



Creating an Affordability Model for Professional Education

A Joint Project Between the
University of Maryland, Baltimore
and HelioCampus

Gregory C. Spengler, Assistant Vice President
Office of Institutional Effectiveness, Strategic Planning, and Assessment
May 31, 2018

Institutional Characteristics

- The University of Maryland, Baltimore (UMB) is Maryland's public health, law, and human services university and plays a key role in meeting state workforce demands in health, legal, and social work professions
- UMB awards 52.3% of professional practice doctoral degrees conferred by any Maryland public or private institution (Johns Hopkins is less than 10%)
- Carnegie Classification: Special Focus – Medical
- Fall 2017 Enrollment is 6,703:
 - 14% undergraduate – all upper division
 - 86% graduate and professional

Principal Professional Degrees

- These “professional practice” programs (not all are doctoral) account for 82% of enrollment and 81% of degrees:
 - Dentistry (DDS)
 - Law (JD)
 - Medicine (MD)
 - Pharmacy (PharmD)
 - Physical Therapy (DPT)
 - Nursing Bachelors, Master’s and Doctoral (DNP)
 - Social Work (MSW)

Cost and Graduating Debt

Degree Program	Current Annual In-State Tuition & Fees	Length of Program	Average Debt at Graduation*
Dentistry (DDS)	\$40,075	4	\$237,473
Law (JD)	\$32,492 FT / \$21,969 PT	3 or 4	\$138,368
Medicine (MD)	\$36,891	4	\$178,709
Pharmacy (PharmD)	\$26,183	4	\$146,779
Physical Therapy (DPT)	\$627 per credit hour	3	\$111,926
Nursing (BSN)	\$10,607	4 (2 at UMB)	\$28,994
Nursing (Master's & DNP)	\$778 per credit hour	2 to 5	\$103,087
Social Work (MSW)	\$15,884	2	\$78,652

* Average UMB and Prior Debt for May 2017 Graduates with Debt

Strategic Plan

- UMB updated its Five Year Strategic Plan in 2016
- The plan's 3rd *Strategic Objective* relates to the theme of Student Success:
 - Design contemporary teaching and learning environments that are **accessible** and **affordable** to prepare students to be exemplary professionals and leaders in society
- A *Strategic Outcome* for this theme is to have:
 - Academic programs and offerings that are **affordable** and **accessible** to Maryland's residents of all races, ethnicities, and income levels.

National Efforts to Define Affordability

- Undergraduate cost of attendance increased 63% between 2006 and 2016, compared to 21% Consumer Price Index increase
- Meanwhile, median household income increased by less than 3%
- Existing wage premium research focuses on undergraduate degrees
- Georgetown University's Center on Education and the Workforce 2011 report *What's It Worth: The Economic Value of College Majors* estimated an earning premium for undergraduate degrees averaging 84%
- Policy initiatives during the Obama administration included College Scorecard, Financial Aid "Shopping Sheet", and the Net Price Calculator

Lumina Foundation

- The *Lumina Foundation* is an independent, private foundation committed to increasing the proportion of Americans with high-quality degrees, certificates and other credentials to 60 percent by 2025
- *A Benchmark for Making College Affordable*, Lumina's 2015 white paper introduced the concept of “**The Rule of 10**”:
 - Students should pay no more for college than the savings generated through 10 percent of discretionary income for 10 years and the earnings from working 10 hours a week while in school

Rule of 10 Limitations

- Applies to undergraduate, not professional education
- 10 percent of discretionary income relates to the student's family income, and savings that accrue before or during time of enrollment
- Earnings potential for professionals occurs after graduation, not before, and extends more than 10 years
- Professional education is demanding and typically does not accommodate employment while in school

Defining Affordability for Professional Students

Can students across all races, ethnicities, and income levels expect to repay accumulated costs of professional education with a portion of their discretionary income within a reasonable period of time once employed in their field?

Affordability Study Strategy

Costs of Education and Debt Repayment

- Cost of education and demographic characteristics can be derived from student level data available through institutional research collections and financial aid office:
 - Enrollments
 - Degrees
 - Financial Aid Awards
 - Student Debt at Graduation
- Debt repayment data for a sample (~450) of graduates across programs 2 – 7 years post graduation was obtained through the National Student Loan Data System (NSLDS)

Affordability Study Strategy

Earnings and Discretionary Income

- With few exceptions (e.g. triennial undergraduate alumni survey and some graduation surveys) individual graduate earnings data are not available
- National and regional wage data by is available from:
 - Maryland Department of Labor, Licensing and Regulation – Workforce Investment Area (12 economically similar counties or groups of counties)
 - Federal Bureau of Labor Statistics – Occupational Employment Statistics
- Often one degree program (CIP) relates to many occupations (SOC) or the range of occupations is not comprehensive enough (e.g. medicine and law)

Affordability Data Model: Graduate Extract

Enrollment

Program	MHEC HEGIS	CIP
MSW	210400	440701
Law	141400	220101
Dental	120400	510401
Pharmacy	121100	512001
Medical	120600	511201
PT	121202	512308
Nursing MS	120300	513801
Nursing BS	120300	513808

Financial Aid

Program	MHEC HEGIS	CIP
MSW	210400	440701
Law	141400	220101
Dental	120400	510401
Pharmacy	121100	512001
Medical	120600	511201
PT	121202	512308
Nursing MS	120300	513801
Nursing BS	120300	513808

Degrees

Program	MHEC HEGIS	CIP
MSW	210400	440701
Law	141400	220101
Dental	120400	510401
Pharmacy	121100	512001
Medical	120600	511201
PT	121202	512308
Nursing MS	120300	513801
Nursing BS	120300	513808

Debt

Program	MHEC HEGIS	CIP
MSW	210400	440701
Law	141400	220101
Dental	120400	510401
Pharmacy	121100	512001
Medical	120600	511201
PT	121202	512308
Nursing MS	120300	513801
Nursing BS	120300	513808

Graduate Extract

Affordability Data Model: Wage and Occupation

Graduate Extract

Program	MHEC HEGIS	CIP
MSW	210400	440701
Law	141400	220101
Dental	120400	510401
Pharmacy	121100	512001
Medical	120600	511201
Physical Therapy	121202	512308
Nursing MS	120300	513801
Nursing BS	120300	513808

