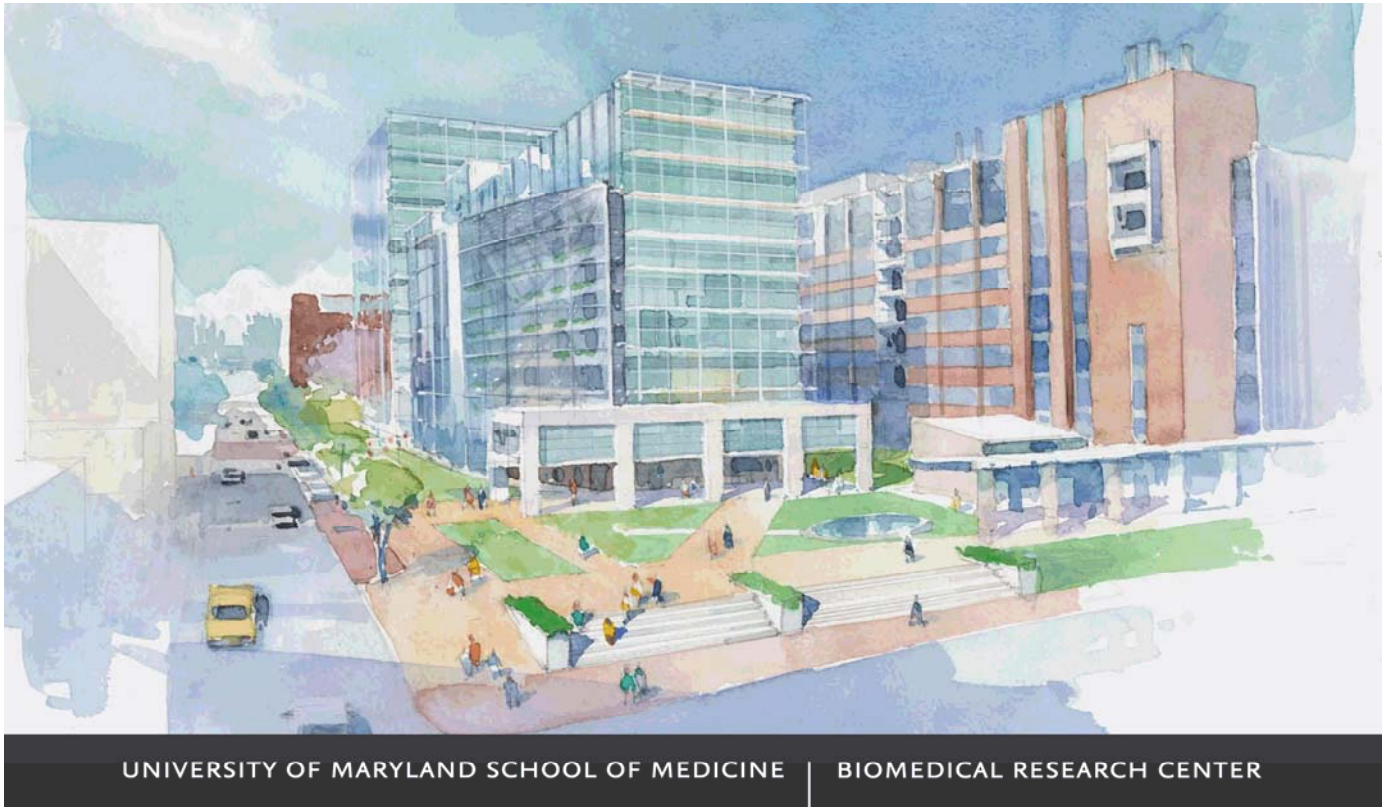


The Economic Impact of the University of Maryland, Baltimore's Health Sciences Facility III on The State of Maryland



Prepared By



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1.0 Introduction and Summary

The University of Maryland, Baltimore retained Richard Clinch, the Director of Economic Research at the University of Baltimore's Jacob France Institute to prepare an analysis of the economic impacts of the construction and operation of the Third Phase of the Health Sciences Facility (HSFIII). Based on this analysis, the construction and operation of the HSFIII building will have the following economic impacts on the State of Maryland:

- The \$265.0 million in construction spending associated with HSFIII will increase economic activity in the State of Maryland by \$407.8 million and create 2,983 jobs earning \$144.5 million in salaries and wages over the multi-year construction period. State and local tax revenues will increase by \$19.3 million over the multi-year construction period;
- Once HSFIII is fully operational in will house an estimated 376 university research personnel. The new research building will allow the University's Dental School, School of Medicine and School of Pharmacy to increase their research activities by \$60.3 million; and
- The \$60.3 million in new research activities and 376 new jobs will annually increase economic activity in the State of Maryland by \$117.3 million and create a total of 804 jobs earning \$46.5 million in salaries and wages. State and local tax revenues will increase by \$5.6 million annually as a result of the new research activities occurring in the building.

