment, 2002-2009, Baltimore City vs. surrounding counties



Following the recession of 2000-2001, the region enjoyed a sustained (although somewhat lukewarm) recovery. Payroll employment in Greater Baltimore rose by 4.7 percent between 2002 and 2007 – an increase of about 57,000 jobs.

Since the onset of the recession in 2008, however, much of the job growth that occurred in the preceding five years has been lost. Between 2007 and 2009, payroll employment in greater Baltimore declined by 3.6 percent – a loss of more than 46,000 jobs. As a result of these losses, net employment growth in Greater Baltimore² between 2002 and 2009 totaled only 11,400 jobs – representing an increase of 0.9 percent.

While the region has seen only minimal gains in payroll employment since 2002, it is important to keep these figures in perspective. The rate of job growth in Greater Baltimore between 2002 and 2009 (0.9 percent) was actually *higher* than the rate for the U.S. as a whole during the same period (0.4 percent).

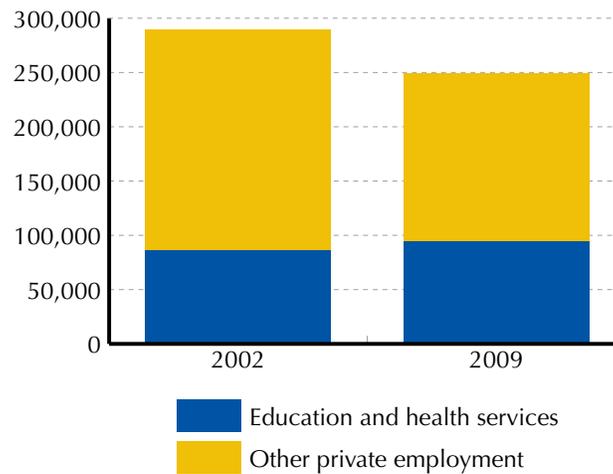
These regional figures, however, mask sharp differences between Baltimore City and the surrounding counties. In contrast to the six neighboring counties, the city never really recovered from the recession of 2000-2001. Payroll employment in the city continued to drift downward, from an annual average of 369,787 in 2002 to 344,209 in 2007 – a decline of 6.9 percent in just five years. With the onset of the recession of 2008-2009, job losses accelerated. By 2009, Baltimore had suffered a cumulative loss of more than 43,000 jobs since 2002 – a decline of 11.7 percent.

During the same period, the six surrounding counties gained nearly 55,000 jobs – an increase of 6.5 percent.

The decline of private-sector employment in Baltimore has been even steeper – a decline of 14 percent between 2002 and 2009. Job losses have been particularly severe in several sectors that had long been part of the city's economic base. Between 2002 and 2009,

² Defined by the Economic Alliance of Greater Baltimore as including Baltimore City and Anne Arundel, Baltimore, Carroll, Cecil, Harford and Howard counties

Figure 4:
Private employment, 2002 and 2009, Baltimore City



wage and salary employment in manufacturing fell by 40 percent; in financial services and information services, by 38 percent; in professional and business services, by 23 percent; and in trade, transportation and utilities, by 19 percent.

As the city's employment base has shrunk, unemployment among its residents has risen. In June 2010, the unemployment rate among Baltimore residents was 11.0 percent – the highest in the state.

The weakness of Baltimore's economy is reflected in a variety of other statistics as well.

- The median income of Baltimore households in 2009 was \$37,830 – less than 56 percent of the statewide median household income (\$68,108).
- In 2008, 19 percent of all Baltimore residents – but only 8 percent of all Maryland residents – lived in households with incomes below the poverty level (defined by the federal government as \$21,834 for a family of four).

- About 24 percent of all Baltimore residents age 25 and older have not completed high school; statewide, only 12 percent of those 25 and older lack high school diplomas.

Despite a continuing decline in several major industries, there are some bright spots in the Baltimore economy. Between 2002 and 2009, wage and salary employment in education and health services grew by 8.8 percent – a gain of 7,645 jobs. In 2002, education and health services accounted for 30 percent of all private employment in Baltimore; by 2009, these two sectors accounted for 38 percent of all private payroll employment in the city.

Of all of the institutions that have contributed to the growth of higher education and health care in Baltimore, none has had a greater impact than Johns Hopkins. Part Two of this report examines the impact of Johns Hopkins as Baltimore's largest enterprise.



PART TWO:

The Johns Hopkins Institutions as an enterprise

As a major enterprise in their own right, the Johns Hopkins Institutions contribute to the economic vitality of the City of Baltimore in several ways – as a major employer, a buyer of goods and services from local businesses, a sponsor of construction projects and a generator of tax revenues. This part of the report addresses the Institutions’ impact in each of these areas.

In fiscal year 2010, the Johns Hopkins Institutions’ revenues totaled \$7.62 billion. As Figure 5 shows:

- Patient care and clinical services (\$3.63 billion) accounted for about 49 percent of all revenues;
- Grants and contracts (\$2.39 billion) accounted for 31 percent of all revenues;

- Tuition and fees (net of institutional scholarships and fellowships) totaled \$411 million – 5 percent of all revenues;
- Investment income totaled \$187 million, about 2 percent of all revenues;
- Contributions and gifts accounted for \$72 million, about 1 percent; and
- Other sources accounted for the remaining 12 percent of revenues.

Overall, we estimate that approximately 86 percent of the Hopkins Institutions’ revenues were derived from sources outside Baltimore, reflecting the position of higher education and high-quality health care as two of the city’s leading “export” industries.

Figure 5:
Johns Hopkins Institutions revenues, FY 2010

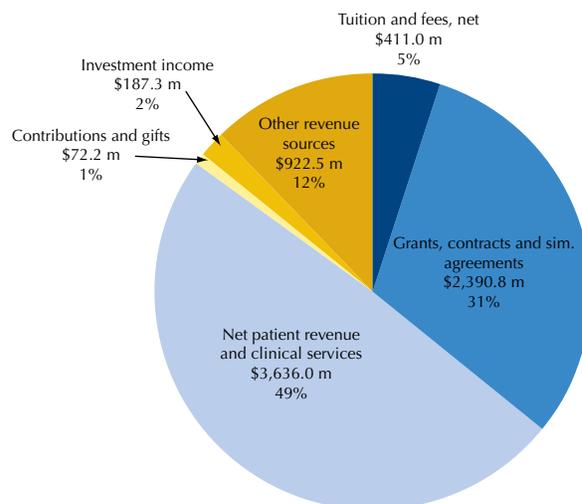


Table 3:
Employment by location in Baltimore, Spring 2010

Baltimore location	Jobs
Homewood campus	4,898
East Baltimore campus	22,491
Bayview Medical Center	4,415
Downtown Baltimore	913
Other sites	901
TOTAL	33,618

EMPLOYMENT AT JOHNS HOPKINS

In the spring of 2010, the Johns Hopkins Institutions employed 53,532 people. This total included 47,482 regular employees, 79 percent of whom worked full-time, along with 6,050 students employed by the University in a variety of part-time jobs. About 33,618 people (excluding students) worked at locations in Baltimore, including the Homewood campus, East Baltimore, the Bayview Medical Center and other locations. Johns Hopkins is the largest private employer in Baltimore.

Table 3 shows the breakdown of jobs by location in Baltimore as of Spring 2010.

Employment at the Johns Hopkins Institutions has grown by approximately 40 percent since the fall of 2003.

The Johns Hopkins Institutions' payroll in FY 2010 totaled \$2.95 billion, including wages paid to student employees. The payroll for Johns Hopkins jobs based in Baltimore totaled \$2.08 billion. As Figure 6 illustrates, the Johns Hopkins Institutions' payroll increased by 69 percent between FY 2003 and FY 2010.

Figure 6:
Johns Hopkins Institutions annual payroll (\$ millions), FY 2003-2010

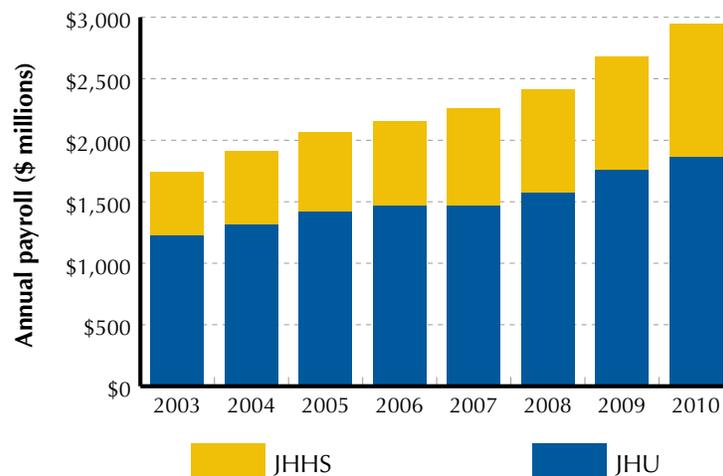
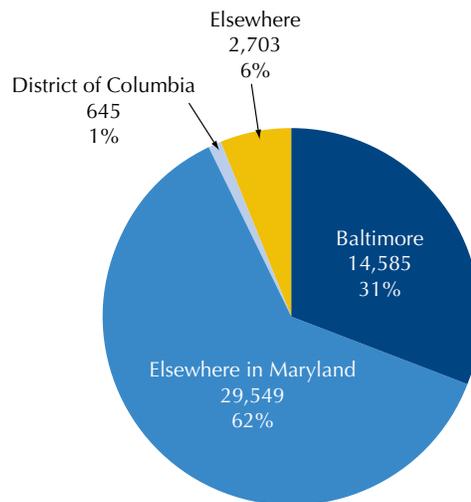


Figure 7:
Number of employees by place of residence, Spring 2010



Where Johns Hopkins employees live

As Figure 7 shows, 31 percent of the Johns Hopkins Institutions' employees (excluding students) lived in Baltimore in the spring of 2010. Salaries and wages paid to these employees totaled \$710.6 million (26 percent of the total payroll for non-student employees).

In addition to these regular employees, 4,358 of the University's 6,050 student employees – about 72 percent of the total – lived in Baltimore.

Diversity and quality of Johns Hopkins employment

Johns Hopkins offers a wide variety of high-quality jobs for residents of Baltimore.

- At the University (including the School of Medicine), faculty account for 27 percent of total employment; administrative and other professionals, 46 percent; and clerical and support staff, 27 percent.
- At Johns Hopkins Health System, administrative and professional jobs (including non-faculty physicians) account for 24 percent of employment; nursing staff for 26 percent; and clerical and support staff for 50 percent.

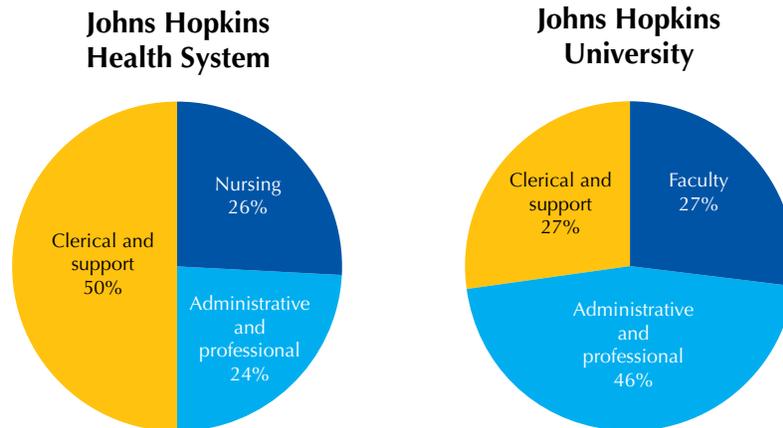
The employment distribution for the University and the Johns Hopkins Health System is shown in Figure 8.

Salaries and wages paid by Johns Hopkins are significantly higher than the average earnings of workers in Baltimore and Maryland. In 2009, the average salary for full-time, full-year employees in Baltimore was \$53,501, and in Maryland, \$50,596; while the average salary for full-time, full-year employees at Johns Hopkins University (excluding the School of Medicine) was \$64,000 – 21 percent greater than the Baltimore average and 28 percent greater than the average for Maryland. The average salary for full-time, full-year employees at the School of Medicine was \$75,500. The average salary for full-time, full-year Johns Hopkins Health System employees was \$60,500.

Earnings are, of course, not the only factor that affects the quality of jobs. Johns Hopkins also provides a wide range of benefits to its employees. They include:

- Health, dental and vision insurance
- Flexible spending accounts
- Life, disability and long-term care insurance

Figure 8:
Johns Hopkins full- and part-time employment by occupation, Spring 2010



- Tax-deferred retirement plans
- Live Near Your Work, a program that provides incentives for employees to purchase homes near the Homewood and medical center campuses (described in Part Nine)

Johns Hopkins also provides its employees with opportunities for education. The University offers a tuition remission program that provides 100 percent of the tuition for employees and employees' family members for part-time, credit and non-credit courses at the University up to \$5,250 per calendar year. In fiscal year 2010, the University provided 1,145 employees with about \$3.1 million worth of tuition under the program.

Employees may also take courses at other colleges and universities under the University's tuition reimbursement program. The program reimburses up to \$2,000 in tuition for each employee's family per year. During the 2009-10 academic year, 370 employees took advantage of this program, totaling \$504,920 in tuition reimbursements.

Educational benefits are not limited to employees themselves. The University also provides a tuition grant that provides 50 percent of full-time undergraduate tuition and mandatory academic fees to dependent children of employees for up to four years. In fiscal year 2010, 1,517 students took advantage of this program – a value of \$19.7 million.

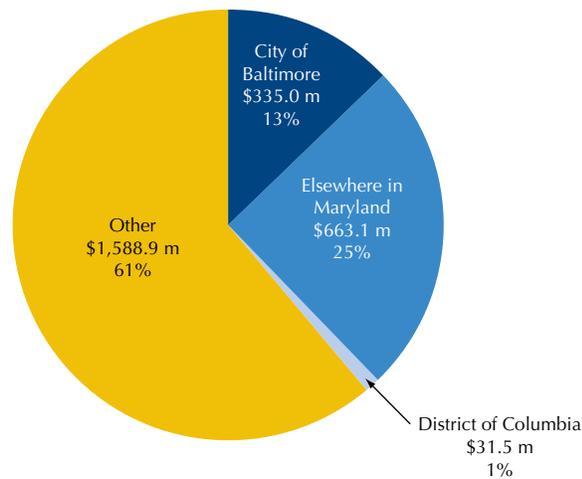
THE IMPACT OF PURCHASING AND CONSTRUCTION

In addition to the people it employs directly, Johns Hopkins generates jobs in Baltimore through its purchases of goods and services from local companies and through construction and renovation of its facilities.

Purchasing goods and services

Johns Hopkins spent \$2.62 billion on the purchase of goods and services during fiscal year 2010. As shown in Figure 9, 13 percent of this total – \$335 million – was spent on goods and services provided by Baltimore companies.

Figure 9:
Johns Hopkins Institutions annual payroll (\$ millions), FY 2003-2010



Johns Hopkins spends a significant amount with minority- and women-owned businesses, including many in Baltimore. In FY 2010, the University spent \$141.6 million with minority- and women-owned businesses, including \$37.7 million in Baltimore.

Johns Hopkins purchases a wide variety of goods and services from businesses located in Baltimore. The leading categories of purchases from Baltimore companies include:

- Professional and technical services
- Leasing of space
- Temporary employment services
- Food and food services
- Building services and facilities support

Using the IMPLAN modeling system, we estimate that in FY 2010 Johns Hopkins purchases of goods and services from local companies directly supported 2,102 full-time equivalent jobs with Baltimore businesses.

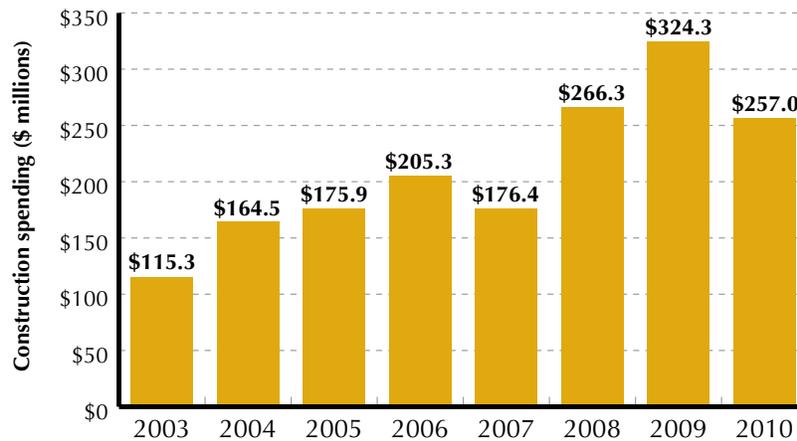
The impact of construction

In addition to generating jobs and economic activity through its purchases of goods and services, Johns Hopkins also does so through its investments in its University and health care facilities. Between fiscal years 2003 and 2010, Johns Hopkins invested a total of \$1.68 billion in facility construction and renovation – an average of \$210 million annually.

Broadway Services: Spinning off a growing business

Baltimore-based Broadway Services was established in 1982 to provide security services to Johns Hopkins. In addition to security services, the company's lines of business now include environmental services, parking/transportation and property management. The company employs more than 1,300 people and generated about \$54 million in revenue in FY 2010. While most of the firm's business continues to be with Johns Hopkins, a growing share is with other companies in the Baltimore area. In FY 2010, about 33 percent of the Broadway Services' revenue (about \$18 million) came from its other 150 customers in the Baltimore area.

Figure 10:
Construction spending, FY 2003-2010 (\$ millions)

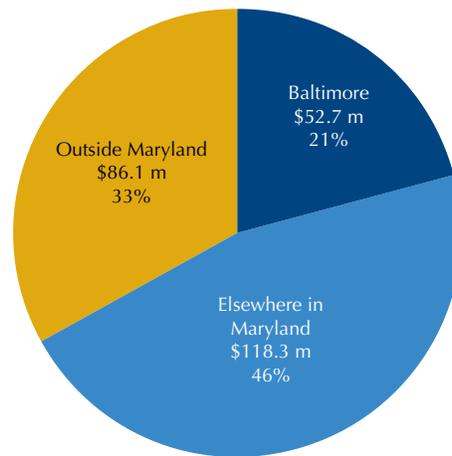


Major projects completed or under way during fiscal year 2010 have included the following:

- After a three-year \$85 million renovation, *Gilman Hall* reopened its doors to faculty, staff and students in August 2010. The building houses ten of the Krieger School of Arts and Sciences' humanities departments and common spaces permitting increased interaction among faculty and students from different departments. The centerpiece of the building is a three-story sunlit atrium that will serve as the building's central focal point and gathering space. The University is seeking LEED Gold certification for the building.
- The *Brody Learning Commons* will be a five-story building adjacent to the Eisenhower Library that will include study space, media rooms and space for materials from the Department of Rare Books and Manuscripts. Its total cost is projected at \$30 million and the University will seek LEED Silver certification.
- On the Johns Hopkins Hospital campus in East Baltimore, work is under way on two new 12-story patient towers – the *Charlotte R. Bloomberg Children's Center* at Johns Hopkins and the *Sheikh Zayed bin Sultan Al Nahyan Cardiovascular and Critical Care Adult Tower*. The towers, totaling nearly 1.6 million square feet, will include 560 patient beds – 355 for adults and 205 for children. This \$1.1 billion project will be completed in 2012.
- Johns Hopkins completed a 4.6-megawatt *cogeneration plant* on its Homewood campus in 2010 and plans to complete two more cogeneration plants totaling 15 megawatts on its East Baltimore campus by the end of 2011. The plants will reduce energy costs, while also substantially reducing carbon dioxide emissions. The total cost of the three cogeneration plants is \$43.1 million.
- In May 2010, the Bayview Medical Center received \$7 million from the National Institutes of Health under an American Recovery and Reinvestment Act grant to renovate lab space in the *Center for Translational Molecular Imaging* (CTMI). The Center will support processes in which chemical imaging agents are administered so physicians and researchers can better see what is happening inside the body's tissues. The initial focus of the CTMI will be on neurology and oncology. The lab is expected to be completed by 2012.