Wage Extract

CIP	Standard Occupation Code	Description
440701	11-9151.00 21-1021.00 21-1023.00	<ul style="list-style-type: none"> • Social and Community Service Managers • Child, Family, and School Social Workers • Mental Health and Substance Abuse Social Workers
220101	23-1011.00 23-1012.00 23-1021.00 23-1022.00	<ul style="list-style-type: none"> • Lawyers • Judicial Law Clerks • Administrative Law Judges, Adjudicators, and Hearing Officers • Five others
510401	29-1021.00	<ul style="list-style-type: none"> • Dentists, General • Three others
121100	29-1051.00	<ul style="list-style-type: none"> • Pharmacists
511201	29-1061.00 29-1062.00 29-1063.00 29-1064.00	<ul style="list-style-type: none"> • Anesthesiologists • Family and General Practitioners • Internists, General • Five others



WIA: Workforce Investment Area (MD DLLR)
 OES: Occupational Employment Statistics (US BLS)
 CIP: Classification of Instructional Programs
 SOC: Standard Occupational Classification

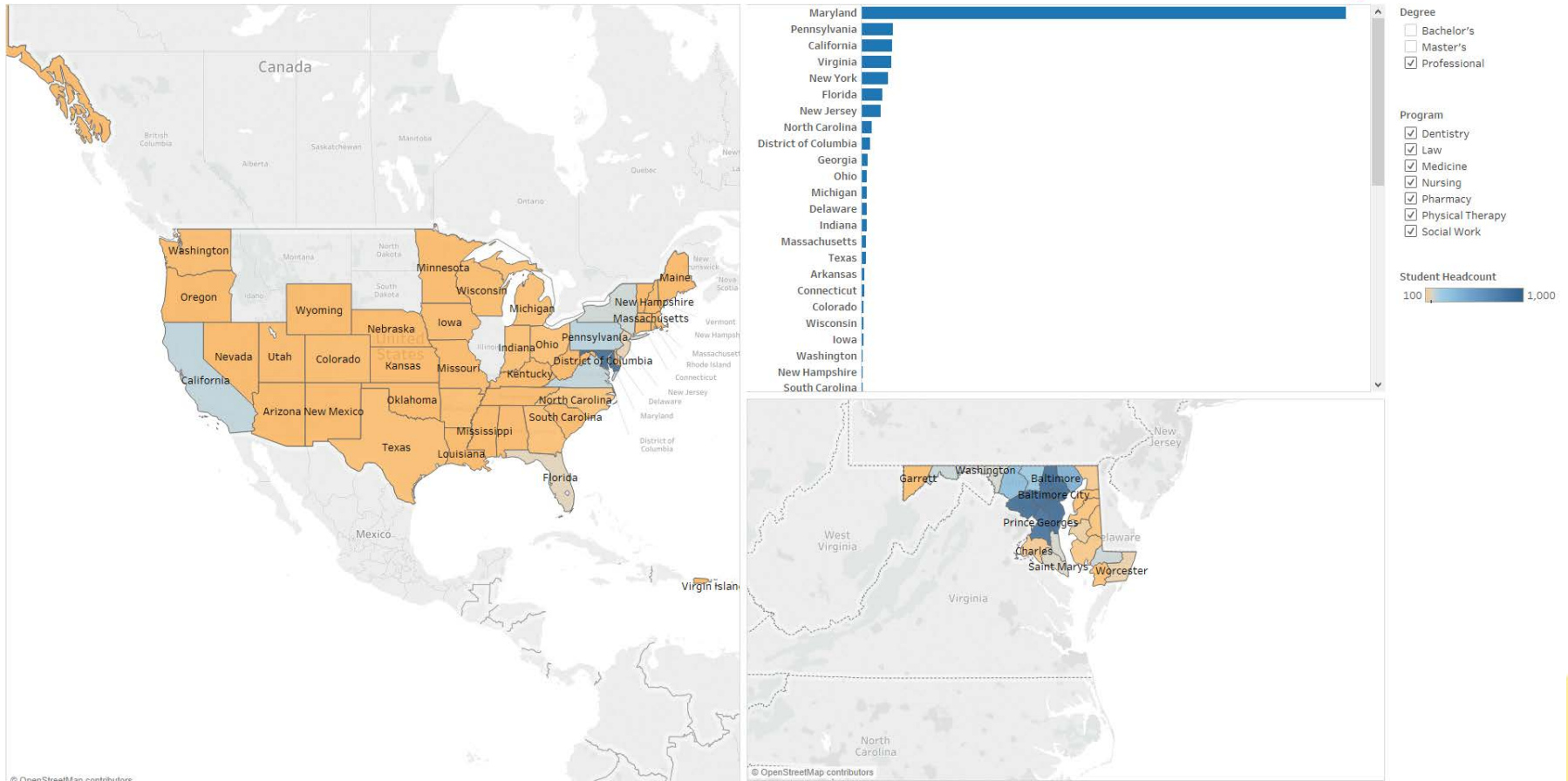
HEGIS → CIP → SOC → Affordability Extract

