



BOARD OF REGENTS

SUMMARY OF ITEM FOR ACTION  
**INFORMATION** OR DISCUSSION

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**TOPIC:** USM Economic Impact Study Update (information item)

**COMMITTEE:** Economic Development and Technology Commercialization

**DATE OF COMMITTEE MEETING:** November 15, 2012

**SUMMARY:** The Committee will be updated on the findings of the study on the economic impact of the University System of Maryland conducted by UB's Jacob France Institute.

**ALTERNATIVE(S):** This item is for information purposes.

**FISCAL IMPACT:** This item is for information purposes.

**CHANCELLOR'S RECOMMENDATION:** This item is for information purposes.

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COMMITTEE RECOMMENDATION:

DATE:

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BOARD ACTION:

DATE:

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SUBMITTED BY: Joseph F. Vivona (301) 445-2783

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# USM Economic Impact Report Draft Report Findings

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The Economic Impact of the  
University System of Maryland  
A Fiscal Perspective  
FY 2011



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October 2012

# Overview and Summary

1. Economic Impact
  - Human Capital Approach – Analyze Earnings of Three Cohorts of Graduates
  - Contribution to “Export Base” of State
  - Fiscal Impact
2. Workforce Impact
  - Enrollment, Graduation, Occupational Demand for Graduates
  - In-State Employment of Recent Graduates
3. Economic Development
  - Research, Technology Commercialization, Business Support Programs
  - Incubators and Research Parks
4. Public Service, Educational, Cultural, and Community Contributions

# Economic Impact

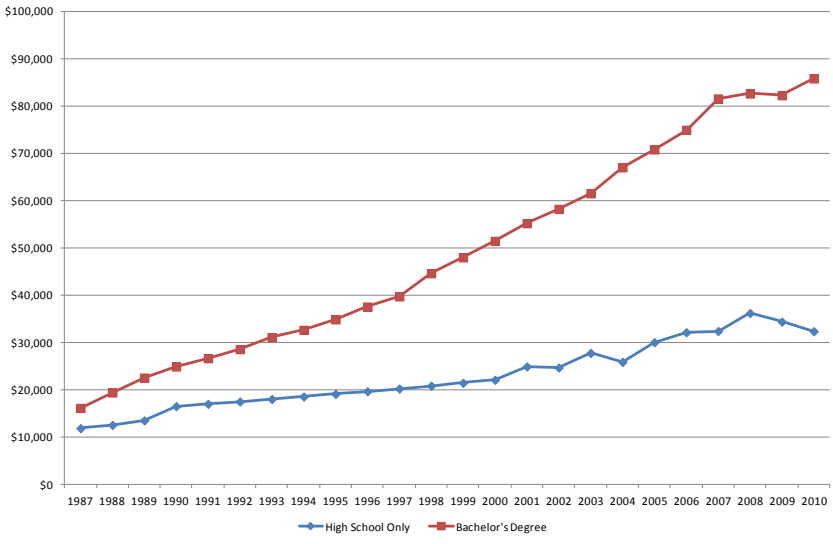
Measuring the USM's economic and fiscal impact on the State using the human capital approach involves the following steps:

1. The earnings of a cohort of USM graduates are derived for each year after graduation from a database of State employment and earnings maintained by the JFI;
2. These earnings are compared to estimates of what the graduates would have earned had they not obtained a degree. The difference is the incremental earnings effect of their degree;
3. The increased economic activity and State revenues derived from the incremental earnings are then calculated;
4. The increased economic activity and State revenues attributable to the expenditures of out-state-students and visitors, and of grants originating out-of-state are also calculated by modeling the economic activity these expenditures generate; and
5. The total increased State revenues are then compared to the State's cost of producing the graduates, to determine the net fiscal impact of the State's investment.