Figure 11:

Johns Hopkins construction spending by location of contractor, FY 2010



As Figure 11 shows, in fiscal year 2010, Johns Hopkins spent \$257 million on construction and renovation of facilities, of which we estimate that 21 percent, or \$52.7 million, was paid to contractors and subcontractors located in Baltimore.

We estimate that in fiscal year 2010, Johns Hopkins' spending on construction directly created about 985 jobs with Maryland contractors, including about 325 jobs working for Baltimore-based contractors and subcontractors.

A significant portion of Johns Hopkins Institutions' spending on construction in FY 2010 (and in the preceding five years) went to minority- and women-owned businesses (MWBEs). As Figure 12 shows, Johns Hopkins spent about \$37.8 million with MWBEs in FY 2010 – nearly 15 percent of its FY 2010 spending. Between FY 2005 and FY 2010, Johns Hopkins spent about \$147 million with MWBE contractors.

Figure 12:

Construction spending with MWBE contractors, FY 2005-2010

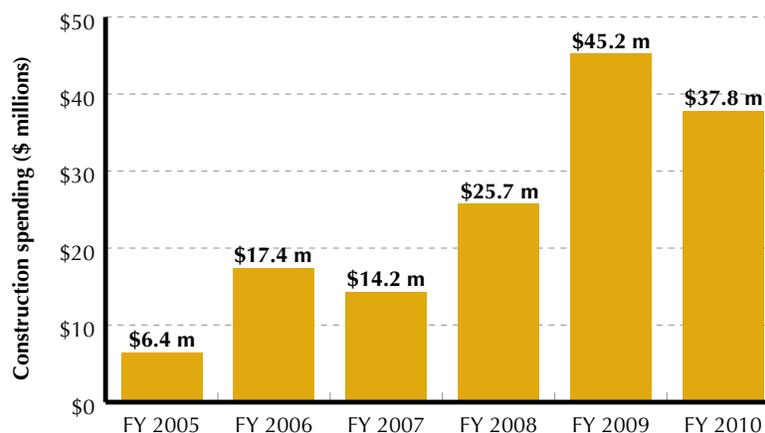
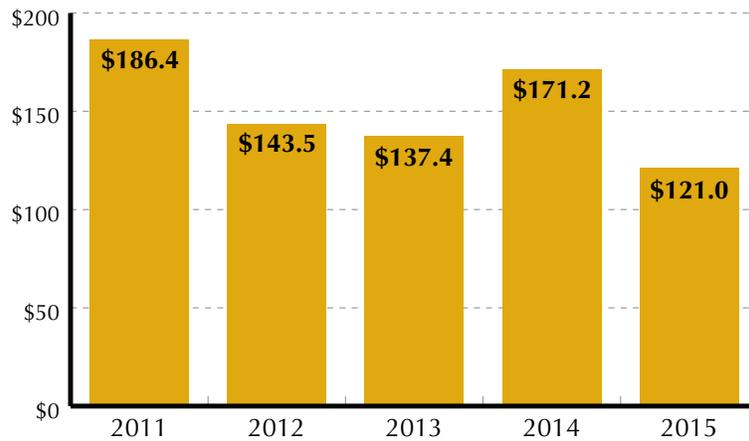


Figure 13:
Projected construction spending, FY 2011-2015 (\$ millions)



As shown in Figure 13, over the next five years from 2011 to 2015, Johns Hopkins estimates it will spend an average of approximately \$152 million per year on new construction and major renovation.

Based on the location of contractors used by Johns Hopkins in FY 2010, we estimate that about \$101 million per year could be spent with Maryland-based contractors, including about \$32 million with Baltimore-based contractors. Over the next five years, this spending could directly support about 2,900 person-years of employment in construction and related industries in Maryland, including 990 person-years of employment with Baltimore-based contractors.

(It should be noted that the estimate of \$152 million in average annual construction spending during the next five years is based on current plans. Identification of new needs and opportunities – such as currently-unanticipated major gifts – could increase total investments in new construction and renovation beyond the level of the current five-year forecast. New investments over and above forecasted levels have been fairly common at Johns Hopkins in recent years.)

The impact of Johns Hopkins construction spending goes beyond the opportunities it creates for contractors and construction workers in Baltimore and throughout Maryland. The Johns Hopkins Institutions' investment in construction and renovation of facilities enhances its ability to fulfill its mission of education, research and patient care, which in turn enhances its capacity to contribute to the ongoing development and redevelopment of Baltimore, the surrounding region and the state.

Indirect and induced effects

The jobs and economic activity generated by Johns Hopkins Institutions' spending for payroll, purchasing and construction are not limited to the direct impacts cited above. Some of the money that Johns Hopkins pays to its local suppliers and contractors is used to buy goods and services from other local companies; and the latter companies in turn buy goods and services from other local businesses.

Table 4:

Direct, indirect and induced impacts of Johns Hopkins spending in Baltimore, FY 2010

Entity	Direct spending		Indirect and induced impact of spending by vendors, contractors and employees		Total impact
	Payroll	Purchasing/ construction	Impact of vendor and contractor spending	Impact of employee spending	
University	\$ 1,251.6 million 18,783 jobs	\$ 235.6 million 1,390 jobs	\$ 45.7 million 318 jobs	\$ 411.9 million 2,974 jobs	\$ 1,961.6 million 23,562 jobs
Health System	\$ 831.4 million 14,835 jobs	\$ 152.1 million 1,036 jobs	\$ 28.5 million 196 jobs	\$ 254.7 million 1,821 jobs	\$ 1,266.7 million 17,888 jobs
TOTAL	\$ 2,083.0 million 33,618 jobs	\$ 387.6 million 2,426 jobs	\$ 74.2 million 514 jobs	\$ 666.6 million 4,796 jobs	\$ 3,211.4 million 41,353 jobs

Johns Hopkins employees, and the employees of its suppliers and contractors, similarly use part of their earnings to buy a wide variety of goods and services – housing, utilities, food, personal services and other household needs – from local businesses; and the employees of those businesses do the same.

Using a tool of economic analysis called an input-output model, we can measure these “indirect and induced” (or “multiplier”) effects of Johns Hopkins Institutions’ spending. We estimate that in Baltimore, the Johns Hopkins Institutions’ spending on payroll, purchasing and construction in fiscal year 2010 indirectly generated:

- Nearly \$741 million in economic activity and
- 5,309 full-time-equivalent jobs in the city.³

Table 4 summarizes the direct, indirect and induced impacts of Johns Hopkins Institutions’ spending in the City of Baltimore. In addition to the 33,618 people Hopkins employed directly in Baltimore (excluding students), the Johns Hopkins Institutions’

spending directly and indirectly generated 7,736 full-time equivalent jobs with other employers in Baltimore, and generated about \$1.13 billion in economic activity throughout the city in addition to its direct spending on payroll.

The analysis above includes spending by employees who live in Baltimore, but does not include spending by employees who commute to a Johns Hopkins location in Baltimore from outside the city. We conducted a survey of all Johns Hopkins employees during the fall of 2010, asking employees who commute to Baltimore how much money they spend in Baltimore.

Based on responses to the survey, we estimate that commuters to Baltimore spend an average of about \$36.00 per week off-campus on food, shopping and gas and other transportation. Assuming these 19,000 commuters worked in Baltimore 50 weeks during fiscal year 2010, we estimate that they spent about \$34.4 million, directly supporting 247 full-time-equivalent jobs in local businesses.

³ This analysis excludes the 6,050 student workers from the direct employment impact.

Table 5:
Taxes and fees paid to the City of Baltimore, FY 2010

Type of tax	Amount
Parking tax	\$ 3,891,911
Property tax	\$ 4,280,109
Water/sewer	\$ 1,814,733
Energy taxes	\$ 3,544,884
Telecom	\$ 211,224
Licenses/permits/fees	\$ 225,547
TOTAL	\$ 13,968,408

Contributing to local and state revenues

As shown in Table 5, Johns Hopkins paid nearly \$14 million in taxes and fees to the City of Baltimore in FY 2010. This total included about \$4.3 million in property taxes on non-exempt properties, \$1.8 million in water and sewer fees, \$3.9 million in parking taxes and \$3.5 million in energy taxes.

As shown in Table 6, Johns Hopkins paid nearly \$175 million in taxes and fees to the State of Maryland in FY 2010, including about \$171 million in income taxes withheld from the wages and salaries of Johns Hopkins employees. We estimate that employment at Baltimore-based Johns Hopkins facilities generated about \$120.5 million out of the \$171 million in state income taxes.

The impact of student spending

In addition to the University's own spending, off-campus spending by Johns Hopkins students also generates economic activity in the Baltimore area.

The impact of student spending is determined in part by whether students live on campus, in off-campus University housing, or elsewhere in Baltimore or the surrounding communities. In the fall of 2009, 5,831 undergraduate and 14,551 graduate students were enrolled at Johns Hopkins University. Approximately 46 percent of undergraduate students lived on the Hopkins campus while most graduate students lived off-campus in Baltimore or the surrounding communities.

During the fall of 2010, Appleseed conducted an online survey to understand student spending. Questions captured residence location and type, program and degree status and weekly expenditures on goods and services. A total of 2,827 undergraduate, graduate and professional students completed the survey. Based on their responses, we determined average annual expenditures on housing, transportation, books, supplies, food and personal expenses to be \$12,782 for undergraduates living off-campus and \$13,327 for graduate students, as shown in Table 7.

Table 6:
Taxes and fees paid to the State of Maryland, FY 2010

Type of tax	Amount
State income taxes withheld	\$ 170,946,533
Unemployment insurance taxes	\$ 3,743,027
TOTAL	\$ 174,689,560

Table 7:
Average annual student expenditures

Expense	Undergraduate, off-campus	Graduate students
Room and board	\$ 7,814	\$ 7,557
Books, supplies, food and personal expenses	\$ 4,510	\$ 5,153
Transportation	\$ 458	\$ 617
TOTAL	\$ 12,782	\$ 13,327

After discounting student payrolls (which were analyzed as part of the employee spending impacts discussed above), we calculated that spending by Hopkins students in FY 2010 totaled about \$168.2 million in the Baltimore area. This figure discounts housing costs of students who resided in on-campus housing, and excludes spending by part-time graduate students (as we assume they would have been in Baltimore regardless of their enrollment at Hopkins).

Using IMPLAN, we estimate that off-campus student spending directly supported approximately 1,207 FTE jobs in Baltimore.

Through the multiplier effect, off-campus student spending generated an additional \$49 million in economic activity in Baltimore City and 350 FTEs.

Spending by visitors

Visitors to the Johns Hopkins Institutions also have an economic impact on the city of Baltimore. During their stay, they spend money off-campus in hotels, restaurants, retail stores and on entertainment and transportation.

Table 8:
Impact of student spending in Baltimore City, FY 2010

Baltimore City	
Output	
Direct	\$ 86,143,229
Indirect/induced	\$ 48,763,029
TOTAL	\$ 134,906,258
Employment	
Direct	1,207
Indirect/induced	350
TOTAL	1,556
Employee compensation	
Direct	\$ 33,137,577
Indirect/induced	\$ 18,758,162
TOTAL	\$ 51,895,739

Table 9:
Visitors to Johns Hopkins, FY 2010

Type of visitor	Total visitors	# outside Baltimore	# of days	Outside Baltimore visitor-days
Alumni visitors	13,451	4,630	2	9,260
Vendors	4,829	4,291	1	4,291
Admissions visitors	35,284	33,520	1-3	40,502
Commencement visitors	10,000	8,500	3	25,500
Peabody concerts	5,073	761	1	761
Charles Commons Conference Center	11,832	2,366	2	4,733
Summer events	5,254	3,863	3	11,589
Athletics visitors	26,375	5,708	1	5,708
TOTAL	112,098	63,639		102,344

Table 10:
Analysis of number of patients' visitors, and visitor-days, FY 2010

	Johns Hopkins Hospital	Bayview Medical Center	Average length of stay	Baltimore visits/patient-days	Visitors per patient	Baltimore visitor-days
Outpatient visits						
From outside Baltimore						
Other Maryland/DC	328,535	184,047		512,582	0.5	256,291
Elsewhere in US	101,867	12,812		114,679	1.0	114,679
Outside US	11,895	2,324		14,219	3.0	42,657
TOTAL	442,297	199,183		641,480		413,627
Inpatient visits						
From outside Baltimore						
Other Maryland/DC	22,577	12,206	3.6	125,217	0.5	62,609
Elsewhere in US	8,172	854	3.6	32,494	2.0	64,987
Outside US	698	182	3.6	3,168	3.0	9,504
TOTAL	31,447	13,242		160,879		137,100

Table 11:
Spending by patients' companions in Baltimore

Category	Spending
Food	\$ 19,462,673
Lodging	\$ 9,175,906
Shopping	\$ 11,677,604
Other transport	\$ 2,621,687
Gasoline	\$ 1,557,014
TOTAL	\$ 41,873,196

As shown in Table 9, we estimate that about 112,000 non-Hopkins visitors came to one of the Hopkins campuses in FY 2010. As the table shows, we estimate that about 63,000 of those visitors (about 57 percent of them) came from outside the city of Baltimore.

Using data compiled by the Baltimore Visitors and Convention Bureau on spending by visitors to Baltimore, we estimate that these visitors spent about \$19.6 million on off-site purchases of hotel accommodations, food shopping, entertainment and transportation.

The Johns Hopkins Hospital and Bayview Medical Center also bring patients' companions and other patient visitors to the city. As Table 10 shows, there were about 641,480 outpatient visits to The Johns Hopkins Hospital and Bayview Medical Center from outside Baltimore, including 114,679 visits from elsewhere in the U.S. and 14,219 visits from outside the U.S. The number of visitors per patient can vary widely. As shown in the table, we estimate one-half visitor per patient for outpatients from within Maryland or DC, one visitor per patient for outpatients from elsewhere in the U.S. and 3 visitors per outpatient for those from outside the U.S. In total, we estimate that outpatients' visitors accounted for 413,627 visitor-days in Baltimore in FY 2010.

In FY 2010, there were 44,689 inpatient discharges from The Johns Hopkins Hospital and Bayview Medical Center of patients who reside outside the city of Baltimore. Patients from outside Maryland and DC accounted for 9,026 discharges and patients from outside the U.S. accounted for 880. As in the case of outpatient visits, the number of visitors accompanying patients can vary widely. We conservatively estimated one-half visitor per in-state and D.C. patients, two visitors per out-of-state patient and 3 visitors per patient from outside the U.S. Using data from Johns Hopkins on the average length of stay of visitors, we estimate that those visitors accounted for 137,100 visitor-days in Baltimore in FY 2010.

As with other visitors to the Health System and University campuses, we use data from the Convention and Visitors Bureau to estimate spending by visitors in Baltimore. As Table 11 shows, we estimate that patients' companions spent about \$41.9 million in Baltimore in FY 2010, including about \$19.5 million on food, \$9.2 million on lodging and \$15.9 on shopping and transportation costs.

Using IMPLAN, we estimate that spending by visitors to the University and the two Baltimore hospitals directly created 441 FTE jobs in Baltimore in FY 2010 in restaurants, shops, hotels, gas stations and other local businesses.

Adding it all up

As Table 12 shows, we estimate that in FY 2010:

- The Johns Hopkins Institutions directly employed 33,618 people in Baltimore, with a payroll of \$2.08 billion; and through payments of \$388 million to Baltimore vendors and contractors, supported 2,426 additional FTE jobs.
- Institutions affiliated with Johns Hopkins (listed in Part One of the report) directly employed 3,874 people, with a payroll of \$244 million; and through payments of \$59 million to Baltimore vendors and contractors, supported 345 additional FTE jobs. (Employment at these institutions is discussed in Part Seven.)
- About \$264 million in local spending by students, visitors and Johns Hopkins employees who commute into the city directly supported 2,027 FTE jobs.
- Through the multiplier effect, spending by the Johns Hopkins Institutions, by its employees, vendors and contractors, by students and visitors, by affiliated institutions and by their employees and suppliers indirectly generated \$955 million in economic activity in the city and 6,886 FTE jobs.

In total Johns Hopkins directly and indirectly accounted for 49,177 FTE jobs – about one out of every seven wage-and-salary jobs in the city – and nearly \$4.0 billion in output in Baltimore in FY 2010.

Table 12:
Impact of Johns Hopkins, students, visitors and affiliates, FY 2010

	Employment/ payroll	Purchasing/ construction	Indirect/ induced	Total
Johns Hopkins				
Output	\$ 2,083.0 million	\$ 387.6 million	\$ 740.8 million	\$ 3,211.4 million
Employment	33,618 jobs	2,426 FTEs	5,309 FTEs	41,353 FTEs
Affiliate spending				
Output	\$ 244.0 million	\$ 59.2 million	\$ 138.0 million	\$ 441.2 million
Employment	3,874 jobs	345 FTEs	989 FTEs	5,208 FTEs
Commuter				
Output		\$ 34.4 million	\$ 10.0 million	\$ 44.4 million
Employment		247 FTEs	72 FTEs	318 FTEs
Student spending				
Output		\$ 168.2 million	\$ 48.8 million	\$ 216.9 million
Employment		1,207 FTEs	350 FTEs	1,556 FTEs
Visitor spending				
Output		\$ 61.5 million	\$ 17.8 million	\$ 79.4 million
Employment		574 FTEs	166 FTEs	740 FTEs
TOTAL				
Output	\$ 2,327.0 million	\$ 710.9 million	\$ 955.3 million	\$ 3,993.3 million
Employment	37,492 jobs	4,799 FTEs	6,886 FTEs	49,177 FTEs



MAHILUY, BARBARA

PART THREE: Contributing to the development of Baltimore's human capital

During the past 20 years, a growing body of research has confirmed the role of human capital – the accumulated knowledge, skills and experience of a nation's, a region's or a city's people – as perhaps the single most important contributor to economic growth. At the individual level, of course, the impact of education on earnings is widely understood. In 2009, as Figure 14 shows, the median earnings of employed Baltimore residents who had four-year college degrees (\$46,016) were 86 percent higher than the median earnings of those who had only a high school diploma (\$24,753); and the median earnings of those with graduate or professional degrees (\$57,728) were 133 percent higher.

The benefits of higher education are not limited to those who earn degrees. For example, economist Edward Glaeser has found that between 1960 and 1990, population and income growth in U.S. cities was closely correlated with levels of human capital, as measured by the percentage of the cities' residents who were college graduates in 1960. The relationship between human capital and urban economic growth persisted through the 1990s.⁴

In a recent paper published by the New York Federal Reserve Bank, Jaison Abel and Todd Gabe similarly found that “a one percentage point increase in the proportion of residents with a college degree is associated with a 2.3 percent increase in metropolitan-area GDP

per capita.” Summarizing the results of previous studies, Abel and Gabe cite two explanations for the powerful link between human capital and economic growth.

First, human capital increases individual-level productivity and idea generation. Second, the concentration of human capital within a region facilitates knowledge spillovers, which further enhance productivity and fuel innovation. Indeed, Glaeser suggests that human capital is a key predictor of urban success because “high skilled people in high skilled industries may come up with more new ideas.” In addition, a region's stock of human capital has been shown to lead to more rapid reinvention and increases in the long-term economic vitality of cities.⁵

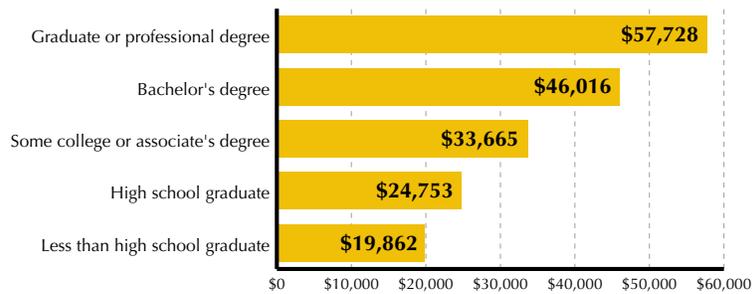
Abel and Gabe's work echoes that of other economists who had found similar spillover effects. Even non-college educated workers benefit from this effect. Enrico Moretti has shown that a 1 percentage-point increase in the percentage of a city's workers who have college degrees is associated with a 1.6 percent increase in the earnings of workers who have a high school education, and a 1.9 percent increase in the earnings of those who have not completed high school.⁶

⁴ Edward Glaeser, Jose Scheinkman and Andrei Schleifer, “Economic Growth in a Cross-Section of Cities,” *Journal of Monetary Economics* (1995) pp. 117-143; Glaeser and Jesse Shapiro, “Is There a New Urbanism? The Growth of U.S. Cities in the 1990's” (Cambridge: National Bureau of Economic Research Working Paper, July 2001) p. 2.