Graduate Extract Visualization

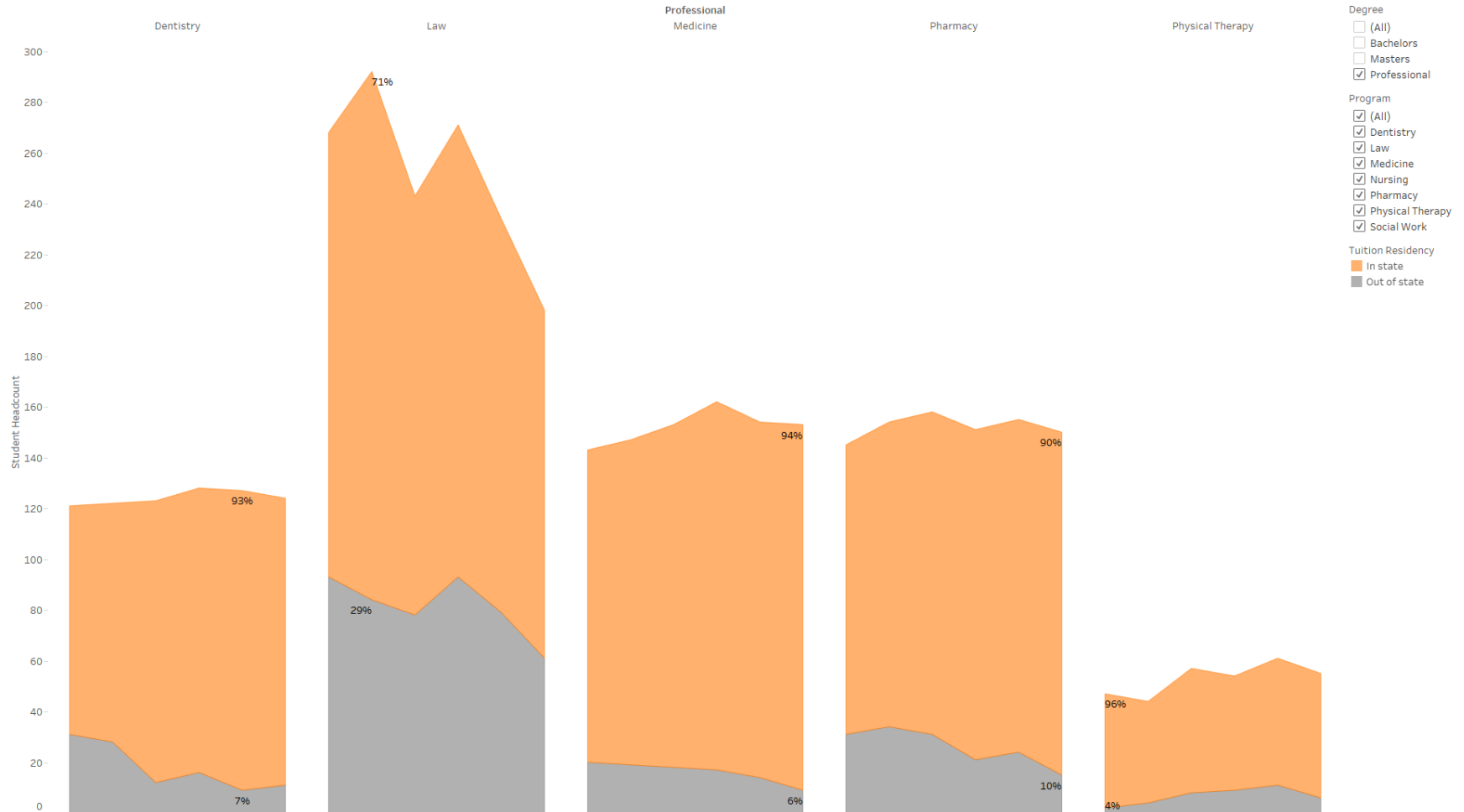
Tableau Screenshots

Origin of UMB Graduates

Distribution of Degrees, 2011-2016

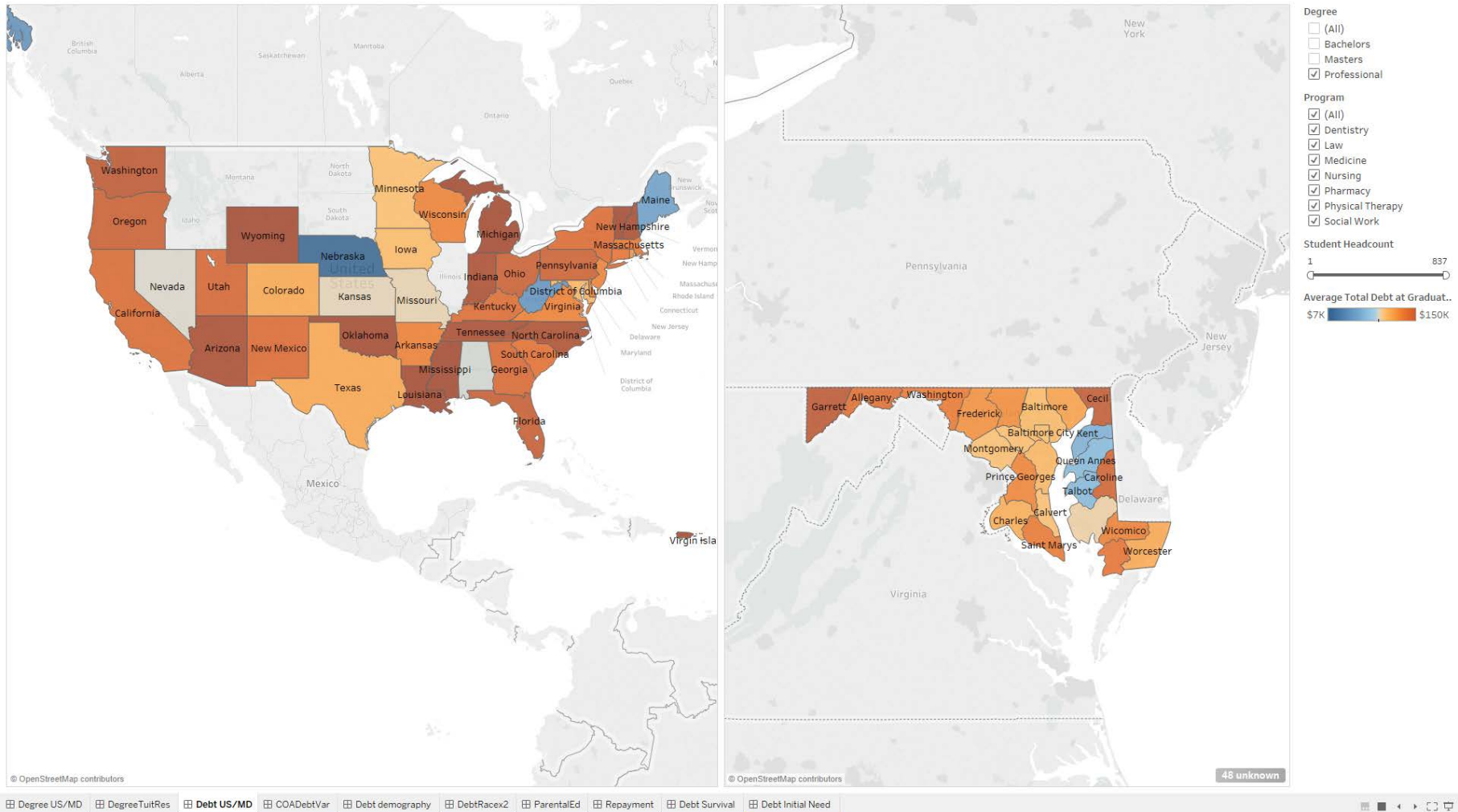


UMB Graduates by Residency



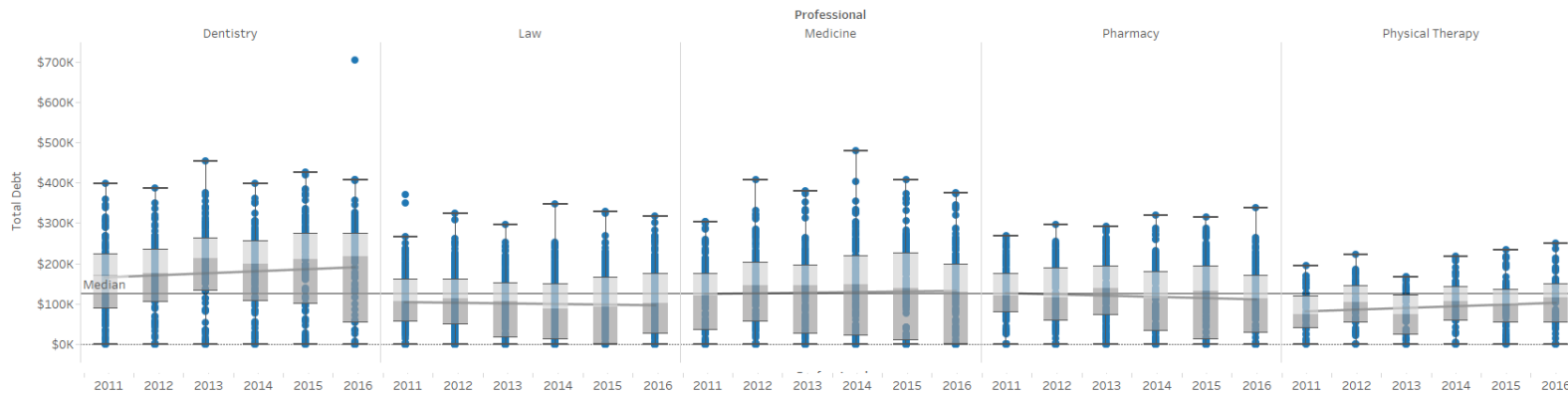