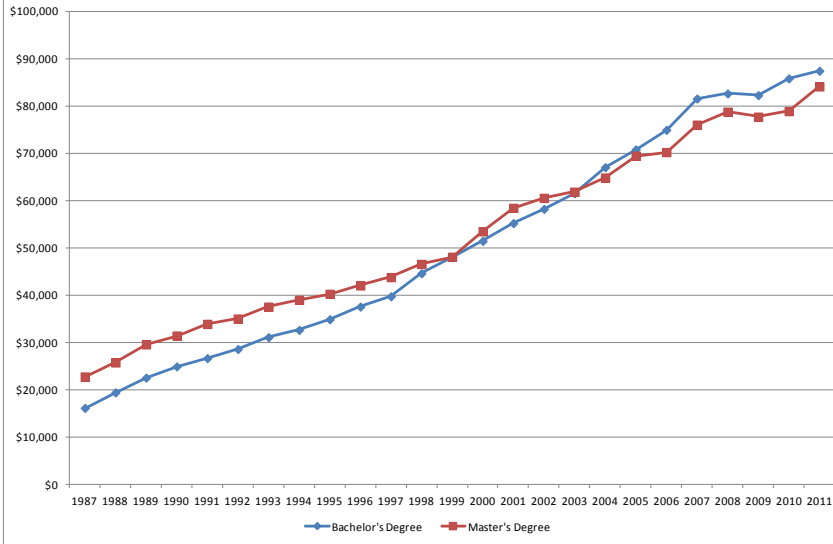
# Economic Impact

## 1986 Cohort -- Incremental Earnings

**Figure 1: Individual Incremental Earnings**  
**1986 Cohort - Bachelor's vs. High School Graduate Earnings**

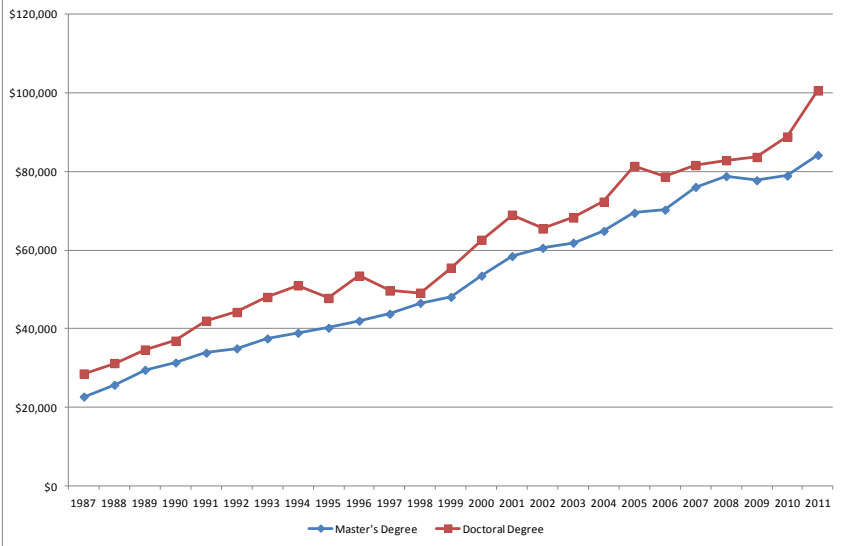


**Figure 2: Individual Incremental Earnings**  
**1986 Cohort - Master's vs. Bachelor's Graduate Earnings**

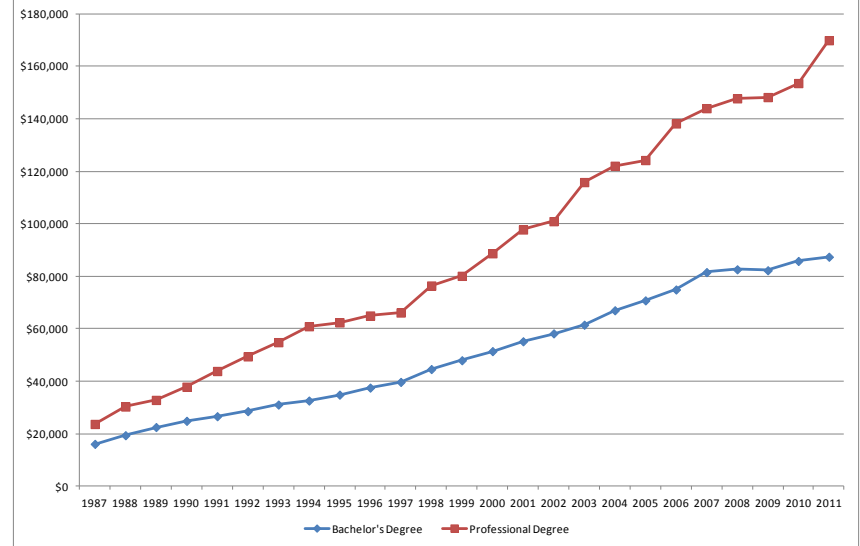


# Economic Impact

**Figure 3: Individual Incremental Earnings  
1986 Cohort - Doctorate vs. Master's Graduate Earnings**



**Figure 4: Individual Incremental Earnings  
1986 Cohort - Professional vs. Bachelor's Graduate Earnings**



# Economic Impact

**Table 1**  
**Individual Incremental Lifetime Earnings and Taxes Paid**  
**1986, 1986, and 1996 Cohorts of USM Graduates, By Type of Degree**  
**(Non-Discounted and Discounted Dollars)**