⁵ Jaison Abel and Todd Gabe, “Human Capital and Economic Activity in Urban America,” Federal Reserve Bank of New York, staff report no. 332, July 2008, pp. 1-2.

⁶ Enrico Moretti, “Estimating the Social Return to Higher Education: Evidence from longitudinal and repeated cross sectional data” *Journal of Econometrics* 121, pp. 175-212 (2004).

Figure 14:
Median earnings by level of education, Baltimore City residents, 2009



Johns Hopkins University contributes to the development of Baltimore's supply of human capital in several ways:

- By providing a high-quality education for thousands of Baltimore residents
- By attracting talented students from around the world, some of whom remain in Baltimore after they graduate
- By preparing both undergraduates and graduate students for careers in fields that are critical to the future of Baltimore's economy

- By providing opportunities for working professionals to upgrade their skills
- By helping to improve the quality of elementary and secondary education in Baltimore

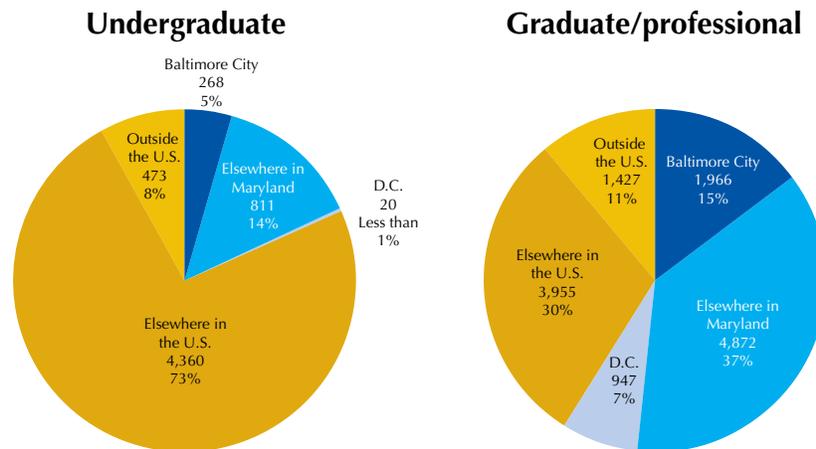
STUDENTS AND ALUMNI

In the fall of 2009, a total of 20,483 students were enrolled in undergraduate and graduate degree and for-credit certificate programs at Johns Hopkins. Table 13 provides data on undergraduate and graduate/professional enrollment by school.

Table 13:
Enrollment by school, Fall 2009

School	Undergraduate	Graduate/professional
Advanced Academic Programs	-	2,482
Krieger School of Arts and Sciences	3,512	1,025
Carey Business School	159	1,517
School of Education	73	1,933
Whiting School of Engineering	1,486	759
Engineering Part-Time Programs	-	2,005
School of Nursing	360	339
Bloomberg School of Public Health	-	2,056
Peabody Institute	342	340
SAIS	-	717
School of Medicine	-	1,378
TOTAL	5,932	14,551

Figure 15:
Enrollment by permanent residence, Fall 2009



As Figure 15 shows, about 5 percent of all undergraduates and 15 percent of all graduate and professional students in the fall of 2009 were residents of Baltimore. In 2009-10, Johns Hopkins provided more than \$25.7 million in financial aid to students in Baltimore.

In 2009-2010, the University granted a total of 1,586 undergraduate, 4,352 graduate and professional degrees, 219 medical degrees and 532 certificates. About 12 percent of all undergraduate degrees and 8 percent of all graduate and professional degrees were awarded to residents of Baltimore.

Between 2003 and 2010, enrollment at Johns Hopkins grew by 9 percent – an increase of about 1,600 students. Undergraduate enrollment grew by 600 (about 11 percent) and graduate and professional enrollment grew by more than 1,000 (about 8 percent).

Some of those who earn degrees at Hopkins stay in Baltimore after they graduate. As of the summer of 2010, 11,279 Hopkins graduates – 7.2 percent of all living alumni – lived in Baltimore.

Figure 16:
Degrees awarded, by residence of degree recipient and type of degree

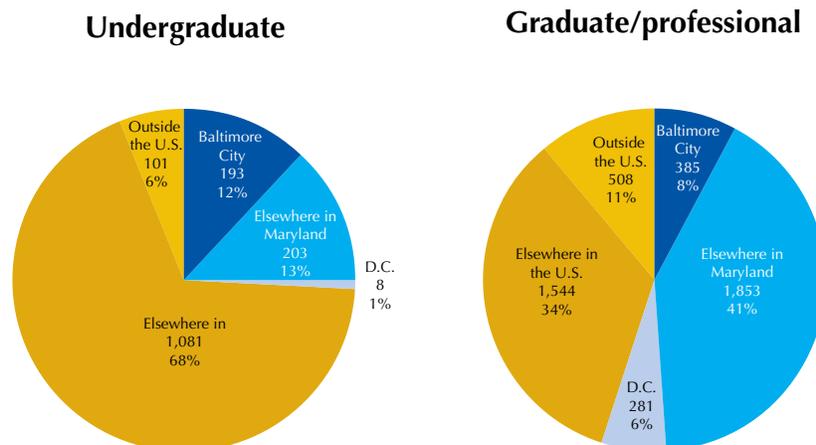
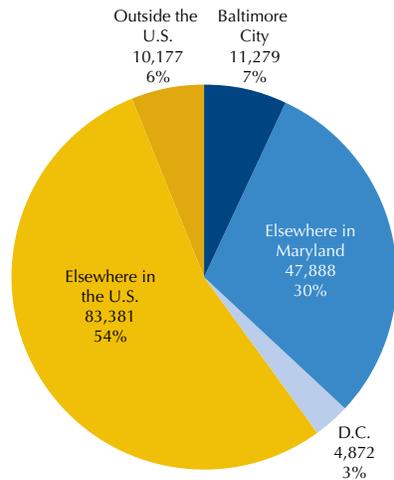


Figure 17:
Current address of Hopkins alumni



PREPARING JOHNS HOPKINS STUDENTS FOR TOMORROW'S ECONOMY

Johns Hopkins offers its students opportunities for learning in a number of fields that have a major impact on Baltimore's economy, or that could be important sources of future growth.

- The Whiting School of Engineering offers undergraduate, master's and doctoral programs in *biomedical engineering*. Concentrations are offered in several areas, including biological systems, computational biology, cell and tissue engineering and sensors and micro-devices.
- The Whiting School's *Center for Bioengineering Innovation and Design* (BID) offers an undergraduate program in which teams of biomedical engineering students design innovative medical devices aimed at solving specific problems identified by clinicians or industry participants. The Center reports that over a five-year period student teams have completed 58 device designs, secured eight provisional patents and two licensing agreements and started two new companies. The Center also offers a one-year MSE in bioengineering innovation and design.
- The Whiting School also offers an MS in *security informatics*, designed for students pursuing careers in the fast-growing field of information security. The program combines studies in technology, management, health policy and security policy, with courses offered at the Homewood and East Baltimore campuses and at the Applied Physics Laboratory in Laurel. The Whiting School also offers a combined BS/MS program in security informatics, to which students can apply after their second year of undergraduate studies; it gives students the option of earning both a bachelor's degree and a master's degree in five years.
- In addition to training physicians⁷, the Johns Hopkins School of Medicine offers graduate programs in other areas critical to Maryland's continued leadership in biomedical research and health care delivery. For example, the School offers two master's degrees in *health sciences informatics* – a two-year program for those interested in the use of information technology, solutions and services in biomedical research and a one-year program focused on applications in areas such as public health and health systems management.

⁷ Training of physicians is discussed in Part Five of the report.

- Undergraduates in the Krieger School of Arts and Sciences can earn a bachelor's degree in *neuroscience* through a rigorous program aimed at preparing students for graduate study, medical school or work in industry. Students can specialize in cognitive, molecular and cellular, or systems neuroscience and can also earn a joint BA/MS degree through a fifth year of advanced seminars and research in their chosen specialty.
- The Krieger School's Center for Financial Economics offers a *minor in finance* to undergraduate students majoring in other disciplines, designed to give students a better understanding of the financial dimensions of their principal areas of interest – from biomedical engineering and public health to government and the arts.
- Starting in 2010, the Bloomberg School of Public Health is offering a new master's degree in *health economics*, aimed at giving students the tools they need to understand the economics of health care and to promote a more “efficient and equitable allocation of health care resources.”
- In addition to a traditional BS/RN program, the Johns Hopkins School of Nursing offers an *accelerated, 13-month nursing degree* program for students who have already completed a bachelor's degree.
- Through a combined BS/MSN program, the School of Nursing allows students to earn a master's degree in nursing, with opportunities for specialization in fields such as *health systems management*.
- The Peabody Institute offers both four-year and graduate degrees for musicians, conductors and composers. The Institute also offers a bachelor's degree in *recording arts and sciences* – a five-year program that combines courses in music and engineering with practical training in recording technology.

Engagement with the world outside the U.S. is an important part of the process of preparing students to live and work in an increasingly integrated global economy. In 2009-2010, 379 Johns Hopkins undergraduates earned academic credit through participation in international programs and more than 200 others participated in research or service projects in other countries.

Partnerships with leading universities in other countries have in recent years expanded the range of opportunities available to Johns Hopkins students. Since 2001, for example, the Peabody Institute has worked closely with the National University of Singapore on the creation and continued development of that nation's first conservatory – an institution that now regularly exchanges students with its partner in Baltimore.

Preparing students for careers in global business

In August 2010, the Carey Business School welcomed its first class of 89 students into the Johns Hopkins Global MBA program. Described as “an MBA with a mission,” this full-time, two-year program combines a solid grounding in areas such as finance, marketing, management and operations with engagement in a broader range of issues and concerns. The program has several innovative features.

In their first year, students are required to participate in the Innovation for Humanity Project, through which they engage directly in the creation and growth of sustainable businesses in developing countries. Starting in their second semester, the Discovery to Market Project engages students in the process of translating scientific discoveries and new technologies into commercially viable products and services.

American students at Johns Hopkins also benefit from the opportunity to live and work with students from other countries. In the fall of 2009, 1,900 undergraduate and graduate students from other countries were enrolled at Johns Hopkins – about 9 percent of the University’s total enrollment. Both by bringing international students to Baltimore and by providing U.S. students with opportunities for international experience, Johns Hopkins is developing a web of ongoing global relationships that benefits the University, its students – and Baltimore as well.

BUILDING THE SKILLS OF BALTIMORE’S PROFESSIONAL WORKFORCE

Johns Hopkins is unusual among leading American research universities in the extent of its commitment to providing educational opportunities for working professionals.

Engineering for Professionals

The most extensive of the University’s part-time graduate programs is the Whiting School’s Engineering for Professionals (EP) program. EP offers master’s degrees and graduate certificates in nineteen fields, ranging from traditional disciplines such as chemical, civil, electrical and systems engineering to emerging fields such as biomedical engineering, bioinformatics, nanotechnology, information assurance and photonics. EP also offers advanced certificate programs in several specialized areas for students who already have at least a master’s degree – for example, a new six-course program in climate change, energy and environmental sustainability.

EP courses are offered at the Homewood campus and at a variety of other locations in Maryland, D.C. and Arlington, Virginia. A growing number of EP courses are also available online. In the fall of 2009, 2,005 part-time students (including 198 residents of Baltimore) were enrolled in EP courses, making Engineering for Professionals one of the largest part-time graduate engineering programs in the U.S.

Advanced Academic Programs

Through its Advanced Academic Programs (AAP), the Krieger School of Arts and Sciences also offers an array of part-time master’s degree and certificate programs geared to the needs of working professionals. For example:

The Krieger School’s *Center for Biotech Education* offers master’s degrees in biotechnology, bioinformatics and bioscience regulatory affairs and a dual-degree MS in biotechnology/MBA offered jointly with the Carey Business School. Classes are held in the evening and on Saturdays at the Homewood campus and several other locations. Other areas in which AAP offers master’s degrees include:

- Environmental science and policy
- Energy policy and climate
- Global security studies
- Writing, with concentrations in fiction, non-fiction, poetry and science writing, offered in Baltimore and D.C.

In the fall of 2009, 2,482 students – including 200 Baltimore residents – were enrolled in the Krieger School’s Advanced Academic Programs.

Other programs

Other schools at Johns Hopkins also offer programs geared to the needs of working professionals. We will cite here just a few examples.

- The Carey School’s *Flexible MBA* allows students to earn a degree via classes held on weekday evenings and on weekends. The Carey School also offers graduate certificates in areas such as finance, investment and the business of medicine.
- The School of Education’s *Division of Public Safety Leadership* offers a 60-credit bachelor’s degree in management for public safety professionals who have already completed two years of college, as well as a 45-credit master’s degree in management designed specifically for those who have been identified

by their agencies as future leaders. To date, 609 students have enrolled in the program, including 174 residents of Baltimore. Classes are held at the Johns Hopkins Columbia Center.

- The Peabody Institute offers an *artists diploma* in music, designed for those who have already embarked on careers as professional performers. The curriculum includes lessons, recitals and one classroom course per semester.

STRENGTHENING ELEMENTARY AND SECONDARY EDUCATION

The development of Baltimore's human capital depends not only on the strength of its colleges and universities, but on the quality of its educational system from pre-kindergarten through high school. Johns Hopkins has long been involved in efforts to strengthen pre-school, elementary and secondary education in Baltimore – through the training of teachers and other school professionals, research, engagement with schools in Baltimore, and expansion of educational opportunities for young Baltimore residents.

Training teachers and other school professionals

The Johns Hopkins School of Education provides a variety of options for Baltimore residents who want to earn a Master of Arts degree in teaching (MAT).

- The *School Immersion MAT* is an intensive, one-year 39-credit program that combines full-time summer study with a full-time teaching internship and late-afternoon and evening classes during the school year.
- The *Flexible MAT* is designed for working professionals in other fields who want to become teachers. Students can take anywhere from two to five years to complete the program, which includes an internship requirement.

Applying the lessons of brain science

During the past twenty years, advances in neuroscience have greatly enhanced our understanding of how the brain functions. Until recently, however, relatively little had been done to translate new insights from neuroscience into the school environment and the practice of teaching. The School of Education's Neuro Education Initiative is designed to bridge this gap. This initiative includes the development of research partnerships among education and neuroscience faculty, the development of new teaching methods and professional development programs.

Dr. Mariale Hardiman, a professor at the School of Education, has developed a "Brain-Targeted Teaching Model" that includes insights into how changes in the school environment can help set the stage for more effective learning, as well as guidance for teachers on how to structure lessons and classroom activities to take advantage of what the field of brain science is discovering about how children learn. The model is now being used in several Baltimore schools.

Since 2008, the School of Education has also offered a 15-credit graduate certificate in Mind, Brain and Teaching, designed to equip teachers and other school professionals with the knowledge and tools they need to translate advances in neuroscience from university labs to elementary and high school classrooms.

- The *Accelerated MAT* allows undergraduate students to begin working toward teacher certification and a master's degree after they have earned at least 60 undergraduate credits. Students can earn up to 12 graduate credits during their undergraduate years (of the 39 required) and can complete the remaining requirements – including an internship at a Johns Hopkins partnership school – in anywhere from one to five years after completing a bachelor's degree.

Johns Hopkins also offers graduate certificate programs for teachers and other school professionals in fourteen areas such as adolescent literacy, English as a second language, educational technology and data-based decision-making for school administrators.

Under the Maryland Redesign for Teacher Education, each of the state's teacher training programs maintains ongoing partnerships with several "professional development schools." There are elementary and high schools with which the colleges and universities collaborate on professional development services for teachers and other school improvement initiatives and where undergraduate and graduate students are placed in teaching internships. In 2009-10, the Johns Hopkins School of Education worked with ten professional development schools, including two in Baltimore – George Washington Elementary School and Paul Lawrence Dunbar High School.

The School of Education's work with Dunbar High School illustrates the value of these partnerships in improving school performance. In 2005, Johns Hopkins and Dunbar created the Algebra Academy, a Saturday program aimed at building the math skills of both students and teachers. By 2007, the percentage of 9th grade students at Dunbar who passed Maryland's statewide algebra assessment doubled – from 43 to 86 percent; by 2009, the pass rate reached 100 percent.

The support provided by Johns Hopkins for Maryland's public schools is not limited to the University's School of Education. Other schools and institutions are also engaged in a variety of ways in efforts to enhance the quality of public education. For example:

- The Johns Hopkins *Takes Time for Schools* program makes University staff members eligible for up to two paid days per fiscal year to pursue service opportunities in Baltimore schools. In part because of this program, Johns Hopkins employees are the single largest source of volunteers working in the Baltimore Public Schools. In 2010, 193 Johns Hopkins employees regularly worked as volunteers at 13 public schools – 37 percent of all registered volunteers in the city's school system.
- Under a grant from the National Science Foundation, the Whiting School of Engineering's *BIG STEP* program trains engineering graduate students to work in several of Baltimore's public schools. Through a curriculum that is organized around the environment and environmental processes, Johns Hopkins students seek to help disadvantaged students develop a better understanding of math, the physical sciences and technology.

Expanding educational opportunity

In addition to training teachers and other school professionals, Johns Hopkins contributes to the quality of education in Baltimore, and to the expansion of educational opportunity, through programs that directly serve students in grades K-12. We cite here just a few examples.

Creating opportunity for graduates of Baltimore's public schools

In 2004, Johns Hopkins reinforced its commitment to expanding educational opportunity for young residents of Baltimore by creating the Baltimore Scholars Program. The program provides full-tuition scholarships to all graduates of Baltimore public high school who are accepted as full-time undergraduate students at Johns Hopkins. (To be eligible, students must have lived in Baltimore for at least three years and attended a public high school in the city for at least three years.)

From the program's inception in 2005 through 2009-10, 729 Baltimore high school students had applied to Johns Hopkins under the program; 173 had been accepted, of whom 91 had enrolled, and 36 Baltimore Scholars from the classes of 2009 and 2010 have graduated. In the spring of 2010, 23 Baltimore public school graduates were accepted at Johns Hopkins, of whom 21 qualified as Baltimore Scholars and 9 enrolled. To date, the value of scholarships awarded under the program has totaled \$13.6 million.

- The *Johns Hopkins Tutorial Program*, founded in 1958, is administered by the University's Center for Social Concerns (described further in Part Nine of the report). During the fall and spring semesters, the Program brings about 120 to 150 Baltimore elementary school students to the Homewood campus for two one-on-one, hour-long tutoring sessions. The assistance provided is tailored to each student's needs in reading and math, based on individual assessments conducted at the beginning of the semester. In the fall of 2009, 150 JHU student volunteers participated in the program.
- The *Harriet Lane Tutorial Project*, sponsored by the Harriet Lane Clinic – The Johns Hopkins Hospital's principal pediatric outpatient service – provides after-school tutoring in reading and math to elementary school students in East Baltimore.
- The *Center for Biotechnology Education* in the School of Arts and Sciences offers several programs for elementary and secondary school students, including a lab where groups of visiting students can engage in hands-on learning in the life sciences.
- The Peabody Institute's *Peabody Preparatory* is Baltimore's largest community education program in the performing arts. The school offers individual and group instruction in music and dance to young Baltimore residents from pre-school through high school and to adults as well.
- For high school students, work experience is an important complement to classroom learning. The *Johns Hopkins Summer Jobs Program* provides students in Baltimore City schools aged 15 and older with six-week, paid internships in various departments at the University and at JHHS. Students work a five-day, 30-hour week and also participate in educational sessions on topics such as job readiness, financial literacy and post-secondary education. During the summer of 2010, 275 students worked at Johns Hopkins in areas such as administration, information technology, maintenance and patient care and were paid a total of \$388,000.