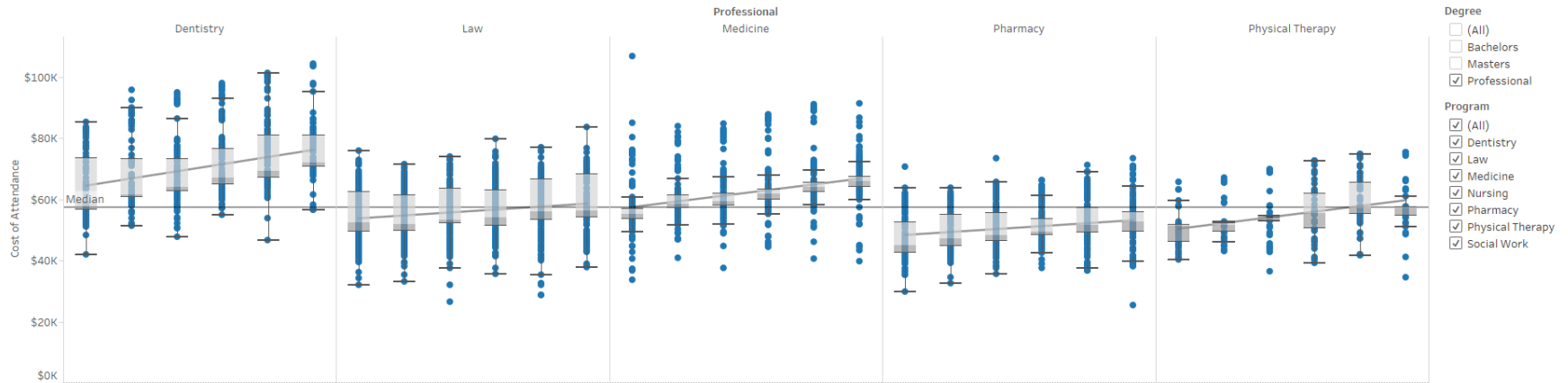
- Degree
 - (All)
 - Bachelors
 - Masters
 - Professional
- Program
 - (All)
 - Dentistry
 - Law
 - Medicine
 - Nursing
 - Pharmacy
 - Physical Therapy
 - Social Work
- Tuition Residency
 - In state
 - Out of state