2.0 HSF III Economic Impact Assumptions

HSF III is the third component of University of Maryland, Baltimore's development of research, laboratory and teaching facilities is needed to meet the needs of the State's flagship public medical and health related institution. This development will consist of a 332,000 sq. ft. facility with an auditorium and public space and 179,350 sq. ft. of research space that will be allocated among the University's Dental School, School of Medicine and School of Pharmacy. This new research space is essential to meet the needs of the University's expanding base of medical, biomedical and health related research and to facilitate collaborative projects among these three schools in today's increasingly interdisciplinary research environment.

HSF III represents the next generation of state-of-the-art research buildings. It will provide the spaces and facilities necessary to foster collaborative interdisciplinary research. The following needs of the three schools will be addressed in this building:

- **Interdisciplinary Research Space** Today, successful research complexes at universities in the United States and around the world foster collaborative interdisciplinary research between different types of science. This is a major shift from the paradigm of research in the past. Interdisciplinary programs and grants often require specialized facilities. HSF III will provide a combination of wet lab bench space and support spaces, and other centralized facilities, such as imaging and nanotechnology programs; and
- **Replacement Space** The development of HSF III space will allow for the phased renovation of the Medical School Teaching Facility and Bressler Research Building.

This economic impact analysis utilized the IMPLAN input-output model for the State of Maryland developed by the Minnesota IMPLAN Group. IMPLAN is one of the most widely

used models in economic impact analysis. The IMPLAN model can be used to estimate the impact of an economic activity based on either its employment or revenues/expenditures. For the analysis of the economic impacts associated with the construction of the proposed research building, the input to this analysis was the construction budget for the building. Because no official estimates of the total value of research activities to be undertaken by the three schools in this new facility were available, the analysis of the economic impacts associated with the expansion in UMB research activities supported by the new research building were based on an estimate of the research employment likely to be created by the new facility. This employment estimate was based on the square footage of research space being developed, using the following assumptions:

- One job being created for each 250 square feet of net assignable office space;
- One job being created for each 500 square feet of net assignable wet lab space; and
- One job being created for each 1,000 square feet of net assignable instructional space.

The inputs to the construction and operational impact analyses are presented in Table 1 (below).

Table 1
Modeling Inputs for
Health Sciences Facility III

Construction Phase	
Total Construction Cost	\$265,000,000
Operational Phase	
Total Square Feet (GSF)	332,000
Total Square Feet (NASF)	<u>179,350</u>
Wet Lab Space	119,347
Office Space	25,930
Other (Instruction)	34,073
Jobs Created¹	376
(1) Estimated at 1 job per 250 sq. ft. for office space and retail and restaurant jobs estimated by IMPLAN.	

Source: and IMPLAN

It is important to note that the Jacob France Institute has substantially revised the assumptions used in this analysis from those used in the original 2007 report on the HSF III Building. In that report, one job was assumed to be created for each 250 square feet of space in the building, both for office and wet lab space. Based on subsequent research on similar research buildings, the JFI reduced the direct job creation estimate for wet lab space to one job per 500 sq. ft., rather than the one job per 250 sq. ft. of all space estimate used in the first report. This change substantially reduced both the direct and total economic and job creation estimates.

3.0 The Economic, Employment, Employee Compensation and Fiscal Impacts of the Construction of HSFIII on the State of Maryland

As presented in Table 1, there are \$265.0 million in construction expenditures associated with the development of HSFIII.¹ These expenditures will increase economic activity in Maryland by more than the simple amount of construction dollars spent as a result of the multiplier effects estimated by the IMPLAN Model. Multiplier effects occur as the spending associated with a project are earned and, in turn, re-spent by other workers and businesses in successive rounds of earning and spending. Each of these successive rounds of spending are lower than the preceding round as an increasing portion of each round is spent outside of the local economy. There are two types of multiplier effects: *indirect effects* resulting from the purchase of goods and services as inputs to the direct activity; and *induced effects* resulting from the increase in local earnings resulting from the jobs created as a result of the direct and indirect effects.