PART FOUR: The impact of Johns Hopkins research

For more than sixty years, scientific discovery and technological innovation have been among the most important sources of economic growth – in the U.S. and increasingly throughout the world. America’s research universities play an important role in this process. Universities – with strong financial support from the federal government – account for about 55 percent of all spending on basic scientific research in the U.S.⁸

Scientific discovery, of course, does not directly drive economic growth. Economic growth occurs only as new knowledge is translated into new technologies and new products, processes and services – and then into new businesses and new jobs. Since the 1970’s, universities have increasingly become involved in this part of the process as well. In a study for the Information Technology and Innovation Foundation, Fred Block and Matthew Keller note that in 1975, academic institutions accounted for only fifteen of the year’s 100 “most technologically significant new products,” as selected annually by *R&D Magazine*. But over time, academic institutions’ share of these promising new technologies has increased dramatically; in 2006, academic institutions accounted for 70 of the innovations listed in the R&D 100.⁹

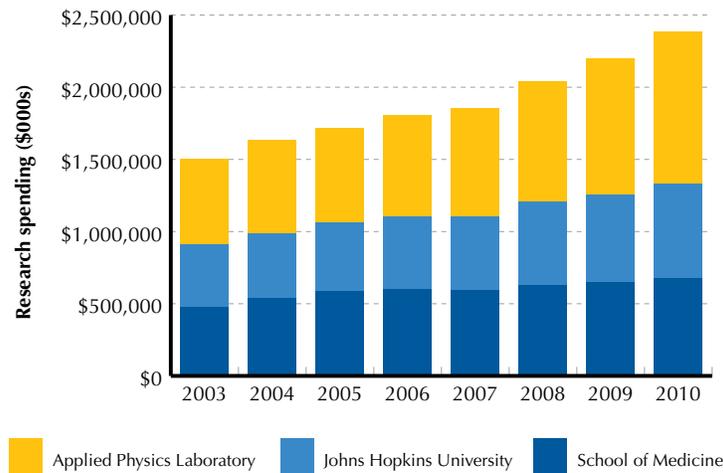
Research at Johns Hopkins contributes in several ways to the vitality of Baltimore’s economy.

- Each year, Johns Hopkins attracts more external (primarily federal) research funding than any other university or academic medical center in the U.S., a substantial part of which – especially in the area of medical research – is spent in Baltimore.
- Research conducted by Johns Hopkins faculty, staff and students expands the boundaries of knowledge in areas that in the years ahead are likely to be continuing sources of innovation and economic growth.
- The “intellectual capital” created by Johns Hopkins researchers provides a foundation for the creation of new products and services, new businesses and new jobs.
- Opportunities to participate in significant research projects enhance the education of Johns Hopkins students – and the ability of the University’s graduates to participate in the continued development of the city’s economy.

⁸ The Science Coalition, *Sparking Economic Growth*, April 2010, p. 3.

⁹ Fred Block and Matthew Keller, “Where Do Innovations Come From? Transformation of the U.S. National Innovation System, 1970-2006” (Washington, D.C.: Information Technology and Innovation Foundation, 2008)

Figure 18:
Research spending, FY 2003-2010



TRENDS IN RESEARCH SPENDING

In 2009-2010, Johns Hopkins spent a total of \$2.384 billion on research and related activities – a total that reinforced the University’s position as the nation’s leading research institution. As Figure 18 shows, total research spending at JHU has grown from \$1.502 billion in fiscal year 2003 to \$2.384 in 2010 – a total increase of about 59 percent, equating to an average increase of about 6.8 percent annually over seven years.

As Figure 19 shows, the Applied Physics Laboratory (APL), located in Laurel, Maryland (and described below) accounted for about 44 percent of all University research and related spending in fiscal year 2010; the School of Medicine accounted for about 29 percent; and all other divisions of the University for 27 percent. The APL was also the fastest-growing part of the University’s research enterprise, with the Laboratory’s research spending growing by 78 percent between 2003 and 2010, for an average annual increase of about 8.5 percent.

Figure 19:
Research expenditures, by division, FY 2010 (\$000s)

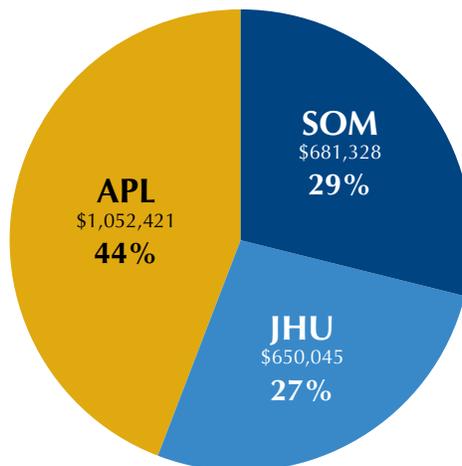


Table 14:
Research spending, top ten institutions*, 2008 (\$000s)

Rank	School	Research expenditures
1	Johns Hopkins University	\$ 1,680,927
2	University of California, San Francisco	\$ 885,182
3	University of Wisconsin-Madison	\$ 881,777
4	University of Michigan	\$ 876,390
5	University of California, Los Angeles	\$ 871,478
6	University of California, San Diego	\$ 842,027
7	Duke University	\$ 766,906
8	University of Washington	\$ 765,135
9	University of Pennsylvania	\$ 708,244
10	Ohio State University	\$ 702,592

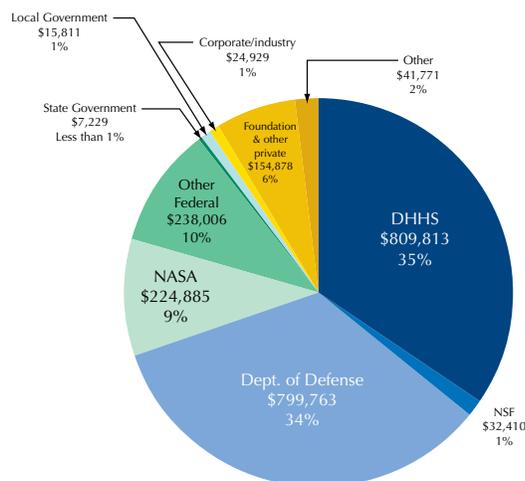
Source: National Science Foundation

* The lower research spending total for Johns Hopkins shown in Table 14 as compared to Figure 19 reflects both the growth of research spending at Johns Hopkins between FY 2008 and FY 2010, and the fact that the National Science Foundation uses a somewhat narrower definition of research spending in its ranking of universities. The \$2.384 billion total for fiscal year 2010 that is cited above includes several types of spending not included in the NSF data, such as research in areas other than science, engineering and medicine, and research-related educational and outreach programs. Under either definition, Johns Hopkins leads all U.S. universities in research spending.

Table 14 shows how research spending at Johns Hopkins compared with spending at some of its peer institutions in 2008 (the last year for which comparable data are available for all institutions).

Figure 20 provides a breakdown of research spending in fiscal year 2010 by source of funding. The Department of Health and Human Services was the leading source of funding, accounting for 35 percent of total research spending at Johns Hopkins, followed closely by the Department of Defense, with 34 percent of research spending.

Figure 20:
Research spending, by source, FY 2010



NASA was the source of about 9 percent of the University's research expenditures in FY 2010, and NSF and other federal agencies accounted for about 11 percent of the University's research expenditures.

CREATING A FOUNDATION FOR FUTURE ECONOMIC GROWTH

Research conducted at Johns Hopkins can provide a foundation for future growth in some of Baltimore's leading industries. The core of the Johns Hopkins Institutions' Baltimore research enterprise is concentrated in the life sciences, health care, public health and related fields of science and engineering. Here we cite just a few examples.

- The *Sidney Kimmel Comprehensive Cancer Center*, founded in 1973, has been designated by the National Cancer Institute as a "center of excellence," and is the only NCI-designated comprehensive cancer center in Maryland. It is widely recognized as one of the world's leading centers of cancer research. The Center conducts basic research in areas such as the biology of cancer, immunology and viral oncology and applied research on the treatment of a wide range of cancers. It is named for Sidney Kimmel, a leading philanthropist who in 2001 donated \$150 million – the single largest gift in Johns Hopkins history – to support its work.
- The *Johns Hopkins Engineering in Oncology Center*, a joint effort of the Whiting School of Engineering and the School of Medicine supported by the National Cancer Institute, is exploring mechanical forces within the body that affect the growth of tumors.
- The *Howard Hopkins Program* – a joint program of the Kimmel Center and the Howard University Cancer Center in Washington D.C. – works to understand and address disparities in the incidence of cancer and in survival rates among minority populations.

- The Johns Hopkins *Institute for Cell Engineering*, established in 2001 with a gift from an anonymous donor, conducts research aimed at achieving a better understanding of "how cells' fates are determined," and using that knowledge to select, modify and mobilize cells for use in treating diseases such as Parkinson's, ALS and diabetes. Since 2001, Johns Hopkins has emerged as one of the world's leading centers for research on the therapeutic use of both adult and embryonic stem cells.
- The *Institute for NanoBiotechnology* (INBT), established in 2006, brings together researchers from the School of Medicine, the Whiting School of Engineering, the Krieger School of Arts and Sciences, the Bloomberg School of Public Health and the Applied Physics Laboratory both to create new knowledge and develop new technologies at the interface of nanoscience and medicine. INBT researchers, for example, are developing nanoscale devices that that could be used within the body to identify cancer cells, transmit diagnostic information and directly deliver treatment at the cellular level.
- The *Welch Center for Prevention, Epidemiology and Clinical Research*, a joint program of the School of Medicine and the School of Public Health, focuses on "promoting the health of the public by generating knowledge required to prevent disease and its consequences." Current areas of research include epidemiology, lifestyle and behavioral factors, outcomes research and cost-effectiveness, as well as disease-specific research on problems such as obesity and diabetes.
- The *Johns Hopkins Institute for Clinical and Translational Research* provides a wide range of support services for faculty members and others at Johns Hopkins Medicine who are engaged in clinical research and in other work aimed at moving the findings of laboratory research "from bench to bedside." The Institute's services include:

- » Assistance in recruiting and retaining participants in clinical trials
- » A clinical research management system
- » Two-year post-doctoral research fellowships in clinical research
- » One-year grants of up to \$100,000 to jump-start new translational research projects

Johns Hopkins research in Baltimore is not, however, limited to the life sciences in health care. Examples of research in other areas include the following:

- The *Laboratory for Computational Sensing and Robotics* is an interdisciplinary center engaged in robotics science and engineering research. Recent projects have included collaborating with Woods Hole Oceanographic Institute on development, deployment and operation of a deep-sea robotic vehicle that has been used to explore the deepest parts of the world's oceans at depths of more than 35,000 square feet.
- The Johns Hopkins *Information Security Institute* (ISI) conducts both basic and applied research on problems related to securing cyberspace and the nation's information infrastructure, covering such areas as information warfare, e-commerce security and electronic voting.
- The ISI's *Center for the Study of Preparedness and Catastrophic Event Response* (PACER), located on the Mount Washington campus, was created in 2005 with support from the Department of Homeland Security. The center conducts research on topics such as how emergency response agencies can more effectively harness the power of informal networks, especially when there is a need for "surge capacity."

- The *Advanced Technology Laboratory*, located about a mile from the Homewood campus, seeks to foster collaboration among scientists and engineers at JHU and APL, government sponsors and industry in solving a variety of problems. Recent projects have for example included the development of a ceramic coating for a planned NASA solar probe that could protect the spacecraft and its instruments from the intense heat of the sun and the development of a ceramic foam for use in building inflatable satellites.

HEADQUARTERS FOR A GLOBAL RESEARCH ENTERPRISE

While much of the work associated with the University's research enterprise is concentrated either in Baltimore or at the Applied Physics Laboratory in Howard County, Johns Hopkins faculty, students and other staff are also engaged in both basic and applied research – and in applying the lessons of their research – in countries around the globe.

Building on its strengths in medicine and public health, Johns Hopkins has become a leader in global health research. According to the University's *Center for Global Health* – created in 2006 to coordinate and integrate the global engagement of the schools of Medicine, Nursing and Public Health – as of the fall of 2010, Johns Hopkins faculty, students and staff were engaged in health research projects in 111 countries in the Americas, the Caribbean, Europe, the Middle East, Asia and Oceania.

Taking into account the full range of research conducted overseas – including health care, international studies, the arts and sciences and work done overseas by the Applied Physics Laboratory – we estimate that in fiscal year 2010 Johns Hopkins spent approximately \$220 million on research projects and related activities outside the U.S. – about 9 percent of total University research spending.

UNDERGRADUATE RESEARCH AT JOHNS HOPKINS

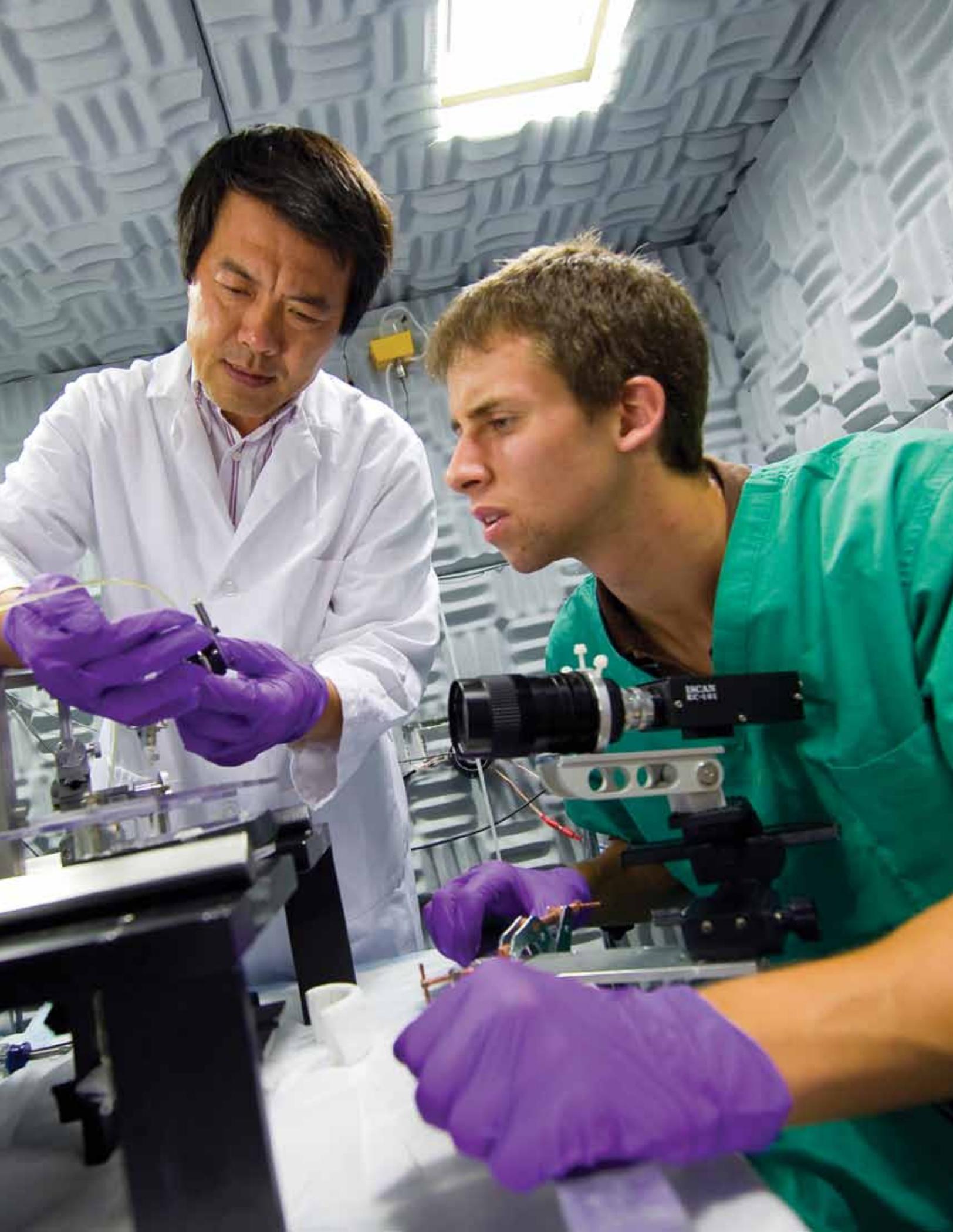
University research, as noted above, is valuable not only for the knowledge it produces but also for what it can contribute to the educational process. Active participation in faculty research has long been an important part of graduate education in the U.S. but research experience is increasingly seen as an important part of undergraduate education as well. Substantial involvement in significant research can deepen undergraduates' understanding of their chosen fields of study – and just as important, provide opportunities for students to get experience and develop their skills in areas such as proposal-writing, project planning and management, investigation and communications.

Johns Hopkins encourages its students to undertake their own research projects, under faculty supervision. In the Whiting School of Engineering, for example, undergraduates can earn up to three credits per semester for research projects approved by a faculty member. The University also provides material support. Through the Provost's Undergraduate Research Awards (a program launched in 1993), students can obtain grants of up to \$2,500 to support their research. Examples of projects completed in 2009-2010 include:

- A study of the relationship between family dynamics and residential mobility in poor neighborhoods in Mobile, Alabama
- Research into the causes of heart rhythm disorders in patients who suffer from a genetic disease called Brugada Syndrome
- A study of the impact of MP3 players on hearing loss

NEW PRODUCTS, NEW BUSINESSES AND NEW JOBS

Research conducted at Johns Hopkins also contributes to the growth of the local economy through the development of new products and the creation of new businesses, based on technologies first developed in University labs. This dimension of the Johns Hopkins Institutions' economic impact is discussed in Part Six of the report.





In addition to being Baltimore's largest employer and its leading center of higher education and research, Johns Hopkins is one of the city's leading providers of medical care. This part of the report describes the role of Johns Hopkins Medicine in:

- Providing health care services
- Educating the next generation of physicians and other health professionals
- Bringing health services into underserved communities in Baltimore
- Providing health insurance coverage
- Addressing critical public health issues

PROVIDING HEALTH CARE TO BALTIMORE RESIDENTS

Johns Hopkins is a major provider of health care services to Baltimore residents through its two major hospitals – The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center – and through several other subsidiaries of the Johns Hopkins Health System.

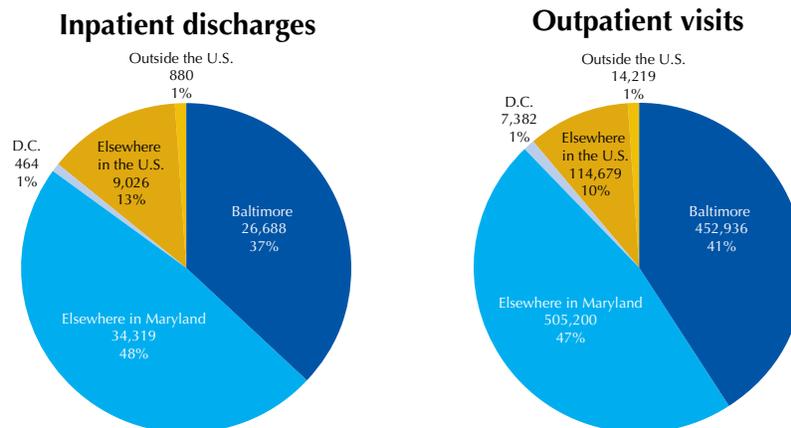
Hospital inpatient and outpatient services

The Johns Hopkins Hospital provides a wide range of acute care and specialty services to Maryland residents. It is consistently ranked at or near the top among U.S. hospitals in neurology and neurosurgery, cancer care, eye surgery, gynecology, orthopedics, psychiatry, pediatrics, rheumatology, urology, the treatment of diabetes and several other areas. Johns Hopkins is also home to the only state-designated level-1 pediatric trauma center in Maryland.

Of the more than 49,200 inpatients discharged from The Johns Hopkins Hospital in fiscal year 2010, 17,580 – about 36 percent of the total – were residents of Baltimore. During the same year, clinics at Johns Hopkins Hospital handled nearly 716,000 outpatient visits, including 273,000 (about 38 percent of all outpatient visits) that involved Baltimore residents. Whether measured by number of patients served or by total patient care revenues, Johns Hopkins is Baltimore's largest hospital.¹⁰

¹⁰ Baltimore Business Journal, *Book of Lists 2010*, p. 112.