Type of Degree	Earnings		Tax Impact	
	Non-Discounted	Discounted	Non-Discounted	Discounted
<b><u>1986 Cohort</u></b>				
Bachelor's	\$2,716,639	\$1,522,407	\$180,667	\$100,822
Master's	\$114,603	\$101,361	\$7,335	\$6,487
Doctorate	\$567,161	\$363,675	\$37,436	\$23,878
First Professional	\$2,883,530	\$1,741,637	\$190,945	\$114,835
<b><u>1989 Cohort</u></b>				
Bachelor's	\$2,831,664	\$1,576,954	\$188,909	\$104,826
Master's	\$170,695	\$145,246	\$10,967	\$9,324
Doctorate	\$298,875	\$202,510	\$19,639	\$13,241
First Professional	\$2,323,178	\$1,443,806	\$153,902	\$95,233
<b><u>1996 Cohort</u></b>				
Bachelor's	\$3,407,581	\$1,882,541	\$228,544	\$124,908
Master's	\$503,545	\$157,385	\$33,135	\$13,407
Doctorate	\$700,571	\$423,760	\$46,397	\$27,954
First Professional	\$3,286,436	\$2,009,363	\$217,399	\$132,328

Source: USM, DLLR, and the JFI

# Economic Impact

**Table 2**  
**Total Cohort Lifetime Earnings and Taxes Paid**  
**1986, 1986, and 1996 Cohorts of USM Graduates, By Type of Degree**  
**(Non-Discounted and Discounted Dollars)**

Type of Degree	Earnings		Tax Impact	
	Non-Discounted	Discounted	Non-Discounted	Discounted
<b><u>1986 Cohort</u></b>	<u>\$12,026,774,414</u>	<u>\$7,153,346,811</u>	<u>\$796,268,711</u>	<u>\$471,289,080</u>
Bachelor's	\$11,034,420,401	\$6,489,279,767	\$731,114,961	\$427,913,639
Master's	\$132,691,093	\$118,219,088	\$8,492,230	\$7,566,022
Doctorate	\$48,417,097	\$34,121,593	\$3,166,458	\$2,220,053
First Professional	\$811,245,823	\$511,726,363	\$53,495,061	\$33,589,366
<b><u>1989 Cohort</u></b>	<u>\$13,304,678,826</u>	<u>\$7,890,002,620</u>	<u>\$883,828,711</u>	<u>\$521,753,089</u>
Bachelor's	\$12,407,676,744	\$7,259,419,301	\$825,029,934	\$480,625,715
Master's	\$226,475,765	\$195,926,397	\$14,536,483	\$12,567,075
Doctorate	\$25,977,139	\$18,799,920	\$1,695,668	\$1,221,655
First Professional	\$644,549,178	\$415,857,002	\$42,566,626	\$27,338,644
<b><u>1996 Cohort</u></b>	<u>\$17,359,375,203</u>	<u>\$10,276,407,372</u>	<u>\$1,159,029,472</u>	<u>\$682,461,547</u>
Bachelor's	\$15,986,317,441	\$9,296,064,320	\$1,060,498,794	\$613,894,393
Master's	\$432,491,321	\$374,893,224	\$36,606,901	\$28,896,304
Doctorate	\$68,847,732	\$43,683,371	\$4,538,780	\$2,867,155
First Professional	\$871,718,709	\$561,766,458	\$57,384,997	\$36,803,695

Source: USM, DLLR, and the JFI



# Economic Impact

Table 3  
Statewide Economic Impact of  
Incremental Income Earned by 1986 USM Cohort  
By Year, Selected Years