As presented in the tables below, when the multiplier effects of this construction spending are included, the \$240.3 million in local construction expenditures associated with HSFIII will increase Maryland economic activity by \$407.8 million as a result of \$64.5 million in indirect effects, from in-State construction related purchases, and \$103.1 million in induced effects, as a result of the jobs created. The construction of HSFIII will create an estimated 1,794 construction jobs with an additional 1,189 jobs created by the indirect and induced effects for a total of 2,983 jobs created. There are a total of \$114.5 million in wages and salaries associated with these 2,983 jobs. The IMPLAN model also estimates total state and local tax revenues created by a project. The construction of HSFII will increase state and local tax revenues by \$19.3 million. It is important to note that these impact figures are the aggregate impacts over the entire multi-year construction period. Thus, the impacts in any given year will be smaller.

Table 2
Health Sciences Facility III
Economic Impacts of Construction Expenditures
(Jobs and 2011\$)

Construction Phase	
Direct Impact¹	\$240,264,498
Economic Output (\$s)	\$407,832,743
Employment (# of Jobs)	2,983
Employee Compensation (\$s)	\$144,462,673
Average Employee Compensation per Job (\$s)	\$48,432
Fiscal Impact (\$s)	\$19,340,053

(1) Only the local margin of FFE Purchases is included in the analysis.

Source: IMPLAN

¹ Because of the specialized nature of the Furniture, Fixtures and Equipment (FFE) for the building, it was assumed that these purchases were made from local wholesale firms. As a result, only the local margins associated with this activity are included in this analysis. Thus, the direct in-State construction impact is less than the total budget.

The aggregated economic output, employment and employee compensation impacts are presented by sector in Tables 3, 4 and 5.

Table 3
Output Impact of the Construction of
Health Sciences Facility III
By Sector

Item	Direct Impact ¹	Indirect Impact	Induced Impact	Total Impact
Total	<u>\$240,264,498</u>	<u>\$64,505,722</u>	<u>\$103,062,523</u>	<u>\$407,832,743</u>
Natural Resources	\$0	\$113,895	\$154,147	\$268,042
Mining	\$0	\$185,518	\$75,882	\$261,400
Utilities	\$0	\$1,398,240	\$2,386,311	\$3,784,551
Construction	\$234,499,998	\$372,753	\$969,132	\$235,841,883
Manufacturing	\$0	\$8,682,527	\$3,143,867	\$11,826,394
Wholesale Trade	\$5,764,500	\$7,215,784	\$4,650,290	\$17,630,574
Retail Trade	\$0	\$997,872	\$8,894,541	\$9,892,413
Transportation & Warehousing	\$0	\$2,935,532	\$2,084,958	\$5,020,490
Information	\$0	\$4,419,482	\$4,175,444	\$8,594,926
Finance & Insurance	\$0	\$4,161,780	\$12,667,549	\$16,829,329
Real Estate	\$0	\$5,137,074	\$21,818,883	\$26,955,957
Professional Scientific & Technical Services	\$0	\$20,864,171	\$4,371,548	\$25,235,719
Management of Companies	\$0	\$1,034,933	\$713,790	\$1,748,723
Administrative & Waste Services	\$0	\$3,050,816	\$2,731,438	\$5,782,254
Educational Services	\$0	\$21,979	\$2,391,194	\$2,413,173
Health & Social Services	\$0	\$396	\$18,093,128	\$18,093,524
Arts, Entertainment & Recreation	\$0	\$250,241	\$1,277,601	\$1,527,842
Accommodation & Food Services	\$0	\$936,975	\$5,207,611	\$6,144,586
Other Services	\$0	\$2,157,806	\$5,143,544	\$7,301,350
Government	\$0	\$567,948	\$2,111,665	\$2,679,613

(1) Only the Margin of FFE Purchases Included in the Analysis.

Source: IMPLAN

Table 4
Employment Impact of the Construction of the
Health Sciences Facility III
By Sector

Item	Direct Impact	Indirect Impact	Induced Impact	Total Impact
<u>Total</u>	<u>1,794</u>	<u>404</u>	<u>785</u>	<u>2,983</u>
Natural Resources	0	1	2	3
Mining	0	1	0	1
Utilities	0	1	3	4
Construction	1,766	3	8	1,777
Manufacturing	0	28	7	35
Wholesale Trade	28	35	22	85
Retail Trade	0	16	146	162
Transportation & Warehousing	0	23	18	42
Information	0	12	13	25
Finance & Insurance	0	18	54	72
Real Estate	0	26	49	75
Professional Scientific & Technical Services	0	145	32	177
Management of Companies	0	5	3	8
Administrative & Waste Services	0	43	38	81
Educational Services	0	0	33	33
Health & Social Services	0	0	170	170
Arts, Entertainment & Recreation	0	5	25	30
Accommodation & Food Services	0	14	81	95
Other Services	0	24	72	95
Government	0	4	10	14