Average Debt at Graduation by Origin



Cost of Attendance vs. Debt

Cost of Attendance and Total Debt, 2011-2016

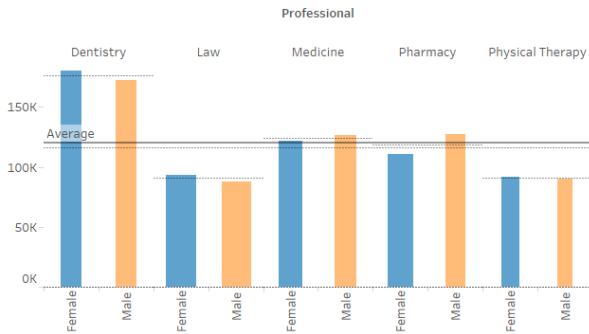


Graduating Debt Demographics

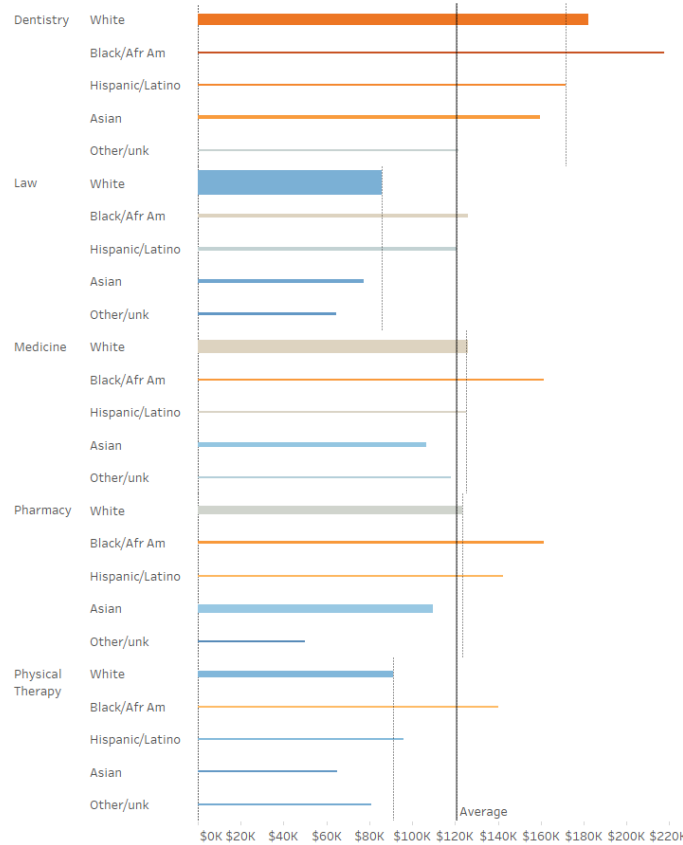


Demographic Correlates of Total Debt at Graduation and Debt Repayment

Total Debt by Gender



Race/Ethnicity



Debt/Repayment Metric

Total Debt

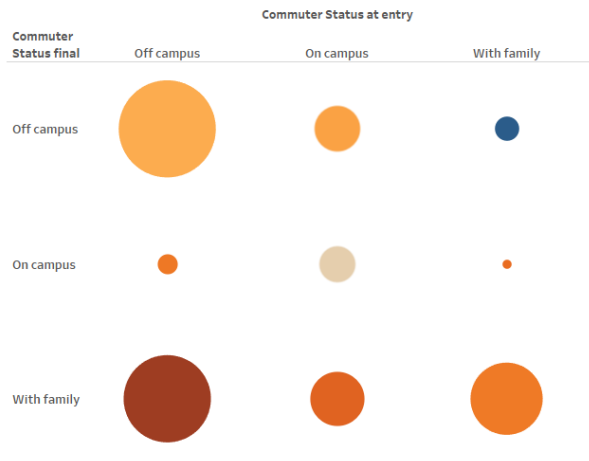
- Degree
- (All)
 - Bachelor's
 - Master's
 - Professional

- Program
- (All)
 - Dentistry
 - Law
 - Medicine
 - Nursing
 - Pharmacy
 - Physical Therapy
 - Social Work

Average Debt



Commuter Status



Graduating Debt by Race / Ethnicity



Ethnicity and Program Debt Levels



- Degree
- (All)
 - Bachelors
 - Masters
 - Professional

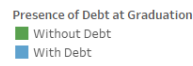
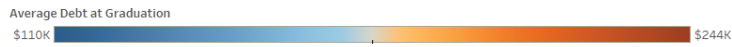
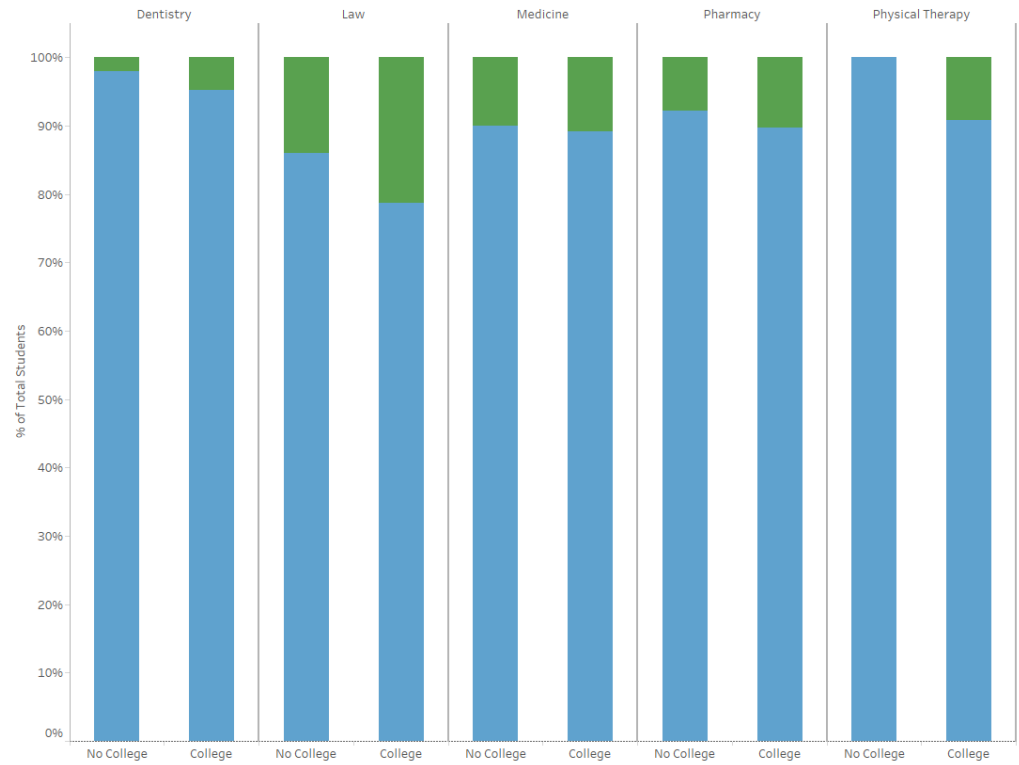
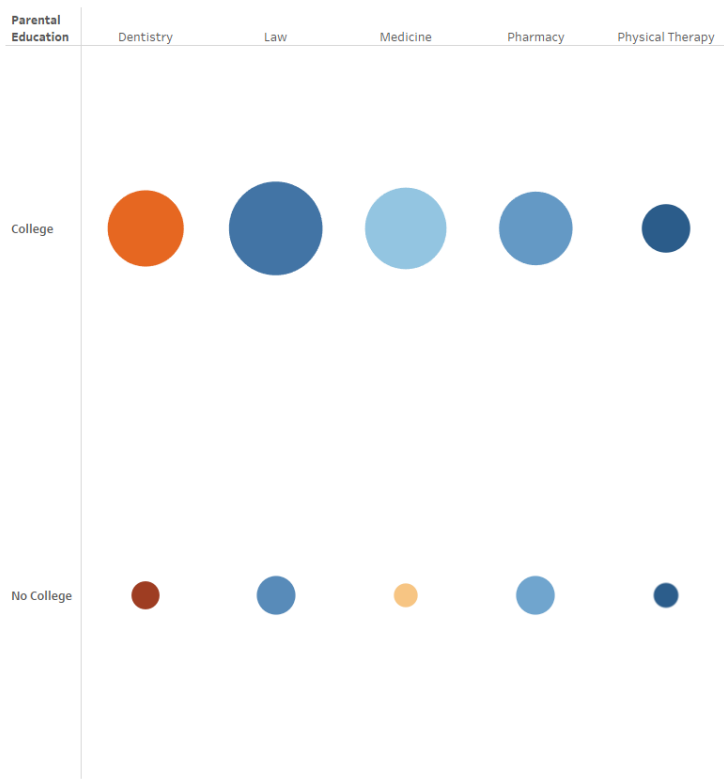
- Program
- (All)
 - Dentistry
 - Law
 - Medicine
 - Nursing
 - Pharmacy
 - Physical Therapy
 - Social Work