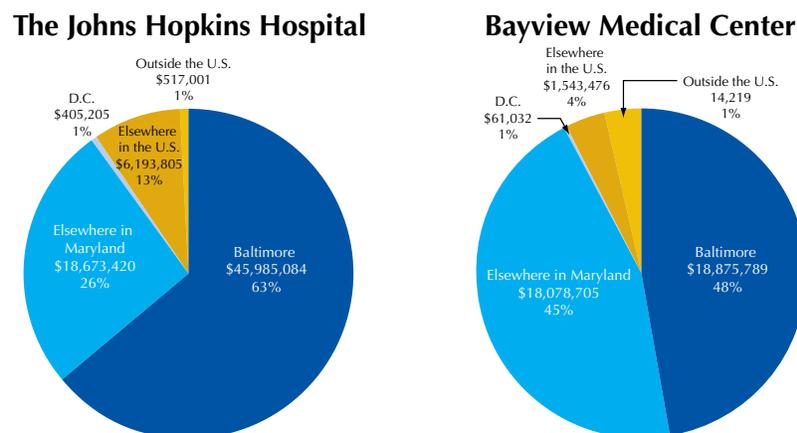
Figure 21:
 Inpatient discharges and outpatient visits, by residence of patient,
 The Johns Hopkins Hospital and Bayview Medical Center, FY 2010



Johns Hopkins Bayview Medical Center is similarly a provider of high-quality health care, with particular strengths in geriatric medicine, alcohol and substance abuse and neonatal intensive care, and serves as Maryland’s only adult burn center. Of the 22,400 inpatients discharged from Bayview Medical Center in 2010, more than 9,100 – 41 percent of the total – were city residents. Bayview also handled nearly 379,000 outpatient visits – just under half of which involved residents of Baltimore.

While the majority of all patients treated at The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center come from outside Baltimore, most of those who lack health insurance (or otherwise lack the resources needed to pay for health care) are city residents. Johns Hopkins estimates that in fiscal year 2010, the cost of health care that was provided to Baltimore residents by The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center, and for which the hospitals were not compensated, totaled \$64.9 million – about 60 percent of all uncompensated care provided by the two hospitals.

Figure 22:
 Value of uncompensated care, by residence of patient, FY 2010



Johns Hopkins also operates the Bayview Care Center, a 276-bed long-term care facility located on the Bayview campus in Baltimore. The Care Center offers chronic care, rehabilitation services, specialized wound therapy and palliative care and serves as the principal site for teaching and research in geriatric medicine at Johns Hopkins. Baltimore residents account for about 32 percent of all those served at the Bayview Care Center.

In addition to the institutions that are part of the JHHS network, Johns Hopkins owns a 50 percent interest in Mount Washington Pediatric Hospital in Baltimore, which is governed by a board that includes representatives of Johns Hopkins and the facility's other co-owner, the University of Maryland Medical System. In FY 2009, the 102-bed hospital provided 23,122 inpatient days of service and 29,559 outpatient visits.

Primary care and home care services

Hospital-based inpatient and outpatient services are not the only means through which Johns Hopkins Medicine provides health care to Baltimore residents. Johns Hopkins Community Physicians operates primary care centers in Wyman Park, East Baltimore and Canton Crossing. In fiscal year 2010, these three centers provided more than 149,000 patient visits. A fourth JHCP center was scheduled to open on the Bayview campus at the end of 2010.

In addition to services provided in hospital outpatient clinics or at JHCP's primary care centers, School of Medicine faculty members also provide services to Baltimore residents through the Johns Hopkins Clinical Practice Association – an organization that provides administrative support and billing services for Johns Hopkins faculty physicians. During fiscal year 2010, the Clinical Practice Association billed for more than 177,000 patient encounters that took place outside the two hospitals – including some, as with hospital care, that are uncompensated.

In fiscal year 2010, the two hospitals' outpatient clinics, JHCP's primary care centers and Johns Hopkins faculty physicians together accounted for approximately 627,000 visits involving residents of Baltimore.

Johns Hopkins is also a major provider of home care in Baltimore. In fiscal year 2010, Johns Hopkins Home Care provided a range of in-home health services – including skilled nursing and home health aide services, physical therapy and the provision of medication and medical equipment to nearly 9,900 city residents.

EDUCATING PHYSICIANS, NURSES AND OTHER HEALTH CARE PROFESSIONALS

Baltimore also benefits from Johns Hopkins University's role in the education of medical professionals. During the fall of 2009, Johns Hopkins University's School of Medicine, School of Nursing and the Bloomberg School of Public Health enrolled more than 4,100 students.

During the fall of 2009, 1,378 students were enrolled in the Johns Hopkins School of Medicine, including 226 who were residents of Baltimore. In the fall of 2009, the School of Medicine introduced a new curriculum called Genes to Society, designed to provide students with a better understanding of all of the factors that can affect an individual patient's health and well-being, from genetic, molecular and cellular levels to family, community, societal and environmental factors. The new curriculum also represents a break from the past in that students get to interact with patients in a variety of settings from their very first days at JHSOM, rather than having to wait until their third year.

In 2010, 697 graduates of the Johns Hopkins School of Medicine – about 9 percent of all School of Medicine alumni – lived in the city of Baltimore.

Training leaders in primary care

In 2010, Johns Hopkins was awarded a five-year federal grant of \$3.84 million to help finance expansion of its primary care residency program. Under the Osler Urban Health Residency program, four medical school graduates will be selected annually for a three-year residency that focuses specifically on the primary care needs of underserved communities in Baltimore and other urban areas. After completing the three-year residency, participants in the program will be eligible for scholarships that allow them to pursue graduate degrees in public health, business or another related field while working as primary care physicians in Baltimore.

The city also benefits from Johns Hopkins Medicine's role in graduate medical education. In 2009-2010, 786 residents were enrolled in graduate medical education at Hopkins, including 728 who worked at Johns Hopkins Hospital and 58 at Bayview. Residents represent a valuable addition to Baltimore's physician workforce – one that only a major academic medical center can provide.

Johns Hopkins also contributes to the ongoing development of Baltimore's physician workforce through its continuing medical education (CME) programs. These programs seek to help medical professionals develop their skills and provide better outcomes for their patients by providing the most up-to-date information in a variety of formats, including intensive, on-site short courses, online courses and grand rounds. In fiscal year 2010, the School of Medicine offered a total of 864 CME programs and events, with enrollment totaling 62,658.

The Johns Hopkins School of Nursing also contributes to the development of the city's health care work force. In the fall of 2009, 360 students were enrolled in undergraduate degree programs in the School of Nursing, of whom 268 were Baltimore residents; and 339 students were enrolled in graduate degree programs, of whom 75 were Baltimore residents. And as with the School of Medicine, some of those who graduate from the School of Nursing continue to work in Baltimore after graduation.

The Institute for Johns Hopkins Nursing – a partnership between the School of Nursing and The Johns Hopkins Hospital – is also a major provider of continuing education for nurses in Baltimore and elsewhere. Advanced training for nurses is offered in a variety of formats, including one-day workshops, week-long courses, online programs and clinical experience at The Johns Hopkins Hospital.

The Bloomberg School of Public Health – one of America's leading schools of public health – enrolled 2,056 graduate students in the fall of 2009, including 382 Baltimore residents. The Bloomberg School has initiated a number of programs specifically aimed at meeting the public health needs of communities in Baltimore; several of these are described below.

In addition to the role that Johns Hopkins University plays in training Baltimore's health care workforce, the institutions of the Johns Hopkins Health System play an important role as sites for clinical training of students enrolled in nursing and allied health programs at other institutions in the Baltimore area. The Johns Hopkins Hospital is also home to a leading program for training medical imaging technologists (described below).

Training technologists for Maryland's health care sector

In addition to its role in the clinical training of physicians and nurses, The Johns Hopkins Hospital is a leading center for the training of medical imaging technologists. The Hospital's Schools of Medical Imaging offer full-time, college-level certificate programs in radiology, nuclear medical technology and diagnostic sonography as well as more specialized training in CT scanning, MRI and mammography.

Academic requirements for the certificate programs are rigorous. Admission to the nuclear medical imaging program requires at least an associate degree in a related allied health field, and the others require specific courses in mathematics, science and English. The radiology and nuclear medicine programs require 18 months of full-time study and clinical work; and the sonography program, 14 months. Clinical training is provided at Johns Hopkins Health System facilities, and at other hospitals and outpatient locations in the greater Baltimore area.

Through partnerships with the College of Notre Dame and Bloomsburg University, students can also combine their studies in medical imaging with work towards a bachelor's degree.

MEETING COMMUNITY NEEDS – IN EAST BALTIMORE AND ELSEWHERE

Even as it has grown into a major global health care institution, Johns Hopkins Medicine remains committed to the East Baltimore neighborhood that has been its home for 130 years. That commitment takes several forms.

- **East Baltimore Medical Center**, which first opened in 1975, is (as noted above) one of 26 primary care centers operated by Johns Hopkins Community Physicians. EBMC provides comprehensive health care services to residents of East Baltimore. For fiscal year 2010, EBMC provided more than 70,000 patient visits – making it the busiest primary care facility in the JHCP network.
- The School of Nursing operates **Community Nursing Centers** at three locations in East Baltimore. These centers are staffed by undergraduate and graduate student nurses and clinical faculty and by other Johns Hopkins physicians and nurses who work on a volunteer basis.
- » The **Lillian Wald Community Nursing Center**, which provides a variety of health care and wellness services to neighborhood residents, located at the Rutland Center
- » The **Isaiah Wellness Center**, which provides health education programs for the elderly residents of Apostolic Towers
- » The health suite at the **House of Ruth**, a shelter for victims of domestic violence and their children
- The **Harriet Lane Clinic** at The Johns Hopkins Hospital is both a center for teaching and research in pediatrics and a major provider of primary care and wraparound services to children and adolescents in East Baltimore and surrounding communities. The Clinic cared for more than 8,000 children in 2009-10, with a total of more than 20,000 patient visits.

- The John Hopkins Hospital's *Case Management Unit in Community Psychiatry* provides intensive case management services for Medicaid recipients in Baltimore age 16 and older who suffer from serious mental illness.
- In 2009, Johns Hopkins Medicine launched *The Access Partnership* (TAP), a new initiative that aims to improve uninsured or under-insured neighborhood residents' access to the full range of specialty care that is available at Johns Hopkins and Bayview. The program is currently open to residents of five ZIP codes near the East Baltimore and Bayview campuses. Because participating Hopkins specialists donate their services, TAP is able to minimize the cost of these services to uninsured neighborhood residents. Eligible patients who are referred by their primary care physicians to specialists at Hopkins pay a one-time fee of \$20.00; there are no other charges for any services provided as a result of the referral.
- The *Urban Health Institute*, founded in 2000, focuses on how the teaching, research and clinical resources of Johns Hopkins University and the Johns Hopkins Health System can be used more effectively to meet the needs of East Baltimore residents. The Institute seeks to improve residents' access to health care, to foster university-community research partnerships and to support the development of neighborhood organizations. For example:
 - » UHI provides small grants to support research projects undertaken jointly by Johns Hopkins faculty or students and East Baltimore community organizations. Since 2008, the institute has awarded 31 grants totaling more than \$205,000.
 - » UHI also conducts capacity-building workshops for local community organizations. Three such workshops were offered in 2009-2010 – on adolescent substance abuse, proposal-writing and program evaluation – and drew a total of 131 participants.

Each year, hospitals in Maryland submit to the state an accounting of the unreimbursed costs they incur in providing a specified set of services to their communities. These eight types of service are defined below.¹¹

11 The categories of service identified by the Health Services Cost Review Commission are:

1. *Community health services*, such as health screenings, mobile health services and wellness education programs provided at no or low cost;
2. *Health professions education*, such clinical training of medical and nursing students, scholarships and school partnerships;
3. *Mission-driven health services* – neighborhood health centers or clinics that operate primarily as a service to the community and that are part of the hospital's ongoing operations;
4. *Research*, including community-based and clinical research on problems affecting the health of the community, and research on innovations in health care delivery;
5. *Financial contributions*, in-kind support for and grants to community organizations;
6. *Community-building* – cash or in-kind support for affordable housing, economic development, job training for local residents and other community improvement projects;
7. *Community benefit operations*, including the cost of managing and administering community programs;
8. *Charity care* – regular inpatient or outpatient care provided free or at a substantial discount to indigent or low-income people.

Table 15:
Value of community benefit and charity care activity, FY 2010

Community Benefit Activity	Johns Hopkins Hospital	Johns Hopkins Bayview Medical Center
Community Health Services	\$ 3,871,822	\$ 2,026,057
Health Professions Education	\$ 70,131,370	\$ 20,454,701
Mission-driven Health Services	\$ 18,747,109	\$ 3,655,229
Research	\$ 75,000	\$ 79,066
Financial Contributions	\$ 1,132,358	\$ 825,047
Community Building Activities	\$ 5,741,634	\$ 1,099,602
Community Benefit Operations	\$ 183,206	\$ 39,569
Subtotal Community Benefits	\$ 99,882,499	\$ 28,179,271
Charity Care	\$ 36,059,669	\$ 21,740,000
Foundation-funded Community Benefit		
Total Community Benefit and Charity Care	\$ 135,942,167	\$ 49,919,271

As Table 15 shows, The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center together estimate that the unreimbursed cost incurred by the two institutions in providing these services in fiscal year 2010 totaled about \$185.9 million, including more than \$57 million in charity care, \$90.6 million for education of health professionals and more than \$28 million for community and mission-driven health care.

PROVIDING HEALTH CARE COVERAGE FOR BALTIMORE RESIDENTS

As noted in Part One, *Johns Hopkins Health-Care LLC (JHHC)* – a joint venture of the University and the Johns Hopkins Health System created in 1995 – manages three health care plans.

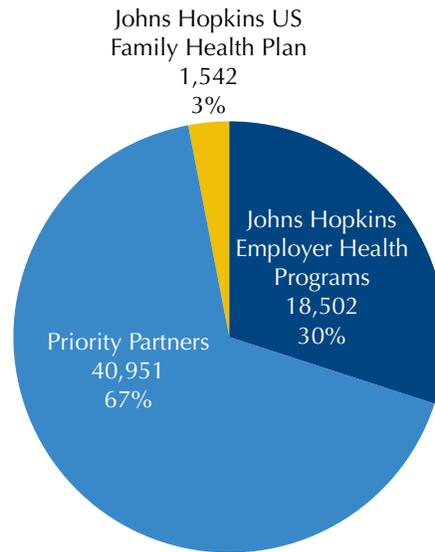
- *Priority Partners Managed Care Organization* provides health care for recipients of Medicaid and other publicly funded health care programs in Maryland.

- *Johns Hopkins Employer Health Programs* provides health care for employees of the Johns Hopkins Health System and several partner institutions
- *Johns Hopkins U.S. Family Health Plan* provides health care to military families living in Maryland and in adjoining areas in several other states.

JHHC provides a variety of services for these plans, including member outreach and enrollment, ongoing development of provider networks, management of both provider and customer relations and claims processing. JHHC also provides a range of health care management services for members. These range from information and assistance to members who want to adopt healthier lifestyles to individualized case management for members with chronic health conditions such as diabetes or shorter-term issues such as a high-risk pregnancy.

Figure 23:

Johns Hopkins HealthCare enrollment, Baltimore residents by plan, FY 2010



At the end of fiscal year 2010, enrollment in JHHC's three plans totaled 262,246 – including 60,995 members who were residents of Baltimore. Overall, in 2010 about 9.4 percent of all Baltimore residents were members of a JHHC health plan. As Figure 23 shows, Priority Partners accounted for more than two-thirds of the three plans' membership in Baltimore.

PUBLIC HEALTH: IMPROVING HEALTH AND WELL-BEING AT THE COMMUNITY LEVEL

Improving Baltimore's health means focusing not just on the needs of individual residents, but on broader issues that affect the health and well-being of entire communities. At Johns Hopkins, the Bloomberg School of Public Health is deeply involved in efforts to address these issues. We cite here just a few examples.

- The *Center for Adolescent Health* – one of 33 prevention research centers nationwide that are funded by the Centers for Disease Control – seeks to help young people in Baltimore develop into healthy and productive adults. The center conducts research on topics such as youth violence and substance abuse and works with local partners such as Casey Family Services and the Julie Community Center to develop and test strategies for improving the lives of inner-city youth.
- The *Center on Aging and Health* conducts research that aims to prevent disease, disability and frailty among older adults, and improve their health and well-being. Research topics range from the biology of aging to public policies affecting older adults. The center is also co-sponsor of the *Baltimore Experience Corps* – a program that seeks to mobilize the energy and experience of older Baltimore residents to address the needs of children in inner-city elementary schools. In 2007-2008, 325 Experience Corps volunteers worked in nineteen Baltimore schools.

- The *Lighthouse Center at Peer Point*, located in East Baltimore, collaborates with local agencies and community groups on research and pilot projects aimed at improving the health of local residents. For example, the center's STEP program trains community residents to work as health educators, with a particular focus on HIV/AIDS prevention; and its B-Quest program is working with several city agencies to improve emergency response capabilities in Baltimore.
- The *Center for a Livable Future* was founded on the idea that human health and nutrition, food production and distribution, environmental protection and social equity are all inseparable aspects of a single system. Its work encompasses research, education and community action. In 2009, for example, the center conducted a "community food assessment" in Southwest Baltimore, mapping how and where neighborhood residents buy food and developing strategies for improving residents' access to healthier food. The center also worked with African-American churches in Baltimore to promote healthier eating among members of their congregations.

HEALTH CARE AS AN INTERNATIONAL BUSINESS

Health care has long been viewed as essentially a local service. Hospitals and physicians in Baltimore cared for residents of Baltimore, those in Boston cared for Bostonians, those in Singapore cared for residents of Singapore – and health care providers competed only within narrowly defined local markets. But today, while most services are still delivered locally, health care is increasingly a global business – a trend that presents significant opportunities both for Johns Hopkins and for Baltimore.

Johns Hopkins Medicine attracts patients to Baltimore from around the world. In fiscal year 2010, The Johns Hopkins Hospital and Johns Hopkins Bayview Medical Center provided inpatient care to 880 patients from outside the U.S. and handled more than 14,000 outpatient visits involving non-U.S. patients. Service provided to non-U.S. patients at the two hospitals generated about \$33.5 million in revenues in fiscal year 2010.

Johns Hopkins International – a for-profit joint venture of the University and the Johns Hopkins Health System, founded in 1999 – manages all aspects of international patients' engagement with Johns Hopkins, from initial referral and consultations to arranging transportation, making hotel reservations for family members and monitoring follow-up care. (Johns Hopkins International also provides similar services to patients coming to Baltimore from elsewhere in the U.S.) The company also has a growing business in the provision of remote second opinions, with patient records transmitted to Baltimore and Hopkins physicians providing comments in writing, by telephone or via videoconference.

Johns Hopkins International also provides management and consulting services to health care institutions and organizations overseas. In 2010, Johns Hopkins International managed five hospitals overseas: The Johns Hopkins Singapore International Medical Center in Singapore, Punta Pacifica Hospital in Panama and three hospitals in the United Arab Emirates. Johns Hopkins International also provided consulting and educational support to hospitals and other health care organizations in Canada, Mexico, Trinidad, Italy, Portugal, Turkey and Lebanon. More than 350 Johns Hopkins faculty members and other professionals participated in Johns Hopkins International's consulting services during the course of the year.

In 2010, Johns Hopkins International employed 200 people (150 in Baltimore and 50 overseas) and generated more than \$200 million in total revenues (including patient care revenues passed through to The Johns Hopkins Hospital, Johns Hopkins Bayview and other Hopkins institutions).

The Johns Hopkins Institutions' engagement in the delivery of health care overseas is not limited to its involvement in the management of major institutions. Founded in 1973 as the Johns Hopkins Program for International Education in Gynecology and Obstetrics, *Jhpiego* (pronounced je-pie-go) is a non-profit organization affiliated with Johns Hopkins that is dedicated to improving the delivery of health care services to women and their families in low-income communities worldwide.