Year	Output (Mil. 2011\$)	Earnings (Mil. 2011\$)	Employment (# of Jobs)	Fiscal (Mil. 2011\$)
1987	\$100,069,427	\$27,125,527	758	\$6,980,848
1988	\$132,403,773	\$35,890,303	1,003	\$9,236,494
1989	\$151,534,312	\$41,075,962	1,147	\$10,571,042
1990	\$135,106,861	\$36,623,021	1,023	\$9,425,062
1991	\$144,047,899	\$39,046,642	1,091	\$10,048,789
1992	\$151,689,708	\$41,118,085	1,149	\$10,581,882
1993	\$166,400,684	\$45,105,746	1,260	\$11,608,120
1994	\$172,902,222	\$46,868,099	1,309	\$12,061,668
1995	\$185,403,278	\$50,256,724	1,404	\$12,933,742
1996	\$193,297,321	\$52,396,539	1,464	\$13,484,431
1997	\$200,030,731	\$54,221,744	1,515	\$13,954,154
1998	\$231,779,017	\$62,827,659	1,755	\$16,168,916
1999	\$243,781,675	\$66,081,185	1,846	\$17,006,222
2000	\$264,110,040	\$71,591,535	2,000	\$18,424,330
2001	\$266,610,672	\$72,269,374	2,019	\$18,598,774
2002	\$280,552,751	\$76,048,612	2,124	\$19,571,375
2003	\$273,968,999	\$74,263,974	2,075	\$19,112,092
2004	\$317,877,971	\$86,166,251	2,407	\$22,175,184
2005	\$302,894,331	\$82,104,679	2,294	\$21,129,924
2006	\$305,277,330	\$82,750,632	2,312	\$21,296,163
2007	\$333,525,037	\$90,407,655	2,526	\$23,266,724
2008	\$306,420,650	\$83,060,548	2,320	\$21,375,921
2009	\$307,757,916	\$83,423,037	2,330	\$22,576,214
2010	\$329,233,550	\$89,244,374	2,493	\$24,151,604
2011	\$333,028,301	\$90,273,006	2,522	\$24,429,975
2015	\$387,218,169	\$104,962,095	2,932	\$28,405,185
2020	\$457,975,507	\$124,142,079	3,468	\$33,595,734
2025	\$532,704,490	\$144,398,646	4,034	\$39,077,633
2030	\$568,913,887	\$154,213,821	4,308	\$41,733,847
Total	\$14,685,894,237	\$3,980,862,331		\$1,059,833,654
Average Annual Employment			2,527	
<b>Discounted Total</b>				
Total	\$8,734,951,791	\$2,367,757,795		\$627,285,766

Source: USM, DLLR, and The Jacob France Institute

## Economic Impact Results

- The 1986 cohort of USM Grads:
  - \$14.7 billion in economic activity over their estimated work-life (\$8.7 billion in discounted terms).
  - 2,527 annual jobs earning \$4.0 billion in salaries and wages.
  - \$1.1 billion in additional State income and sales taxes (\$627 million in discounted terms).

# Economic Impact

## Economic Impact Results

- The 1989 cohort of USM Grads:
  - \$16.2 billion in economic activity over their estimated work-life (\$9.6 billion in discounted terms).
  - 2,919 annual jobs earning \$4.4 billion in salaries and wages.
  - \$1.2 billion in additional State income and sales taxes (\$94 million in discounted terms).

## Economic Impact Results

- The 1996 cohort of USM Grads:
  - \$21.8 billion in economic activity over their estimated work-life (\$12.9 billion in discounted terms).
  - 3,910 annual jobs earning \$5.9 billion in salaries and wages.
  - \$1.6 billion in additional State income and sales taxes (\$924 million in discounted terms).

# Economic Impact

## “Economic Base” Approach

Not Only Does The USM Represent an Investment in Human Capital Development – It is also an Important Part of Maryland’s Economic Base

**Table 6**  
**Economic Base Approach**  
**Economic Impact**  
**(Fiscal 2011)**

Item	Direct Impacts	Economic Impact		
		Output	Earnings	Employment
Total	\$1,820,120,560	\$3,685,234,829	\$1,162,770,526	30,098
Non-Resident Student				
Tuition and Fees	\$392,177,592	\$821,415,967	\$275,779,283	6,697
Student Cost of Living	\$439,700,681	\$807,226,693	\$203,754,437	6,436
Federal Grants and Contracts	\$917,648,614	\$1,922,015,022	\$645,290,505	15,671
Out-of-State Visitors	\$70,593,673	\$134,577,146	\$37,946,300	1,293