Source: IMPLAN

Table 5
Employee Compensation Impact of the Construction of
Health Sciences Facility III
By Sector

Item	Direct Impact	Indirect Impact	Induced Impact	Total Impact
<u>Total</u>	<u>\$89,625,661</u>	<u>\$22,765,393</u>	<u>\$32,071,619</u>	<u>\$144,462,673</u>
Natural Resources	\$0	\$13,906	\$19,520	\$33,426
Mining	\$0	\$31,023	\$4,678	\$35,701
Utilities	\$0	\$189,269	\$320,784	\$510,053
Construction	\$87,464,875	\$147,133	\$339,202	\$87,951,210
Manufacturing	\$0	\$1,778,315	\$457,773	\$2,236,088
Wholesale Trade	\$2,160,786	\$2,704,791	\$1,743,131	\$6,608,708
Retail Trade	\$0	\$520,063	\$4,479,405	\$4,999,468
Transportation & Warehousing	\$0	\$949,819	\$716,728	\$1,666,547
Information	\$0	\$887,920	\$894,400	\$1,782,320
Finance & Insurance	\$0	\$1,190,275	\$3,519,711	\$4,709,986
Real Estate	\$0	\$613,551	\$754,738	\$1,368,289
Professional Scientific & Technical Services	\$0	\$10,042,533	\$1,920,855	\$11,963,388
Management of Companies	\$0	\$559,399	\$385,816	\$945,215
Administrative & Waste Services	\$0	\$1,417,680	\$1,200,331	\$2,618,011
Educational Services	\$0	\$11,258	\$1,345,992	\$1,357,250
Health & Social Services	\$0	\$146	\$8,709,888	\$8,710,034
Arts, Entertainment & Recreation	\$0	\$93,955	\$465,351	\$559,306
Accommodation & Food Services	\$0	\$324,974	\$1,817,374	\$2,142,348
Other Services	\$0	\$994,170	\$2,217,155	\$3,211,325
Government	\$0	\$295,213	\$758,787	\$1,054,000

Source: IMPLAN

4.0 The Economic, Employment, Employee Compensation and Fiscal Impacts of the Operation of HSFIII on the State of Maryland

The development of HSFIII will provide the space needed by the University of Maryland, Baltimore to support the continued and expected growth in its research programs. The new facility will permit the University to increase its annual research revenues by an estimated \$60.3 million and house as many as 376 academic researchers and their staff.

As presented in Table 6, the \$60.3 million in new research revenues in HSFIII will annually generate an estimated \$117.3 million in Maryland economic activity, support 804 jobs earning \$46.5 million in salaries and wages, and generate \$5.6 million in combined State and Local tax revenues.

Table 6
Health Sciences Facility III
Economic Impacts of Operations
(Jobs and 2011\$)

Operational Phase	
Direct Impact (\$s)	\$60,286,268
Direct Impact (# of Jobs)	376
Estimated Direct Employee Compensation (\$)	\$28,158,621
Average Direct Employee Compensation per Job (\$s)	\$74,890
Economic Output (\$s)	\$117,289,788
Employment (# of Jobs)	804
Employee Compensation (\$s)	\$46,538,476
Average Employee Compensation per Job (\$s)	\$57,905
Fiscal Impact (\$s)	\$5,626,178

Source: IMPLAN

The \$60.3 million in new research revenues in HSFIII will be augmented with \$24.6 million in indirect effects, from the purchase of local supplies and raw materials as part of the research and development activities undertaken in the new building, and \$32.4 million in induced effects resulting from the new jobs created, for total increase of \$117.3 million in Maryland economic output. As presented in Tables 6, 7 and 8, which describe the economic output, employment and wage and salary impacts of HSFIII by sector, the facility will have a broad-based impact on the State's economy, with the largest impacts in the professional services, real estate, finance and insurance, and health and social services sectors.