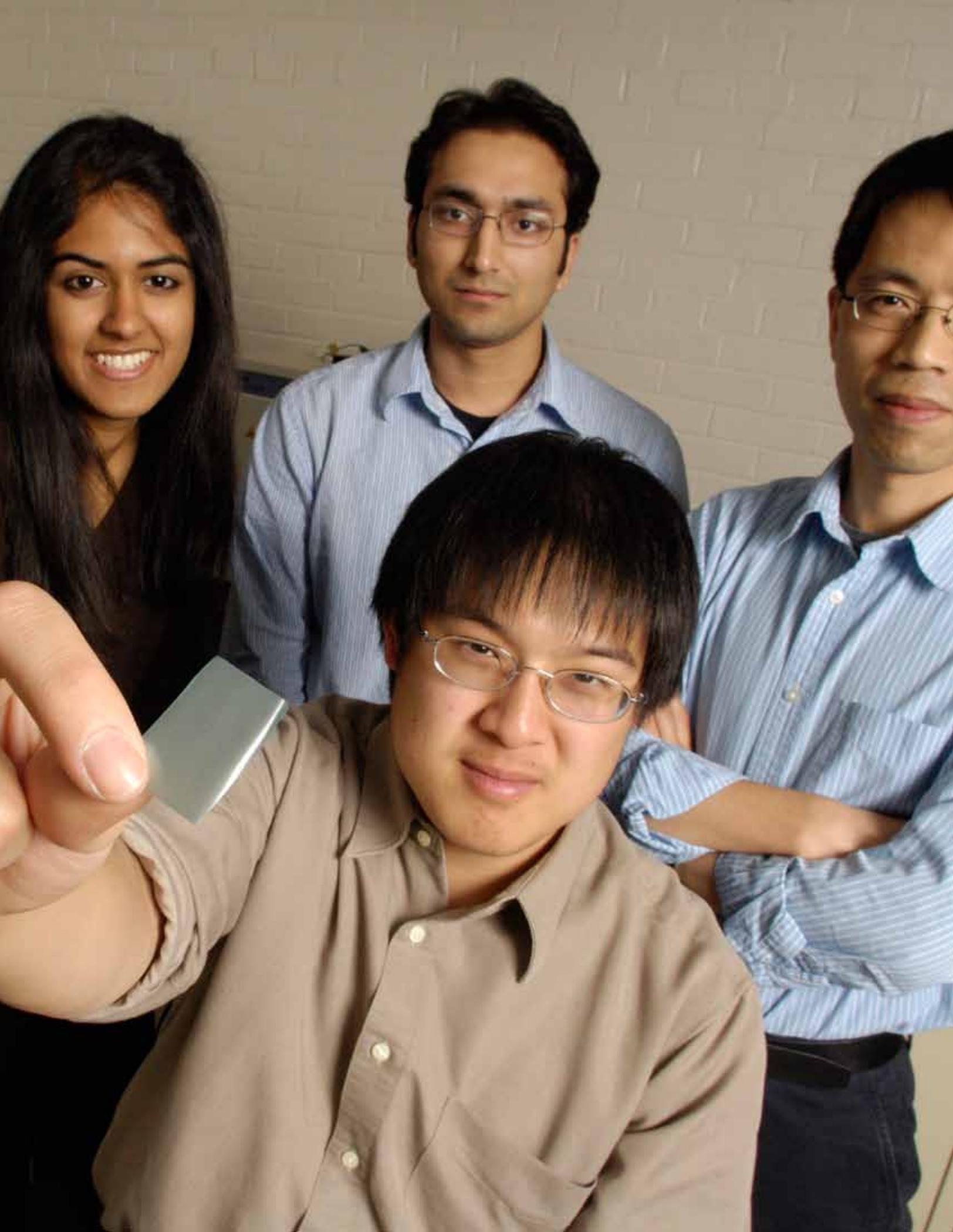
From its headquarters in Baltimore's Fells Point neighborhood and field offices in 26 countries, Jhpiego oversees projects in more than fifty countries in Africa, Asia, the Middle East, the Caribbean and Latin America, as well as the U.S. Jhpiego conducts research on and designs low-cost, practical solutions to health problems that affect some of the most vulnerable communities in these countries and works to get these solutions into the hands of frontline health workers. Areas in which it is particularly active include maternal and child health, reproductive health and the prevention and treatment of HIV/AIDS, malaria and cervical cancer.

Jhpiego's operating budget has increased rapidly during the past decade, growing from \$39.5 million in 2003, to \$105.5 million in 2010. In 2003, the organization employed 198 people; in 2010, it employed a total of 795, including 165 in its Baltimore headquarters, 18 elsewhere in Maryland and D.C., and 612 in offices and at project sites around the world.

A CORNERSTONE OF BALTIMORE'S ECONOMY

Health care is one of Baltimore's most important exports, in the sense that Johns Hopkins Medicine and other institutions generate revenues by providing services to patients who come to Baltimore from elsewhere in Maryland, other states and other countries. But high-quality health care and public health programs are important to the city's economy in other ways as well. Much like improvements in education and the expansion of educational opportunity, improving the health of Baltimore's people enhances the quality of the city's human capital and the overall productivity of its economy. High-quality health care also enhances the overall quality of life in Baltimore – and thus helps make the city more attractive to the highly skilled workers on whom its future depends.





One of the most critical factors affecting a university's impact on a community's or a region's economy is how effectively the university, local entrepreneurs and the broader community support the translation of new knowledge into new products, new businesses and new jobs.

Although it is widely acknowledged to be one of the world's great research institutions, Johns Hopkins has in the past had a reputation for being less interested than some of its peers in practical or commercial applications of the results of its research. During the past decade, however, Johns Hopkins has significantly increased its support for efforts aimed at moving the results of University research from the lab to the marketplace – or, in the case of biomedical research, “from bench to bedside.”

Johns Hopkins Technology Transfer – the office that manages the process of commercializing University research – has increased its staff and expanded the range of services it provides. Outreach to faculty and other researchers has been expanded and JHTT has offered a number of programs for those interested in exploring the creation of new ventures – such as an “Entrepreneur's Boot Camp” that drew 200 participants.

TECHNOLOGY TRANSFER

The most formal way in which the University promotes the translation of its research into new products and businesses is by securing patents on the results of its research and then entering into licensing agreements with private companies for commercial use of its “intellectual property.”

As Table 16 shows, the pace of technology transfer activity at Johns Hopkins (including the Applied Physics Laboratory) increased between 2003 and 2010. The number of patent applications filed by Johns Hopkins Technology Transfer rose by 57 percent, the number of invention disclosures by 47 percent and the number of licensing and option agreements by 46 percent.

In fiscal year 2010, Johns Hopkins (including APL):

- Reported the disclosure of 482 inventions by faculty members and other researchers;
- Filed 461 new U.S. patent applications;
- Was awarded 65 new U.S. patents;
- Entered into 140 new license and option agreements with private companies and institutions for use of Johns Hopkins intellectual property; and
- Assisted in the creation of 5 new companies started specifically to bring to the marketplace technologies initially developed at Johns Hopkins.

Table 16:
Technology transfer activity, FY 2003-2010

	2003	2004	2005	2006	2007	2008	2009	2010
Gross licensing income	\$ 8,210,060	\$ 5,618,296	\$ 13,607,620	\$ 10,899,732	\$ 13,507,579	\$ 12,533,040	\$ 13,274,504	\$ 13,206,895
Invention disclosures	328	367	392	363	413	442	472	482
New patent applications filed	293	332	320	285	341	381	472	461
Patents issued	103	99	86	92	91	70	69	65
Licenses/options executed	96	116	94	81	97	120	130	140
Start-up companies formed	4	5	3	2	4	6	8	5

As a result of the growth of technology transfer activity, as of 2009 there were more than 300 products on the market based on technologies developed at Johns Hopkins and APL, including diagnostic and therapeutic products, medical devices, software, defense electronics and other products.

STARTING NEW BUSINESSES IN BALTIMORE

As Table 16 shows, 37 start-up companies have been created during the past eight years to bring to market technologies initially developed at Johns Hopkins. Several of these companies – as well as others started prior to 2002 – are located in Baltimore. For example:

- **FASgen, LLC**, formed in 1999 by four Hopkins researchers, James D. Dick, Frank P. Kuhadja, Albert H. Owens Jr., and Craig A. Townsend, to access diagnostic and therapeutic technologies targeting the role of fatty acid biosynthesis in health and disease. FASgen primarily develops therapeutic applications for cancer, infectious diseases and metabolic disorders.
- **Fyodor Biotechnologies Corporation** specializes in biotechnology and biopharmaceutical products that diagnose and treat malaria. Fyodor Biotechnologies recently acquired an exclusive license with Johns Hopkins to administer a urine-based ma-

laria test that will be useful in emerging economies. Fyodor was founded by Johns Hopkins scientists Dr. Atul Bedi and Dr. Rajani Ravi.

- **Surgi-Vision, Inc.**, founded in 1998, is an emerging technology company that develops and markets novel imaging products based on research conducted at Johns Hopkins. Surgi-Vision develops sighting and visualization systems, such as MRI coils, that allow magnified stereoscopic vision for minimally invasive surgical procedures, such as heart, blood vessel and esophagus imaging.
- **IATRICa, Inc.**, is a biotechnology company that is engaged in the development of an exclusive new class of biological molecules for prophylaxis and targeted immunotherapy of cancers and infectious diseases. IATRICa's technology platform enables the creation of a diverse spectrum of immunoconjugates that are capable of activating potent targeted immune responses against various tumors or pathogens.

The role of Johns Hopkins in the development of new businesses in Baltimore is not limited to companies that have formal licensing agreements with the University. Other companies started by Johns Hopkins faculty members, other researchers and students have also contributed to the development of new industries in Baltimore. For example:

- *Arcion*, founded in 2007, develops innovative topical treatments for chronic pain that are based on breakthroughs in neuroscience. James Campbell, the founder and CEO, is a professor of neurosurgery at JHSOM.
- *Biomarker Strategies*, founded in 2006, develops and administers methods for cancer treatment and identification. Dr. Douglas Clark, Chief Scientific Officer, is a professor of Pathology and Oncology at Johns Hopkins. The company is located in the *Science + Technology Park at Johns Hopkins*, adjacent to the East Baltimore campus.
- *Brassica Protection Products LLC (BPP)* is a health products company that develops cancer-fighting “nutriceuticals,” based on technologies developed by two School of Medicine faculty members.
- *Infinite Biomedical Technologies*, founded in 1997 by Johns Hopkins researchers, makes bedside patient monitoring devices.
- *Intelligent Substrates, Inc.*, founded in 2007, is developing next-generation tools for in vitro cell culture. The company’s founder is a Johns Hopkins graduate and faculty member.
- *Therataxis*, co-founded in 2004 by a former Johns Hopkins faculty member, develops brain imaging and simulation software for use in both surgical and pharmaceutical treatment of a variety of brain conditions.
- *SmartLogic Solutions*, founded in 2005, provides customized applications development and technology consulting. Co-founders Yair Flicker and John Trupiano established the company while they were still undergraduates in computer science at Johns Hopkins.
- *Vision Multimedia Technologies* founded in 1998, provides technology consulting for a wide range of clients, such as hospitals, manufacturers, retailers and universities. Brian Razzaque, the founder and CEO, is an alumnus and former teaching assistant at Hopkins. The firm employs 12 people.

In several cases, businesses started by Johns Hopkins faculty members or other researchers have since been acquired by larger companies, but still have a significant presence in Baltimore. For example:

- Chesapeake Biological Laboratories was co-founded in 1980 by Dr. William Tew, based in part on research he had conducted at the School of Medicine, and during the next twenty years grew into a substantial contract manufacturing firm serving pharmaceutical and other life sciences companies. CBL was acquired in 2001 by Cangene Corporation and, in 2009, was renamed *Cangene bioPharma*; it has kept its operations in Baltimore.
- Dr. Craig Smith of the Johns Hopkins School of Medicine co-founded Guilford Pharmaceuticals in 1993 to develop innovative treatments for brain cancer and other neurological disorders. The company was acquired by Minnesota-based MGI Products in 2005; and MGI was in turn acquired in 2009 by *Eisai, Inc.*, the U.S. arm of a major Japanese pharmaceutical firm, which has kept the company’s operations in Baltimore.
- Baltimore-based Visicu was founded in 1998 by Dr. Brian Rosenfeld and Michael Breslow, intensive care specialists at Johns Hopkins, who developed a patented model for remote management of intensive care units (eICU). Visicu was acquired by Philips Electronics in 2008 and renamed *Philips Visicu* and has remained as one of the largest bioinformatics companies in the Baltimore area.

Table 17:

Selected Baltimore-based companies founded by Hopkins University alumni or faculty, or licensing Hopkins technology

Company	Relationship	Number of employees
Alexander & Tom, Inc.	Founder is a JH alum	12
Arcion Therapeutics	Founder and CEO is JHSOM faculty	3
Bamvet Laboratories	Licensed JH technology	2
Brijen Biotech LLC	Co-founders are JHSOM faculty	2
Brassica Protection Products LLC	Co-founded by JH faculty	5
Cangen Biotechnologies	Founder is a JH faculty member and alum	5
Cangene bioPharma	Acquired Chesapeake Biological Laboratories whose co-founder was a researcher at JH	120
Canton Group	Co-founder is a JH alum	20
CervoCheck	Founders are JH students	n/a
Circulomics	Founder is a JH alum	1
Champions Biotechnology	JH faculty	11
cmdLabs	Founder is a JH instructor	10
Eisai, Inc.	Originally Guilford Pharmaceuticals, founded by a JH faculty member	289
Emagination Network LLC	CEO is a JH alum	10
FASgen, LLC	Researchers are JH alumni	2
Fyodor Biotechnologies	Founder a JH research fellow, licensed JHU technology	4
IATRICA	Licensed JH technology	2
Infinite Biomedical Technologies	Founded by JH researchers	12
Intelligent Substrates Inc.	Founded by JH faculty	2
Oak Clinical Systems	Licensed JH technology	2
Phillips Visicu	Co-founders/key leaders were/on JHSOM faculty	70
Sensing Machines	Founder is a JH alum and current PhD student	2
Shimadzu Scientific Instruments	Partner with JH to develop new technologies	20
SmartLogic Solutions	Co-founders are JH alumni	9
Spectrum Bioscience	President/CEO is a JH faculty member and alum	2
Surgi-Vision	Licensed JH technology	3
Sun Automation	Founded by a JH alum	100
Therataxis	President was a JH faculty member	3
Vision Multimedia Technologies LLC	Founder is a JH alum	15

A partial listing of Baltimore-based companies that licensed Johns Hopkins technology, or were founded by Johns Hopkins faculty or students is shown in Table 17.

LAYING THE GROUNDWORK FOR FUTURE INNOVATION

Johns Hopkins is also laying the groundwork for future economic growth in Baltimore by helping to prepare the next generation of innovators and entrepreneurs. The Carey School's new Global MBA program, described in Part Three, includes a continuing focus on entrepreneurial development.

Other programs will help students develop the knowledge, skills and experience they will need to create new businesses. The Center for Leadership Education houses the *W. P. Carey Program in Entrepreneurship & Management*, which offers a minor in entrepreneurship that is open to undergraduate students throughout the University.

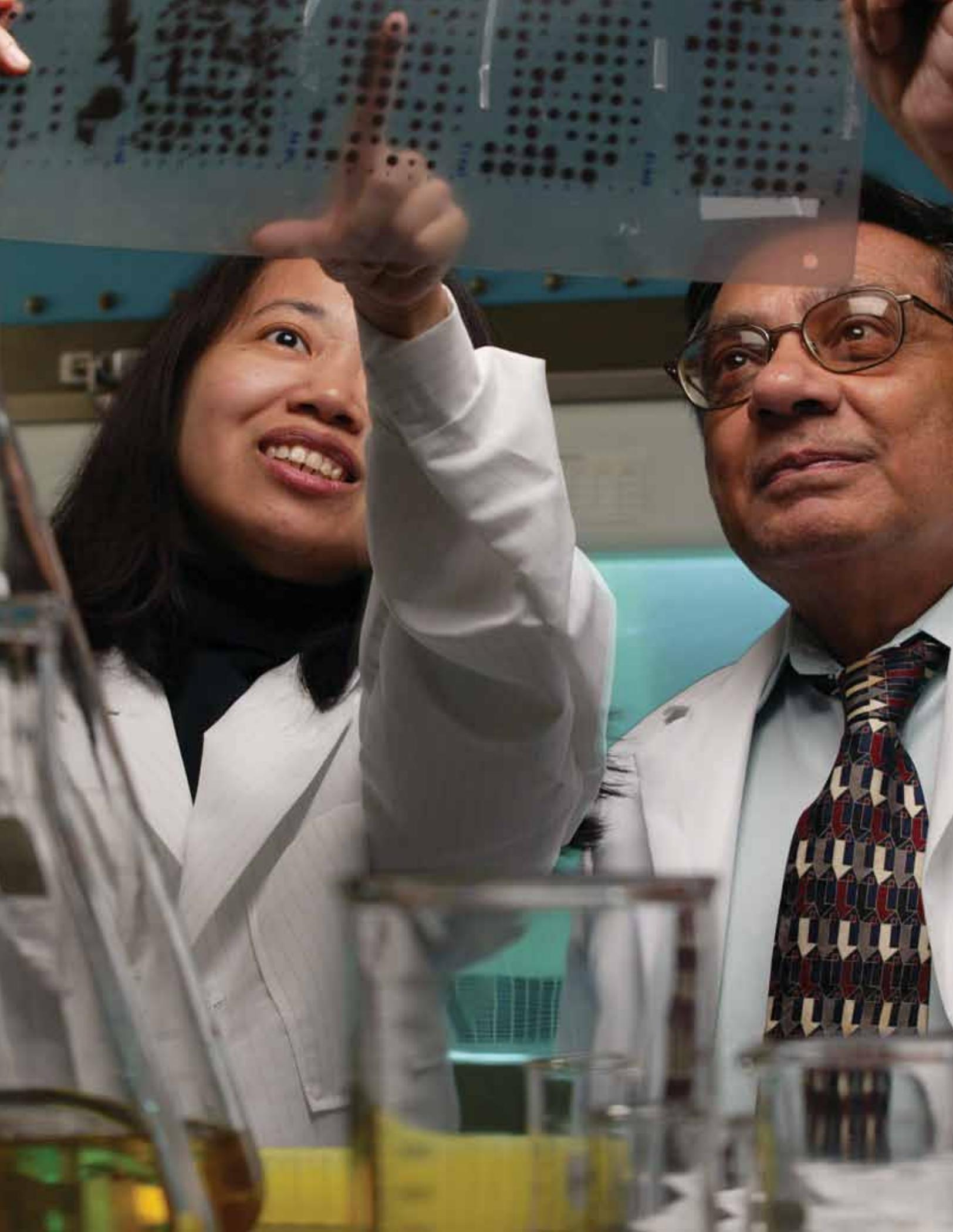
The center also oversees *Hopkins Student Enterprises*, a program that helps students gain valuable hands-on experience as entrepreneurs by starting and managing new on-campus businesses, and the *Johns Hopkins Business Plan Competition*, which helps teams of students develop and then showcase ideas for new products and businesses. Winners of the 2010 competition included two ventures developed by students in the University's biomedical innovation and design program:

- *Cortical Concepts*, started by a team of students who developed an anchor that can more effectively hold screws used in spinal surgery – a potentially valuable device in the treatment of patients suffering from osteoporosis, whose bones may be too brittle for conventional surgical screws.
- *CervoCheck LLC* has developed a device that can detect early signs of the onset of pre-term labor, allowing women and their physicians to take steps to avert premature birth.

Providing space for emerging companies

Through a partnership with Johns Hopkins, the Baltimore Development Corporation makes space available for start-up businesses at its **Emerging Technology Center @ Johns Hopkins Eastern**. One of two such centers created by BDC (the other is in Canton), the 45,000 square-foot ETC is located at 1101 East 33rd Street. The recently renovated building was formerly Eastern High School; it is now owned by Johns Hopkins and is located just a few blocks east of the University's Homewood campus.

The ETC @ JH Eastern is designed to provide flexible space and a variety of supportive services to emerging technology companies, particularly those with roots at Johns Hopkins and other local universities. Companies listed in Table 17 that are (or in the past have been) ETC tenants include CervoCheck, cmd Labs, Smart Logic Solutions, Surgi-Vision, and Therataxis.



The impact of Johns Hopkins on the Baltimore economy includes not only that of the Johns Hopkins Institutions themselves, but also the impact of several other institutions that, but for the presence of Johns Hopkins, would probably not be located in Baltimore. Part One identified seven such institutions; this part of the report describes these seven in more detail and analyzes their impact on the Baltimore economy.