Source: USM, JFI U.S. Bureau of Economic Analysis

# Economic Impact of USM Construction Spending

## Economic Impact of USM Construction Spending

Item	FY2008	FY2009	FY2010	FY2011	FY2012
<b>USM Construction Spending</b>	\$153,451,844	\$59,930,604	\$241,497,614	\$208,684,626	\$156,513,957
<b><u>Economic Impact</u></b>					
Output	\$312,151,741	\$121,910,835	\$491,254,446	\$424,506,266	\$318,380,691
Employment Compensation	\$96,582,591	\$37,720,322	\$151,998,598	\$131,346,104	\$98,509,885
Employment	2,361	908	3,619	3,074	2,253
Estimated State Revenues <sup>1</sup>	\$4,037,000	\$1,577,000	\$6,354,000	\$5,490,000	\$4,118,000

(1) State Income and Sales Taxes Only.

Source: USM, JFI and RIMS II

# Fiscal Impacts

**Table 8**  
**Fiscal Impact of University System of Maryland**  
**Cohort Costs and Benefits,**  
**Including Multiplier Effects and Attrition**

Item	1986 Cohort	1989 Cohort	1996 Cohort
Increase in Tax Revenues	\$1,059,833,654	\$1,176,376,015	\$1,572,017,708
State Cohort Subsidy	\$340,112,606	\$473,618,798	\$576,639,485
Revenue/Cost Ratio	3.1	2.5	2.7

Source: USM, Jacob France Institute

# Fiscal Impacts

## Some Alternative Measures of the Fiscal Contribution of USM

- Based on an Extrapolation of the Three Cohorts Analyzed
  - The Cohort Average Annual Fiscal Impact (State Income and Sales Tax Only) Ranges from \$24 Mil to \$35 Mil.
  - Assuming \$25 million per Cohort - All Employed USM Graduates in Maryland Generate:
    - \$1.1 Billion in State Income and Sales Taxes
    - This Amount Exceeds Current State Appropriations
  - Based on this Extrapolation – The Incremental Earnings of All Employed USM Graduates in Maryland Supports An Additional 110,000 Jobs – 3% of Total State Employment

# Workforce Development

## Summary of Selected Key Findings:

- USM has a Strong Reputation – National and In State – 87% of MD Businesses Rank 4 Year Colleges and Universities and Good or Excellent and 84% Rank Graduate and Professional Education and Good or Excellent
- USM Accounts for 69% of Total Enrollment
- USM Provides Most Graduates in Key Fields:
  - USM in Undergraduate Education USM Provides: 67% of engineering majors; 60% of health majors; 73% of biological science majors; 80% of business majors; 89% of computer science majors; and 83% of the education majors.
- USM Plays a Vital Role in Supplying Maryland's Skilled and Educated Workforce

# Workforce Development

**Table 15**  
**In-State Employment of 2006 Cohort of Graduates, By Degree**

	% Employed in 2007				% Employed in 2011			
	Bachelors	Masters	Doctorate	Professional	Bachelors	Masters	Doctorate	Professional
Total	59%	51%	34%	56%	56%	48%	31%	52%
Agriculture	51%	21%	13%	--	46%	17%	19%	--
Architecture	44%	42%	0%	--	53%	42%	0%	--
Area Studies	46%	40%	67%	--	46%	20%	50%	--
Bio Sciences	55%	39%	34%	--	47%	37%	32%	--
Business	56%	37%	11%	47%	53%	35%	11%	43%
Communications	60%	33%	25%	--	57%	33%	25%	--
Computer Science	53%	37%	18%	--	51%	36%	18%	--
Education	75%	79%	51%	--	72%	75%	53%	--
Engineering	50%	34%	36%	--	47%	34%	30%	--
English	57%	62%	38%	--	56%	60%	19%	--
Health	72%	74%	33%	50%	70%	69%	29%	47%
Humanities	57%	89%	25%	--	49%	95%	38%	--
Interdisciplinary Studies	55%	48%	56%	--	51%	46%	56%	--
Languages	52%	57%	20%	--	51%	48%	20%	--
Law	57%	53%	--	62%	53%	42%	--	57%
Library Science	--	42%	50%	--	--	36%	50%	--
Mathematics	61%	48%	13%	--	57%	52%	9%	--
Physical Sciences	55%	35%	32%	--	51%	37%	27%	--
Psychology	61%	65%	50%	--	56%	61%	42%	--
Public Affairs	82%	36%	50%	--	82%	33%	50%	--
Recreation	68%	0%	--	--	61%	0%	--	--
Social Sciences	59%	65%	25%	--	53%	62%	20%	--
Visual & Performing Arts	67%	52%	34%	--	63%	45%	31%	--