Table 7
Output Impact of the Operation of
Health Sciences Facility III
By Sector

Item	Direct Impact	Indirect Impact	Induced Impact	Total Impact
<u>Total</u>	<u>\$60,286,268</u>	<u>\$24,627,574</u>	<u>\$32,375,946</u>	<u>\$117,289,788</u>
Natural Resources	\$0	\$72,047	\$48,488	\$120,535
Mining	\$0	\$64,848	\$23,871	\$88,719
Utilities	\$0	\$729,469	\$751,396	\$1,480,865
Construction	\$0	\$1,090,674	\$304,184	\$1,394,858
Manufacturing	\$0	\$787,953	\$989,469	\$1,777,422
Wholesale Trade	\$0	\$655,014	\$1,465,192	\$2,120,206
Retail Trade	\$0	\$63,535	\$2,790,687	\$2,854,222
Transportation & Warehousing	\$0	\$1,072,488	\$654,505	\$1,726,993
Information	\$0	\$2,032,189	\$1,313,245	\$3,345,434
Finance & Insurance	\$0	\$1,928,904	\$3,977,062	\$5,905,966
Real Estate	\$0	\$3,430,552	\$6,851,305	\$10,281,857
Professional Scientific & Technical Services	\$56,729,184	\$6,522,237	\$1,373,931	\$64,625,352
Management of Companies	\$0	\$487,489	\$224,431	\$711,920
Administrative & Waste Services	\$0	\$3,732,710	\$858,041	\$4,590,751
Educational Services	\$3,557,084	\$18,647	\$748,184	\$4,323,915
Health & Social Services	\$0	\$187	\$5,687,112	\$5,687,299
Arts, Entertainment & Recreation	\$0	\$112,487	\$400,820	\$513,307
Accommodation & Food Services	\$0	\$573,738	\$1,636,435	\$2,210,173
Other Services	\$0	\$757,138	\$1,613,788	\$2,370,926
Government	\$0	\$495,268	\$663,800	\$1,159,068

Source: IMPLAN

Table 8
Employment Impact of the Operation of
Health Sciences Facility III
By Sector

Item	Direct Impact	Indirect Impact	Induced Impact	Total Impact
<u>Total</u>	<u>376</u>	<u>181</u>	<u>247</u>	<u>804</u>
Natural Resources	0	2	1	3
Mining	0	0	0	0
Utilities	0	1	1	2
Construction	0	9	2	11
Manufacturing	0	2	2	4
Wholesale Trade	0	3	7	10
Retail Trade	0	1	46	47
Transportation & Warehousing	0	8	6	14
Information	0	7	4	11
Finance & Insurance	0	8	17	25
Real Estate	0	18	16	33
Professional Scientific & Technical Services	342	44	10	396
Management of Companies	0	2	1	3
Administrative & Waste Services	0	54	12	66
Educational Services	34	0	10	45
Health & Social Services	0	0	53	53
Arts, Entertainment & Recreation	0	2	8	10
Accommodation & Food Services	0	9	25	34
Other Services	0	8	23	31
Government	0	3	3	6

Source: IMPLAN

Table 9
Employee Compensation Impact of the Operation of
Health Sciences Facility III
By Sector

Item	Direct Impact	Indirect Impact	Induced Impact	Total Impact
<u>Total</u>	<u>\$28,158,621</u>	<u>\$8,304,960</u>	<u>\$10,074,895</u>	<u>\$46,538,476</u>
Natural Resources	\$0	\$22,915	\$6,137	\$29,052
Mining	\$0	\$8,815	\$1,469	\$10,284
Utilities	\$0	\$97,579	\$101,011	\$198,590
Construction	\$0	\$433,521	\$106,483	\$540,004
Manufacturing	\$0	\$151,918	\$144,016	\$295,934
Wholesale Trade	\$0	\$245,528	\$549,218	\$794,746
Retail Trade	\$0	\$33,113	\$1,405,426	\$1,438,539
Transportation & Warehousing	\$0	\$357,321	\$225,040	\$582,361
Information	\$0	\$508,597	\$281,265	\$789,862
Finance & Insurance	\$0	\$560,099	\$1,105,480	\$1,665,579
Real Estate	\$0	\$274,122	\$237,618	\$511,740
Professional Scientific & Technical Services	\$26,210,497	\$2,913,870	\$603,687	\$29,728,054
Management of Companies	\$0	\$263,496	\$121,309	\$384,805
Administrative & Waste Services	\$0	\$1,639,722	\$377,081	\$2,016,803
Educational Services	\$1,948,124	\$8,654	\$420,963	\$2,377,741
Health & Social Services	\$0	\$69	\$2,737,627	\$2,737,696
Arts, Entertainment & Recreation	\$0	\$41,009	\$146,011	\$187,020
Accommodation & Food Services	\$0	\$198,955	\$571,088	\$770,043
Other Services	\$0	\$331,370	\$695,505	\$1,026,875
Government	\$0	\$214,287	\$238,461	\$452,748

Source: IMPLAN

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