Average Debt at Graduation
\$0K \$250K

Parental Education and Debt



Parental Education: Debt Loads and Debt-Free

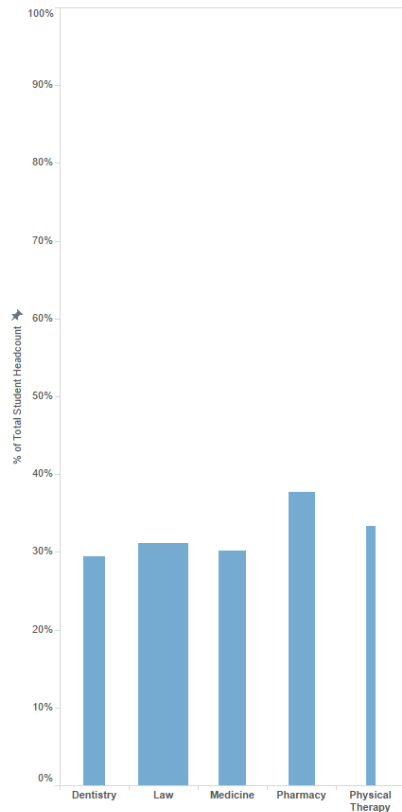


Seven Year Debt Repayment Modeling

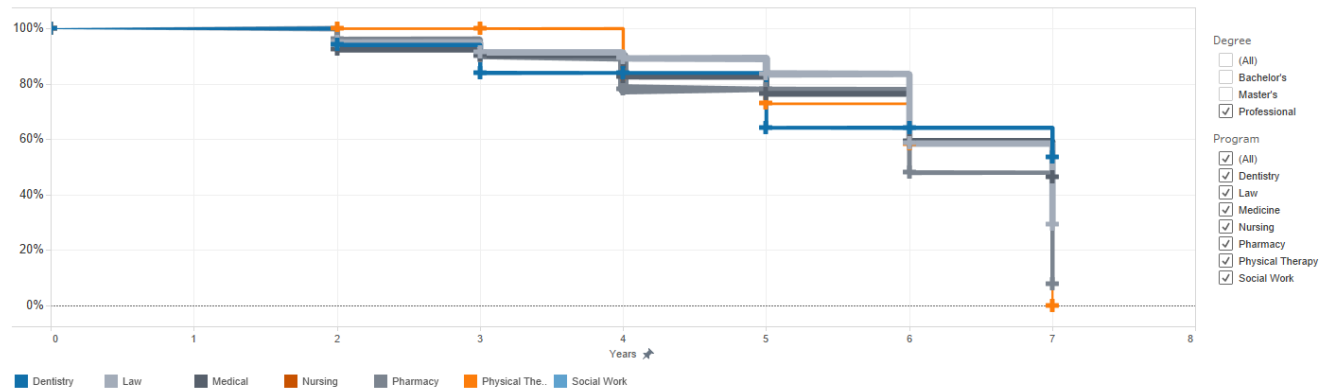


Likelihood of Repayment in Seven Years

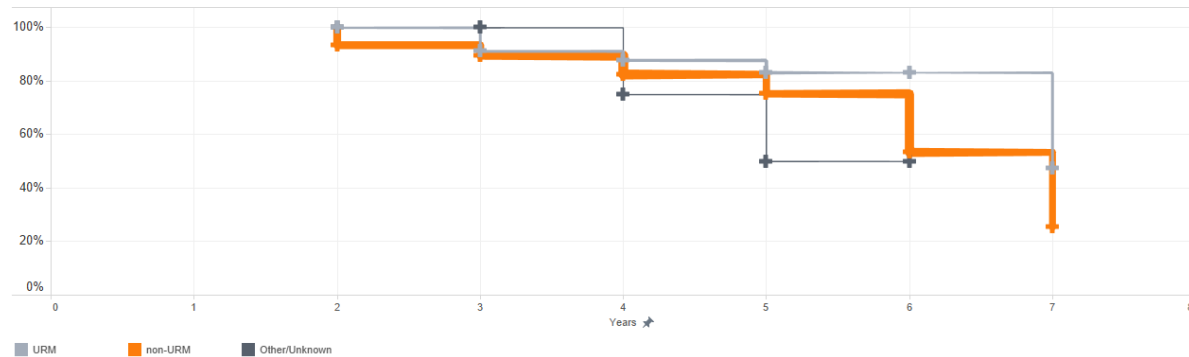
Debt Fully Repaid by 7 Years



Debt Survival by Program



Debt Survival by URM Status



Affordability Model Demonstration

Tableau Screenshots

Affordability Determination

Selection Variables

- Academic Program
- Occupational Wage Comparison
 - National
 - Maryland
- Salary Benchmark (Entry) Percentile
- Percent of Discretionary Income* used for Repayment
- Years of Repayment
- Actual or Custom Debt Input

* Discretionary Income is difference between selected Entry Salary Benchmark Percentile and Median Income for Workforce Investment Area

Law Degree Affordability Table



Affordability Estimator

Median Debt \$90,370

Affordable?