SEVEN AFFILIATED INSTITUTIONS

All of the affiliated institutions identified in Part One are engaged in scientific research – but they vary substantially in terms of the scale and scope of their activities and their relationship to Johns Hopkins.

Kennedy Krieger Institute

The Kennedy Krieger Institute, founded in 1937, serves children and adolescents with disorders of the brain, spinal cord and musculoskeletal system. The Institute provides health care, rehabilitation and educational services; operates schools for children and adolescents with developmental and other disabilities in East Baltimore, in the city's Greenspring neighborhood and in Montgomery County; and provides specialized training for about 400 professionals who come to Baltimore each year for specialized training in caring for disabled children. The Institute's principal facilities are adjacent to the Johns Hopkins East Baltimore campus.

Kennedy Krieger is also a leading center of research in neurodevelopmental disabilities, with research spending totaling \$34.9 million in FY 2010. Many of the Institute's senior faculty members hold joint appointments at Johns Hopkins.

In FY 2010, Kennedy Krieger employed 2,274 people – an increase of 23 percent since 2003.

Space Telescope Science Institute

The Space Telescope Science Institute (STScI) manages scientific research, education and public outreach programs for NASA's Hubble Space Telescope and its successor, the new James Webb Space Telescope (scheduled to be launched in 2014). The Institute, which was founded in 1981, is managed by a consortium of major universities (the Association of Universities for Research in Astronomy) under a contract with NASA.

In 2010, STScI – which is located on the Johns Hopkins Homewood campus – employed 397 people. In FY 2009 (the last full year for which data is available), research spending at the Institute totaled \$84.7 million.

Howard Hughes Medical Institute

The Howard Hughes Medical Institute, a non-profit foundation created by the legendary billionaire in 1953, is one of the world's leading biomedical research organizations. The Institute employs about 345 senior scientists and 700 post-doctoral researchers, who along with about 1,000 graduate students work primarily in laboratories located at 70 leading U.S. universities, hospitals and other research centers. HHMI's headquarters is located in Chevy Chase, Md.

In FY 2010, the Institute employed 15 principal investigators and “early career scientists” at Johns Hopkins, along with 48 non-faculty researchers and 17 administrative, clerical and other support staff. Its spending at Johns Hopkins totaled \$5.4 million.

Carnegie Institution for Science, Department of Embryology

The Carnegie Institution for Science, founded by Andrew Carnegie in 1902, is an independent non-profit research organization with strengths in astronomy, geophysics, developmental biology, plant biology and global ecology. Its headquarters are in Washington, D.C.

The Carnegie Institution's Department of Embryology was founded in 1913 in collaboration with the Johns Hopkins University School of Medicine's Department of Anatomy, and moved to the University's Homewood campus in 1960, where its researchers work closely with the Johns Hopkins Department of Biology. The Department's focus is on understanding developmental biology, starting at the molecular and cellular level.

The Department Embryology moved into a new home on the Homewood campus, the Maxine Singer research building, in 2005. In FY 2010, the Department of Embryology employed 79 researchers and support staff; its expenditures totaled \$7.0 million.

National Institute on Aging

The National Institute on Aging (NIA), one of 27 entities that comprise the National Institutes of Health, conducts and supports research aimed at better understanding the nature of aging and diseases (such as Alzheimer's) associated with aging, and how to help older Americans live healthy, active lives. The agency conducts most of its in-house research at two NIA centers that are located on the Johns Hopkins Bayview campus – the Biomedical Research Center and the Gerontology Research Center.

Table 18:
Employment and research spending at affiliated institutions, 2010

Affiliate	Number of employees	Research spending (\$ millions)
Kennedy Krieger Institute	2,274	\$ 34.9
Space Telescope Science Institute	416	\$ 84.7
Howard Hughes Medical Institute	80	\$ 5.4
Carnegie Institute Dept. of Embryology	79	\$ 7.0
National Institute on Aging	557	\$ 108.0
National Institute on Drug Abuse	468	\$ 87.8
TOTAL	3,874	\$ 327.8

In FY 2010, the operating budget for these two centers totaled \$108.0 million. Together they employed 557 people in 2010.

National Institute on Drug Abuse

The National Institute on Drug Abuse (NIDA) conducts and supports research into the mechanisms of drug abuse and addiction and seeks to disseminate its findings and translate them into practice. NIDA's Addiction Research Center – the agency's principal in-house research center – is located on the Johns Hopkins Bayview campus. Its work focuses on developing a better understanding of the mechanisms of addiction, from the molecular and cellular level to clinical research, and on development of more effective treatment methods.

In FY 2010 the Addiction Research Center employed 468 people, including federal employees and contractors, and had an operating budget of \$87.8 million.

Lieber Institute for Brain Development

The Lieber Institute for Brain Development – the newest Johns Hopkins affiliate – is a non-profit research foundation that focuses on abnormalities in brain development and their role in a variety of diseases, such as schizophrenia.

In June 2010, the Lieber Institute announced that it will be moving into the Rangos Building, in the new Science + Technology Park in East Baltimore – a location that the Institute chose in part due to the opportunities it offers for collaboration with researchers at Johns Hopkins. The Institute expects to initially employ 60 scientists and support staff, growing to 100 within the next three to five years.

As Table 18 shows, the six affiliated institutions operating in Baltimore in 2010 (that is, all of those described above, except the Lieber Institute) together employed 3,874 people with a combined total payroll of about \$244 million and spent an estimated \$327.8 million on research.

Based on data provided by the institutions, we estimate that of these 3,874 employees, 1,960 – about 51 percent of the total – were residents of Baltimore. We further estimate that about \$122 million in wages and salaries was paid to residents of Baltimore by these institutions and another \$98 million was paid to residents of other Maryland counties.

We estimate that the six affiliates withheld about \$18 million in Maryland state income taxes from employees in FY 2010.

IMPACT OF SPENDING BY AFFILIATED INSTITUTIONS

As with Johns Hopkins itself, the impact of the affiliated institutions’ spending on payroll and purchasing goes beyond their roles as major employers.

Using data provided by the institutions, we estimate that they spent about \$168.0 million on purchases of goods, services and construction in FY 2010 – about \$59.2 million of which was spent with Baltimore-based vendors and contractors. We estimate that this spending directly created 345 FTE jobs in Baltimore in FY 2010.

In addition to the direct spending impact cited above, spending by the affiliates also generates indirect and induced impacts in Baltimore. As summarized in Table 19 below, through the multiplier effect, we estimate the six affiliates’ spending on payroll, purchasing and construction generated another 989 FTE jobs and \$138 million in economic output in Baltimore.

In total, we estimate that spending by the six affiliates directly and indirectly generated 5,208 FTE jobs and \$441.2 million in economic output in Baltimore.

Table 19:
Economic impact of affiliated institutions’ spending in Baltimore, FY 2010

Geography	Direct spending		Indirect and induced impact of spending by vendors, contractors and employees		Total impact
	Payroll	Purchasing/ construction	Impact of vendor and contractor spending	Impact of employee spending	
Baltimore	\$ 244.0 million 3,874 jobs	\$ 59.2 million 345 jobs	\$ 11.8 million 83 jobs	\$ 126.2 million 906 jobs	\$ 441.2 million 5,208 jobs





The East Baltimore Development Initiative is the largest single redevelopment project in Baltimore's history and one of the largest urban revitalization projects in the U.S. The Johns Hopkins Institutions have been actively involved in the project since its inception nearly a decade ago.

HISTORY

The East Baltimore Development Initiative began to take shape in 2001, in discussions between then-Mayor Martin O'Malley and the leaders of the Johns Hopkins Institutions. The Mayor was looking for a new strategy for rebuilding one of the city's poorest and most troubled neighborhoods and he recognized two fundamental realities: No plan for rebuilding East Baltimore could succeed in the long run without a major, active commitment from Johns Hopkins, by far the community's largest institution – but no plan for East Baltimore could survive politically and socially if it were perceived as being designed primarily to meet the needs of Johns Hopkins.

The City and Johns Hopkins therefore began to explore an approach that would combine physical redevelopment of a distressed 88-acre area (including institutional, residential, commercial and community development) with a strong emphasis on meeting the needs of neighborhood residents and engaging them from the beginning in the planning process. In 2002, they proposed that the Baltimore-based Annie E. Casey Foundation join with the City and Johns Hopkins in sponsoring the project, with a particular

focus on ensuring that the redevelopment process would be responsive to the needs and desires of the community. After some initial reluctance, the Foundation – seeing in East Baltimore an opportunity to develop a new, more community-oriented approach to large-scale urban revitalization – agreed to take an active role in the project.

From the beginning, the State of Maryland was also an important partner in the effort, providing early (and continuing) financial support and the involvement of several state agencies. The city's representatives in Washington helped secure federal funding.

In 2003, the project was officially launched with the creation of East Baltimore Development Inc. (EBDI), a local development corporation that would play a central role in the revitalization process. During its first few years, EBDI focused primarily on outreach to local residents and engaging them in a community-based planning process, on acquisition of property in the project area and on relocation of several hundred families from sites that were slated for redevelopment. The first phase of new construction began in 2006 and, within a few years, the transformation of the area was well under way.

The 88-acre area being redeveloped by EBDI straddles two Baltimore ZIP codes (21205 and 21213) that encompass some of East Baltimore's poorest neighborhoods. Table 20 provides some basic economic and demographic information about these ZIP codes as well the East Baltimore community more broadly (defined by EBDI as including the two ZIP codes cited above, along with four others, 21202, 21206, 21218 and 21237).

Table 20:
East Baltimore in 2010 – a snapshot

	21205/21213	21202, 21205, 21206, 21213, 21218 and 21237
Population (estimated), 2010	53,291	208,177
Percent African-American	83.5%	63.4%
Percent of residents age 25+ with four-year or higher degrees	13.6%	21.8%
Percent of residents age 16+ who are employed	51.2%	56.4%
Median household income	\$ 31,104	\$ 39,043

A VISION FOR EAST BALTIMORE

The major elements of EBDI’s plan for revitalizing East Baltimore include:

- The East Baltimore Science + Technology Park – approximately 1 million square feet of institutional and commercial research space that is being developed in several phases by Forest City-New East Baltimore Partnership
- Over time, as many as 2,200 new and rehabilitated housing units, with a mix of housing types and income levels. Preference in the rental or sale of new or rehabilitated housing is given to East Baltimore residents, with those who have had to relocate from the project being given a “right to return”
- New retail development (including a supermarket)
- A new East Baltimore Community School, serving grades K through 8
- Development of new parks, playgrounds, cultural and other community facilities
- A strong commitment to participation of minority, women-owned and local contractors in the redevelopment of the area, and to the hiring of local residents

- Career-track training and job placement for neighborhood residents in construction, health care, biotechnology and other areas of opportunity
- A comprehensive program of family and community services

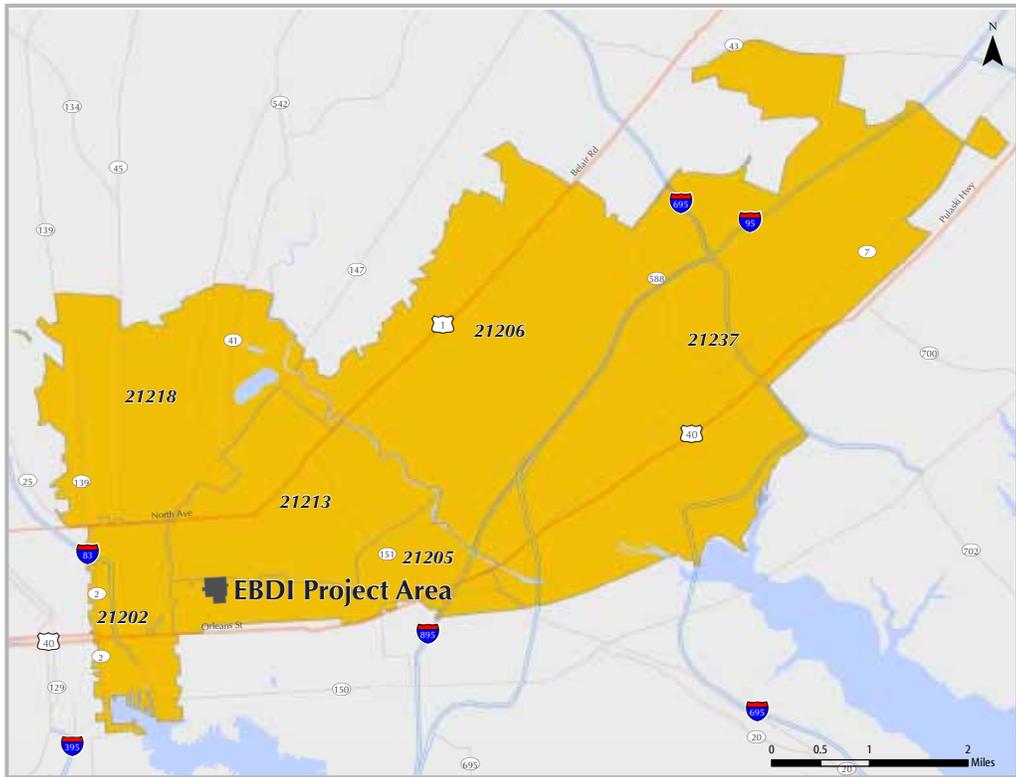
Figure 24 shows the location of the 88-acre project site and the surrounding area.

ACCOMPLISHMENTS TO DATE

While the recession and continued problems in the housing market have slowed the pace of development in East Baltimore during the past two years, much has been accomplished since the project first took shape nearly a decade ago.

- The partners’ commitment to engaging local residents in the planning process has been maintained, with more than 300 community meetings and planning sessions held since 2003.

Figure 24:
Map of the East Baltimore community



- More than 630 households have been relocated from the project site, using an innovative program developed by the Annie E. Casey Foundation that aims to ensure that households are relocated to homes equal to or better than those they previously occupied, and that their housing arrangements remain stable thereafter. Surveys indicate that more than 90 percent of all those who have relocated have been satisfied with the process and with their new homes. And to date, more than 95 percent of those relocated from the project area still occupy the homes to which they first moved.
- Forest City completed the first building in the Science + Technology Research Park in 2009; today the 300,000 square-foot Rangos Research Building is approxi-

mately 80 percent leased – to Johns Hopkins research centers, other non-profit research organizations and commercial tenants. As of the fall of 2010, more than 420 employees of John Hopkins and other tenants were working in the Rangos building.

- Construction is expected to start in 2011 on the park’s second building – a 225,000 square-foot, \$165 million laboratory for the Maryland Department of Health. When it is completed in 2013, the Department of Health laboratory will bring 250 jobs to East Baltimore.

- A total of approximately 220 units of new and rehabilitated housing have been completed to date, including 74 rental units for senior citizens and 78 for low- and moderate-income working families, a 63-unit mixed-income rental complex and five market-rate owner-occupied town houses. More than half of these units have been rented to or purchased by East Baltimore residents.
- Construction started in the summer of 2010 on a new, 20-story graduate student housing complex. The \$60.7 million project is being developed and will be operated by Education Realty Trust, a leading third-party developer of student housing. The new building, to be completed in 2012, will include 321 apartments (enough for nearly 600 students) and 8,400 square feet of retail space.
- In partnership with EBDI, the Maryland Institute College of Art (MICA) opened MICA PLACE (Programs Linking Art, Culture and Education) in a former Catholic school building in East Baltimore in the fall of 2010. MICA PLACE houses the College's MA and MFA programs in Community Arts, its Center for Design Practice and 26 graduate student apartments. Faculty and students will work with neighborhood residents and organizations to explore how the arts and creative design work can contribute to the revitalization of the community. The center will also support the community in other ways as well, such as exhibits of the work of local artists and arts workshops for neighborhood youth.
- The East Baltimore Community School opened in 2009 in temporary quarters, with 150 kindergarten, first-grade and fifth-grade students. The School will gradually build its enrollment during the next several years, to approximately 580 students in grades K-8. In 2012 the School is scheduled to move to a new seven-acre campus within the project area.

The East Baltimore Community School is operated by EBDI under a contract with Baltimore Public Schools. Its status as a contract school allows EBCS to combine the kind of operating flexibility typically given to charter schools with a strong focus on the community and the ability to give priority in enrollment to children who live in East Baltimore.

- Of 1,683 people hired for demolition and construction work on EBDI and Science and Technology Park projects through the end of June 2010:
 - » 900 (53 percent) were minority males and 29 (1.7 percent) were women
 - » 256 (15 percent) were residents of East Baltimore and 421 (25 percent) were residents of other Baltimore neighborhoods
- Of the total hours worked on-site (including both skilled trades and laborers) through the end of June 2010, minorities and women accounted for 57.5 percent. Wages earned by these workers averaged \$25.19 per hour.
- As of December 2009, more than 600 East Baltimore residents had registered with EBDI's workforce development program, with 207 placed in jobs averaging \$10.44 per hour. After participating in EBDI-affiliated training programs, another 150 were placed in career-track jobs in construction, health care and biotechnology.
- Through the end of June 2010, EBDI had awarded \$129 million in contracts for design, construction and related professional services, with nearly \$54 million – 42 percent of the total – awarded to minority and women-owned firms.

- When the project was launched and for its first few years, the East Baltimore Development was essentially a collaborative effort among neighborhood interests and four major partners – the City, the State, John Hopkins and the Annie E. Casey Foundation. Since then, EBDI has succeeded in broadening dramatically the range of agencies and organizations that are supporting the project, both financially and programmatically.

THE ROLE OF JOHNS HOPKINS IN THE REVITALIZATION OF EAST BALTIMORE

Although Johns Hopkins is just one of many partners who are involved in the project, its role in revitalization of East Baltimore has from the beginning been critical.

A major employer of East Baltimore residents

As the community's largest institution, Johns Hopkins is a major employer of East Baltimore residents. In the fall of 2009, the University and the Health System employed 5,400 non-student residents of the six ZIP codes cited above in Table 20, as well as about 2,400 student employees who lived in the same area. About 12 percent of all non-student Johns Hopkins employees lived in East Baltimore – and about 40 percent of all students employed by the University.

Taking into account both students and non-student residents of the area, about 8.4 percent of all employed residents of the six-ZIP-code area work for Johns Hopkins. Salaries and wages paid by Johns Hopkins to residents of the area in fiscal year 2010 totaled more than \$263 million.

A major investor

Johns Hopkins Medicine's continued commitment to – and continued investment in the growth of – its East Baltimore campus is critical to the future of the surrounding community. Emblematic of this commitment is the construction of The Johns Hopkins Hospital's New Clinical Building – which includes two interconnected towers, the Sheikh Zayed Critical Care Tower and the Charlotte Bloomberg Children's Center – on a five-acre site just south of EBDI's project area. At an estimated total cost of \$1.1 billion this 560-bed hospital complex is one of the largest privately financed construction projects in the city's history.

The New Clinical Building will provide the facilities and capabilities that Johns Hopkins needs to maintain its position as one of the world's leading hospitals. And its construction has provided opportunities for minorities, women and local residents on a scale rarely achieved in Baltimore.

- Of a total of \$685 million in construction contracts awarded through June 30, 2010, minority and women-owned firms have won contracts valued at \$111.5 million – 16.3 percent of the total. Payments to minority and women-owned firms during this period totaled \$88.7 million – 17.1 percent of all payments through June 30, 2010.
- Through June 30, minority and female construction workers had worked a total of 1.8 million hours, accounting for roughly 59 percent of all on-site employment on the project. This equates to nearly 1,000 person-years of full-time employment.
- Through June 30, 24 percent of all those hired on the project were Baltimore residents, including 7 percent who were residents of the six East Baltimore ZIP codes.

One of the goals of the redevelopment initiative is for East Baltimore to become a more economically integrated, mixed-income community. Johns Hopkins is contributing to the achievement of this goal through its support for the development of graduate student housing in the East Baltimore project area. The project is being financed and built by Education Realty Trust on land owned by Johns Hopkins and leased to EBDI. And, while the new building's 321 units will be open to graduate students at all of the colleges and universities in the surrounding area, Johns Hopkins medical, nursing and public health students are expected to provide the critical mass of tenants needed to ensure the project's success.