Source: USM and JFI



# Workforce Development

**Table 16**  
**In-State Employment of 2009 Cohort of Graduates, By Degree**

	% Employed in 2010				% Employed in 2011			
	Bachelors	Masters	Doctorate	Professional	Bachelors	Masters	Doctorate	Professional
Total	63%	52%	34%	58%	52%	43%	24%	45%
Agriculture	49%	31%	28%	--	40%	24%	11%	--
Architecture	58%	39%	0%	--	37%	29%	0%	--
Area Studies	75%	86%	80%	--	55%	71%	40%	--
Bio Sciences	62%	48%	31%	--	45%	34%	19%	--
Business	59%	38%	19%	--	47%	30%	13%	--
Communications	64%	50%	40%	--	50%	36%	10%	--
Computer Science	57%	42%	16%	--	49%	36%	9%	--
Education	81%	75%	47%	--	72%	67%	38%	--
Engineering	55%	33%	23%	--	45%	28%	16%	--
English	65%	64%	30%	--	53%	57%	27%	--
Health	72%	73%	60%	46%	64%	62%	50%	36%
Humanities	59%	74%	25%	--	37%	63%	0%	--
Interdisciplinary Studies	53%	84%	70%	--	46%	63%	40%	--
Languages	61%	69%	0%	--	48%	59%	0%	--
Law	38%	57%	--	67%	33%	37%	--	52%
Library Science	--	40%	50%	--	--	28%	0%	--
Mathematics	59%	32%	26%	--	48%	24%	26%	--
Physical Sciences	66%	28%	34%	--	47%	30%	19%	--
Psychology	64%	63%	32%	--	52%	52%	32%	--
Public Affairs	88%	43%	50%	--	63%	30%	50%	--
Recreation	82%	100%	--	--	68%	100%	--	--
Social Sciences	64%	67%	27%	--	50%	54%	19%	--
Visual & Performing Arts	71%	58%	34%	--	53%	41%	16%	--

Source: USM and JFI

# Economic Development

## Summary of Selected Key Findings:

- According to the Maryland Department of Business and Economic Development Research and Technology Commercialization are among Maryland's Key Economic Development Strengths!
- USM Accounts for:
  - \$1.2 Billion in Research – Up From \$462 Million in the 2002 Report
    - This Represents an Increase of Almost 150%
  - Technology Commercialization, in FY2011 – 224 Invention Disclosures
    - 77 Patents Issued
  - USM has had significant impact on the development of 51 companies since July 2011
  - USM Research Parks and Incubators Host 189 Companies with 4,071 Employees

# Economic Development

**Table 22**  
**USM Research Parks and Incubator Tenants and Estimated Impact**

Campus	Park/Incubator	Number of Tenants	Number of Employees
Research Parks		<u>117</u>	<u>3,198</u>
Frostburg	Allegany Business Center	4	213
UM, Baltimore	UMB BioPark	31	660
UMBC	BWTech	68	410
UMCP	M Square	14	1,915
Incubators		<u>72</u>	<u>873</u>
Bowie	Bowie Business Innovation Center	5	9
Towson University	Towson Global	11	49
UMBC	3 Incubators and an Accelerator	33	697
UMCP	TAP	12	98
	MI2	11	20

Source: USM

# Summary of Key Findings

1. USM is an Investment in Human Capital – Graduates Earn Between \$115,000 and \$3.4 Million in Incremental Lifetime Earnings
2. USM Generates Fiscal Returns to the State
  - Graduates Generate Between \$2.5 to \$3.1 in State Income and Sales Taxes Per \$1 Invested
3. USM is a Vital Source of Economic Activity
  - Out-of-State Spending Generates \$3.7 Billion in Economic Activity and Supports 30,098 Jobs
  - 51 Companies formed as a Result of USM Activities Since July 2011, 189 Companies in USM Research Parks and Incubators
4. USM is the Major Source of Skilled and Educated Workers
  - 69% of Enrollment at 4 Year Colleges
  - The Major Supplier of Graduates in Key Fields – Computer Science, Engineering, Education and Life Sciences.