■ No

■ Yes

Median Custom Debt \$90,370

Academic Program
Law

Occupational Wage
Comparison
Maryland Median

Salary Benchmark (Entry)
WIA 75 Percentile

% of Discretionary Income
30

Occupation
Lawyers

Affordable?
All

Wage Investment Area
Multiple values

Custom Debt Input
Median Debt

WIA	County	Occupation	Affordable?		Year 2	Year 4	Year 6	Year 8	Year 10	Year 12	Year 14	Year 16	Year 18	Year 20
Anne Arundel WIA	Anne Arundel County	Lawyers	Yes	Occupational Salary	\$105K	\$112K	\$119K	\$126K	\$133K	\$142K	\$150K	\$159K	\$169K	\$179K
				Income at Entry	\$136K	\$145K	\$153K	\$163K	\$173K	\$183K	\$194K	\$206K	\$219K	\$232K
				Total Discretionary Income	\$31K	\$33K	\$35K	\$37K	\$39K	\$42K	\$44K	\$47K	\$50K	\$53K
				Debt-allocated Discretionary Income	\$9K	\$10K	\$10K	\$11K	\$12K	\$12K	\$13K	\$14K	\$15K	\$16K
				Cumulative Payments	\$18K	\$38K	\$58K	\$80K	\$103K	\$128K	\$154K	\$182K	\$211K	\$243K
				Total Loan Remaining	\$72K	\$53K	\$32K	\$10K	\$0K	\$0K	\$0K	\$0K	\$0K	\$0K
Baltimore City WIA	Baltimore City	Lawyers	Yes	Occupational Salary	\$105K	\$112K	\$119K	\$126K	\$133K	\$142K	\$150K	\$159K	\$169K	\$179K
				Income at Entry	\$136K	\$145K	\$153K	\$163K	\$173K	\$183K	\$194K	\$206K	\$219K	\$232K
				Total Discretionary Income	\$31K	\$33K	\$35K	\$37K	\$39K	\$42K	\$44K	\$47K	\$50K	\$53K
				Debt-allocated Discretionary Income	\$9K	\$10K	\$10K	\$11K	\$12K	\$13K	\$13K	\$14K	\$15K	\$16K
				Cumulative Payments	\$18K	\$38K	\$58K	\$80K	\$104K	\$128K	\$154K	\$182K	\$211K	\$243K
				Total Loan Remaining	\$72K	\$53K	\$32K	\$10K	\$0K	\$0K	\$0K	\$0K	\$0K	\$0K
Baltimore County WIA	Baltimore County	Lawyers	No	Occupational Salary	\$105K	\$112K	\$119K	\$126K	\$133K	\$142K	\$150K	\$159K	\$169K	\$179K
				Income at Entry	\$116K	\$124K	\$131K	\$139K	\$148K	\$156K	\$166K	\$176K	\$187K	\$198K
				Total Discretionary Income	\$11K	\$12K	\$13K	\$13K	\$14K	\$15K	\$16K	\$17K	\$18K	\$19K
				Debt-allocated Discretionary Income	\$3K	\$4K	\$4K	\$4K	\$4K	\$4K	\$5K	\$5K	\$5K	\$6K
				Cumulative Payments	\$7K	\$14K	\$21K	\$29K	\$37K	\$46K	\$55K	\$65K	\$76K	\$87K
				Total Loan Remaining	\$84K	\$77K	\$69K	\$62K	\$53K	\$44K	\$35K	\$25K	\$15K	\$3K
Lower Shore WIA	Somerset County	Lawyers	No	Occupational Salary	\$105K	\$112K	\$119K	\$126K	\$133K	\$142K	\$150K	\$159K	\$169K	\$179K
				Income at Entry	\$115K	\$122K	\$130K	\$138K	\$146K	\$155K	\$164K	\$174K	\$185K	\$196K