Developing a local bioscience cluster

Similarly, the proximity of the Science + Technology Park to Johns Hopkins' biomedical research enterprise is critical to the Park's success. Tenants in the Rangos Building (the Park's first building) highlight the role that Johns Hopkins Medicine plays as simultaneously an anchor, a generator of tenant start-up companies and a magnet that draws companies from elsewhere to East Baltimore. They include:

- The School of Medicine's *Institute for Basic Biomedical Sciences*, the focal point for research in the basic sciences at the Johns Hopkins University School of Medicine
- The Johns Hopkins *Brain Science Institute*, which conducts basic research on brain development and function and seeks to use the insights thus gained to develop more effective treatments for brain-related diseases
- The *Howard Hughes Medical Institute*, an independent non-profit foundation specializing in biomedical research (described in Part 7)

- *Cangen Biotechnologies*, founded in 2000, a company engaged in the development of cancer diagnostics; its first commercial product will be a test for bladder cancer, based on technology licensed from Johns Hopkins
- *Biomarker Strategies LLC*, a company, founded in 2006, that is developing a platform for rapid, automated testing of live tumor biopsy samples; its chairman and chief science officer is a professor at the Johns Hopkins University School of Medicine
- *Champions Biotechnology*, a company that has developed a system for more efficient and more effective drug development; its chairman is a professor at the School of Medicine
- *IATRICA*, a company founded in 2007 that is developing immunoconjugates – molecules that trigger specific types of immune reactions – for treatment of cancer and infectious diseases, based on technology licensed from Johns Hopkins
- *Spectrum Bioscience*, a company that manages supplies of chemical compounds and provides other lab services, to pharmaceutical companies and other research organizations; its founder and CEO is a Johns Hopkins graduate and an adjunct faculty member at the Carey Business School
- *SoBran Inc.*, a contract services company that manages a facility for lab animals used by Johns Hopkins and other researchers
- *The Lieber Brain Development Institute*, an independent non-profit research institution that in 2010 chose to locate a new research center in Baltimore, in part because of the opportunity to collaborate with researchers at Johns Hopkins

Helping to strengthen the community

Johns Hopkins has also worked closely with EBDI on the development of the East Baltimore Community School and will provide ongoing support in terms of after-school programming, other educational and cultural enrichment, recreational opportunities, health services, professional development and other support services.

Johns Hopkins has also collaborated with EBDI and the Annie E. Casey Foundation on providing a broad range of family and community services in East Baltimore.

Finally, Johns Hopkins has been a major contributor to EBDI itself. In 2007, Hopkins committed \$15 million over a five-year period, including \$3.75 million for EBDI's core operations and \$11.25 million for relocation.



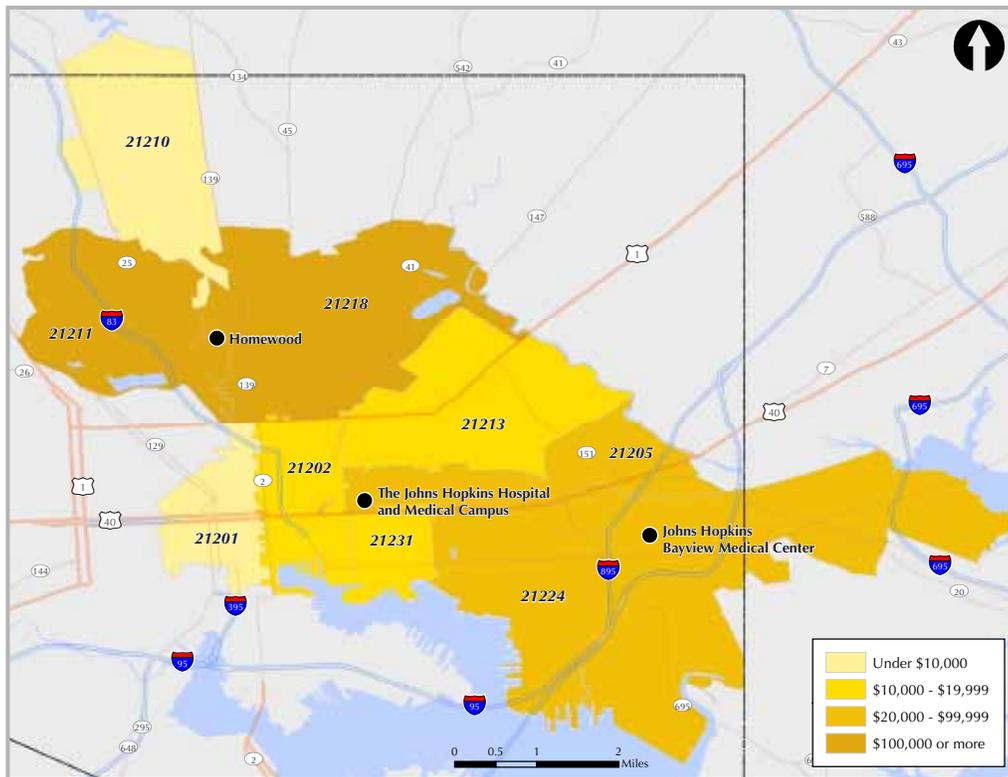
Parts Three and Five highlighted several ways in which Johns Hopkins is engaged in efforts to improve the quality of elementary and secondary education in Baltimore and to meet the health care needs of city residents; and Part Eight described investments by Johns Hopkins in the revitalization of East Baltimore. The Johns Hopkins Institutions' engagement with communities in Baltimore is not, however, limited to these three areas. This part of the report highlights a variety of ways in which Johns Hopkins helps to strengthen the city's neighborhoods and improve the lives of its residents. It is not meant to be a comprehensive account of the institutions' engagement with their communities, but rather to illustrate the scope and diversity of that engagement.

STRENGTHENING COMMUNITIES

Johns Hopkins has long been involved in efforts to strengthen the neighborhoods in which it operates. For example:

- The *Greater Homewood Community Corporation* is a grass-roots community organization that seeks to strengthen the neighborhoods of north central Baltimore, an ethnically and economically diverse area that is home to 70,000 people. The Corporation's work spans youth development, adult literacy and ESOL programs, neighborhood economic development and engagement of the community's older residents through the Baltimore Experience Corps.
- Johns Hopkins has been involved in GHCC's work since its founding in 1969. Johns Hopkins supports the Corporation financially and University employees serve on its board. Johns Hopkins students work as volunteers in several GHCC programs and several University departments and research centers provide technical assistance.
- The *Historic East Baltimore Community Action Coalition (HEBCAC)* was founded in 1994 by Johns Hopkins, city and state governments, local community organizations and residents of a 220-block area in East Baltimore. The Coalition has a dual focus – physical improvements to the neighborhoods it serves and programs that help build the community's "social capital." HEBCAC has rehabilitated 50 homes for local residents, acquired and rehabilitated two vacant industrial buildings, and is working to revitalize East Monument Street, the community's principal shopping area. HEBCAC's Youth Opportunity Center provides GED classes, job training and placement, counseling and other services for young East Baltimore residents; and its Technology Resource Center provides computer access and training – and sells low-cost refurbished computers – to neighborhood residents.

Figure 25:
Map of Live Near Your Work grant totals, by ZIP code



Johns Hopkins (along with other partners) provides continuing financial support for HEBCAC and also provides an organizational home, as all of the coalition's staff are hired as Johns Hopkins employees.

- Since its establishment in 1994, Johns Hopkins has provided financial, technical, in-kind and board member to the *Charles Village Community Benefits District*, which provides supplemental sanitation and safety/security services to a 100-block area with over 14,000 residents.
- Johns Hopkins University is a founding member of the *Central Baltimore Partnership*. Formally established in 2008, the partnership is an alliance of neighborhood organizations, city agencies and

institutions (including the University of Baltimore and the Maryland Institute College of Art) that is seeking to develop and implement a comprehensive community development strategy for an area in central Baltimore that stretches from the University's Homewood campus on the north to Mt. Royal Avenue on the South.

Johns Hopkins has also sought to strengthen these neighborhoods through its *Live Near Your Work* program, which provides grants to employees as an incentive to purchase homes in Baltimore. Recipients also receive a small matching grant from the City. In fiscal year 2010, Johns Hopkins awarded 70 Live Near Your Work grants, totaling about \$416,000, to employee homebuyers. A map showing the total amount awarded under the program in FY 2010 by ZIP code is shown in Figure 25.

VOLUNTEER AND SERVICE LEARNING PROGRAMS

Baltimore neighborhoods and their residents also benefit from the engagement of Johns Hopkins students in various forms of community service – either as volunteers or through “service learning” courses, which combine classroom learning with practical experience in the provision of community services.

- The *Center for Social Concern* (CSC) is the primary focal point on the Homewood campus for student engagement with and service to Baltimore communities. In addition to the Johns Hopkins Tutorial Project (described in Part Three), the Center provides a home for 50 student groups that provide a wide variety of services. For example:
 - » *Project Health* operates a Family Help Desk at The Johns Hopkins Hospital, which provides information and assistance to families of incoming patients, informing them about available benefits, connecting them with needed services and providing follow-up when needed. In 2009-10, 75 students performed approximately 14,900 of volunteer work under this program.
 - » The *Johns Hopkins Jail Tutorial* provides GED preparation and conducts reading groups with female inmates at the Baltimore City Prison. In 2009-10, 59 students provided more than 6,300 hours of volunteer work.
 - » The Johns Hopkins Chapter of *Habitat for Humanity* works with local affiliates to build housing for Baltimore families. In 2009-10, 40 students performed about 2,600 hours of volunteer work on Habitat projects.

Overall, more than 1,500 students performed more than 79,700 hours of volunteer work in programs based at CSC.

- On the Homewood campus, students in fraternities and sororities performed 9,346 hours of community service in 2009-10. Sites at which students volunteered included the East Baltimore Community School, the Baltimore Rescue Mission Clinic, the Margaret Brent Elementary & Middle School and the Maryland Food Bank.
- At the East Baltimore campus, *SOURCE* – the Student Outreach Resource Center – provides a focal point for community engagement students in the School of Medicine, the School Nursing and the School of Public Health. The following are examples of SOURCE’s programs:
 - » The *Connection Community Consultant Group* assists community organizations with a variety of short-term projects. In 2009-10, for example, the Group helped the Baltimore American Indian Center design a survey on the health status and service needs of the city’s Native American population. In 2009-10, student volunteers provided about 800 hours of volunteer consulting work.
 - » *Bienestar Baltimore* focuses on helping to meet the health needs of the city’s Latino community, through services, such as prenatal education, tuberculosis screening and prevention programs and diabetes screening.
 - » SOURCE volunteers provide confidential *HIV Testing and Counseling Services* at several locations in Baltimore.

In addition to these volunteer programs, all three schools on the East Baltimore campus offer a number of service learning courses. For example:

- In 2009-10, 120 student nurses participated in the School of Nursing’s Community Clinics service learning course, recording 3,800 hours of service to about 1,000 members of the community

- The 16 students who participated in the School of Public Health's Baltimore community practicum course performed 1,280 hours of work in the community

During 2009-10, SOURCE estimates that between its volunteer programs and service learning programs such as those described above, students at the three schools provided about 19,500 hours of service to the community – primarily but not exclusively in East Baltimore.

Medicine, Nursing and Public Health are not the only schools at Johns Hopkins offering service learning courses.

- At the Carey Business School, for example, MBA students are required to complete a “capstone” project, in which teams of students work as consultants to a company or a non-profit organization, helping its leaders address a real-world business problem. In 2009-10, 635 Carey Business School students completed capstone projects with non-profit-organizations, institutions and local businesses. We estimate that Johns Hopkins students provided more than 16,000 hours of consulting services to these organizations.
- In 2009-10, 1,742 students enrolled in four service learning courses in the School of Education, including courses on special education, teacher training and public safety leadership. The School estimates that these students performed approximately 17,700 hours working in schools and with other community partners during the year.

Community engagement is not limited to Johns Hopkins students. As noted in Part Three, Johns Hopkins employees make up the largest single group of volunteers working in the Baltimore Public Schools through its *Johns Hopkins Takes Time for Schools* program and other efforts, accounting for 37 percent of all registered volunteers. Other examples of employee engagement include the following:

- Since 2007, Johns Hopkins employees have managed and participated in a fundraising campaign for the *Johns Hopkins Neighborhood Fund*, which provides funding to non-profit organizations that seek to strengthen the neighborhoods in which Johns Hopkins operates. The Fund focuses its support in five areas – community revitalization, education, employment, health and public safety. In 2010, the Fund contributed a total of \$169,500 to 17 neighborhood organizations.
- At *Project Heal*, a joint venture of the Children's Center at Johns Hopkins Hospital and Maryland Volunteer Lawyers, medical staff and attorneys work together to assist patients and their families and to advocate on behalf of the community on issues such as housing, education and access to public benefits.

JOHNS HOPKINS AS A CULTURAL RESOURCE

Johns Hopkins also contributes to the life of Baltimore communities through its role as a major cultural institution, with music, dance and theater performances, museums and lectures that are open to members of the university community and to neighborhood residents as well. For example:

- The *Peabody Institute* – one of the anchor institutions in the city's Mount Vernon cultural district – provides instruction in music to community residents both young and old through its Peabody Prep program (described in Part Three). The Institute stages numerous performances during the course of the year that are open to the community at low or no cost.
- The annual *Shriver Hall Concert Series* – one of the leading chamber music programs in the U.S. – started in 1965 as a university-sponsored concert series. SHCS became an independent non-profit organization in 1970 – but continues to present its concerts on the Homewood campus.

- The *JHU Theatre*, affiliated with the School of Arts and Sciences, stages several plays each year. Those presented during 2009-10 included plays by Lanford Wilson, John Guare and Tom Stoppard, along with several new works.
- The *Homewood Museum* (located on the University campus) and the *Evergreen Museum* (north of the Homewood campus) are open to the public. Each of these museums also stages an annual concert series.
- The Johns Hopkins *Foreign Affairs Symposium* (FAS) is a lecture and discussion series on global issues that began in 1998. About a dozen FAS events are held each spring, giving members of the University community an opportunity to interact with international leaders and experts, and with each other. Speakers in the spring of 2010 included New York Times columnist Nicholas Kristof, former White National Security Advisor Zbigniew Brzezinski, EPA Administrator Lisa Jackson and historian Niall Ferguson.

In an era when the strength of a city's economy depends on its ability to attract, develop and retain talent, cities are in the long run only as strong as their neighborhoods. Through the programs described here and many others, Johns Hopkins is helping to improve the communities in which it operates and others throughout Baltimore.

PROMOTING SUSTAINABILITY

Like many other institutions, Johns Hopkins is committed to reducing its impact on the environment, and participating in efforts to address the challenge of climate change. The Johns Hopkins Institutions can contribute to this effort in three ways:

- As the largest enterprise in Baltimore, Johns Hopkins can contribute to the quality of the local environments – and also help address the broader problem of climate change – by responsibly manag-

ing its own assets and operations. Johns Hopkins has, for example, set a goal of reducing carbon emissions by 50 percent by 2025.

- As a leading university, Johns Hopkins can help develop greater capacity to address these issues more effectively through its mission of teaching and research.
- As a partner, Johns Hopkins can help community organizations and local residents develop and implement their own responses to these challenges.

The following are just a few examples of the Johns Hopkins Institutions' activities in this area.

- As noted in Part Two, Johns Hopkins completed a 4.6-megawatt cogeneration plant on its Homewood campus in 2010, and plans to complete two more cogeneration plants totaling 15 megawatts on its East Baltimore campus by the end of 2011. The plants will reduce energy costs, while also substantially reducing carbon dioxide emissions.
- In partnership with the city, Johns Hopkins created the Climate Showcase Project, which works with local non-profit organizations to help them identify and implement ways to reduce energy and water consumption. During the summer of 2010, teams of students recruited and trained by the University's Office of Sustainability worked with 20 Baltimore non-profits.
- The Office of Sustainability has also sponsored a community-supported agriculture program at the Homewood campus, through which members of the University community and others can purchase up front shares of the produce grown over the course of the season at One Straw Farm, an organic farm located in Baltimore County. The Office markets the program locally and provides a pick-up site on the Homewood campus.



The Johns Hopkins Institutions are in many ways a cornerstone of the Baltimore economy – the city's largest private enterprise, its largest employer, its leading provider of health care and its largest center of research and innovation. Especially as the city's economy has shrunk during the past decade, the role of the Johns Hopkins Institutions has become even more important.

But despite Baltimore's problems, the next ten years are likely to present new opportunities for growth. Johns Hopkins can be a valuable partner for the city as it seeks to take advantage of those opportunities.

1) MAINTAINING BALTIMORE'S POSITION AS A MAJOR RESEARCH CENTER

While the need to reduce the federal budget deficit will no doubt constrain the growth of federal spending on research and the development of new technologies, there are some areas that could in the years ahead be targeted for increased federal investment in research and development, such as cyber security, disaster preparedness and selected areas of medical research. As one of the nation's leading research institutions, Johns Hopkins should be well-positioned to help Baltimore maintain its position as one of the nation's leading centers of federally funded research.

2) EDUCATING BALTIMORE'S PROFESSIONAL WORKFORCE

In an era in which investments in human capital are among the most important determinants of which cities flourish and which do not, the University's role as a leading center for undergraduate, graduate and professional education – and in particular, for the education of working professionals – can help ensure continued investment in the knowledge and skills of Baltimore's college-educated workforce.

3) STRENGTHENING THE CITY'S NEIGHBORHOODS

Attracting, developing and keeping highly skilled workers in Baltimore also means making the city's neighborhoods attractive places to live. Through its participation in and support for the work of organizations, such as the Greater Homewood Community Corporation, East Baltimore Development Inc. and the Central Baltimore Partnership – and through its Live Near Your Work program, which provides incentives for employees to buy homes near its campuses – Johns Hopkins is helping to strengthen Baltimore neighborhoods.

4) IMPROVING SCHOOLS AND EXPANDING EDUCATIONAL OPPORTUNITY

Johns Hopkins can similarly be a partner in strengthening Baltimore's elementary and secondary schools, and in expanding the range of educational opportunities available to young residents of the city— through partnerships between the School of Education and the city's schools, through the work of volunteers in programs such as the Johns Hopkins Tutorial Project and the Baltimore Scholars Program.

5) SUPPORTING INNOVATION AND ENTREPRENEURSHIP

With a growing research base and a stronger focus on the commercialization of technologies first developed in University labs, Johns Hopkins is an increasingly important source of technological innovation and entrepreneurial growth in Baltimore. Over time, the Johns Hopkins Institutions' collaboration with Forest City and East Baltimore Development, Inc. on the development of the East Baltimore Science + Technology Park should also reinforce Baltimore's strengths in this area – by making it easier and more attractive for start-up companies based on Johns Hopkins technology to stay in the city, and by also attracting to Baltimore life sciences companies with potential for future growth.

6) REFORMING HEALTH CARE

The next ten years are likely to see far-reaching changes in the financing, management and delivery of health care in the U.S. With its unique combination of strengths in medical research and education – in the provision of high-quality primary care, hospital care, skilled nursing care and home care – in

health systems planning and management – and in the administration of managed care plans – Johns Hopkins Medicine is well-positioned both to play a leading role in this transformation and to take advantage of the opportunities it offers. Over time, leadership in health care reform can translate into better care for Baltimore residents, more effective control of health care costs – and new business opportunities for Baltimore.

7) CONNECTING BALTIMORE TO THE GLOBAL ECONOMY

In the twenty-first century, cities that are effectively integrated into the world economy are more likely to succeed economically than those that are not. Over the course of several decades, the Johns Hopkins Institutions have developed – and each year continue to expand – a dense network of relationships that now connect Baltimore to more than 100 countries around the world. These relationships clearly benefit the University and the Johns Hopkins Health Care System – and they benefit Baltimore as well.

It is important to recognize that the benefits of the Johns Hopkins Institutions' partnership with Baltimore do not run just one way. Johns Hopkins can be an invaluable partner in Baltimore's efforts to rebuild its economy and strengthen its neighborhoods. At the same time, if it is to maintain in the long run its leading position in research, education and health care, Johns Hopkins needs those efforts to succeed. The university and the hospital that a Baltimore merchant started 140 years ago are still inextricably tied to the city he called home.





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