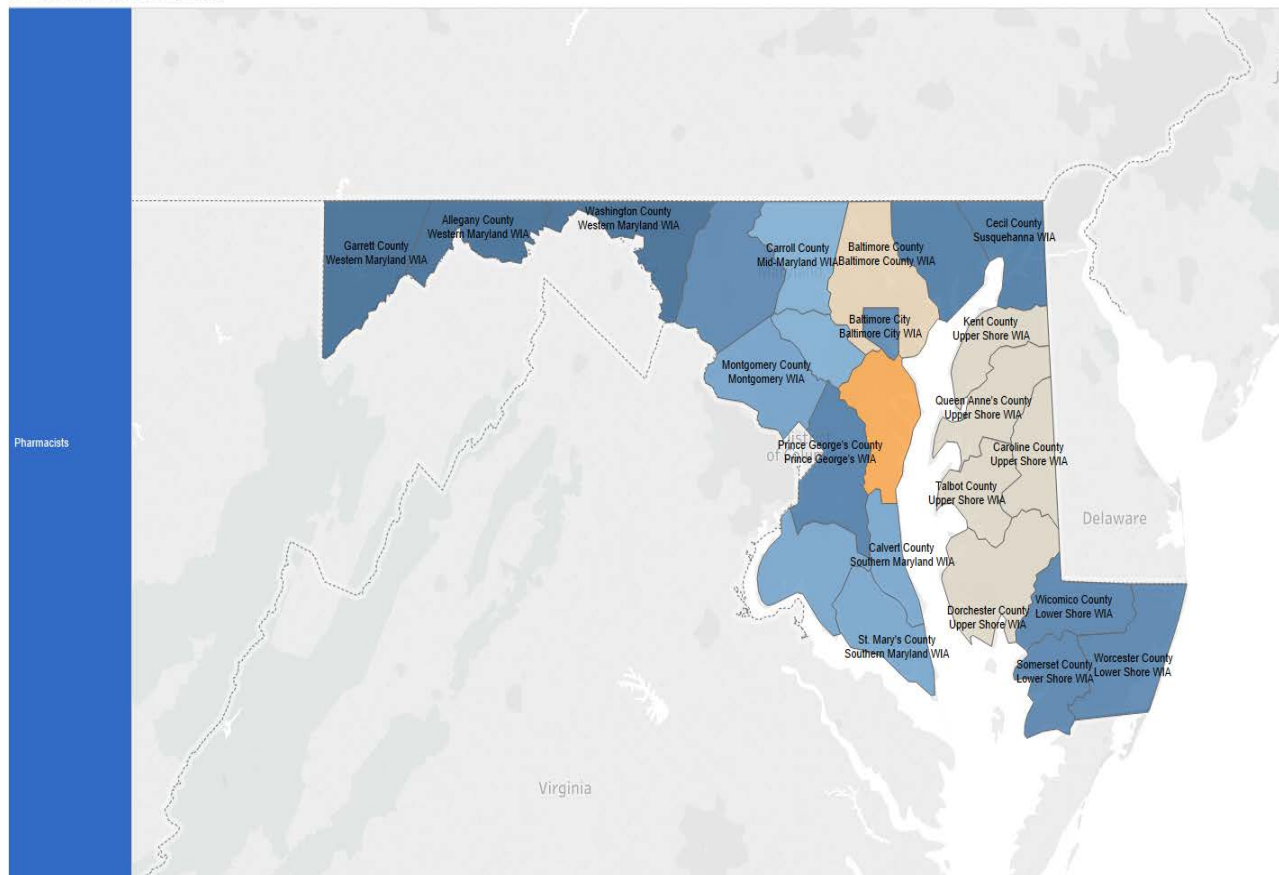
Pharmacy Degree Affordability Map



Affordability Map

Affordability map for Pharmacy

- Academic Program
Pharmacy
- Occupation
Pharmacists
- Wage Investment Area
All
- Pick salary Reference Point
Maryland Median
- Job Market Entry Level
WIA 75 Percentile
- % of Discretionary Income
20



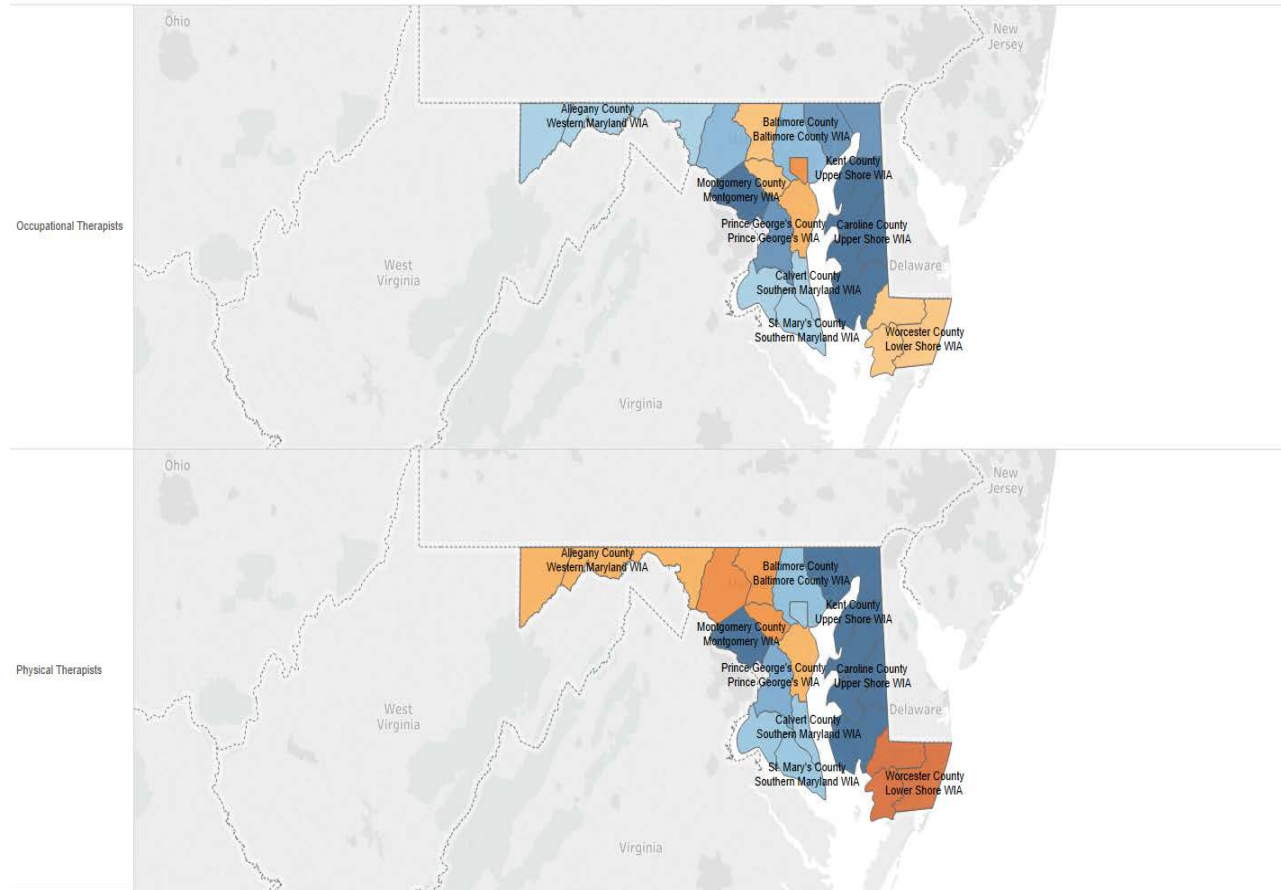
Physical Therapy Degree Affordability Map




Affordability Map

- Academic Program
Physical Therapy
- Occupation
Multiple values
- Wage Investment Area
All
- Pick salary Reference Point
Maryland Median
- Job Market Entry Level
WIA 75 Percentile
- % of Discretionary Income
20

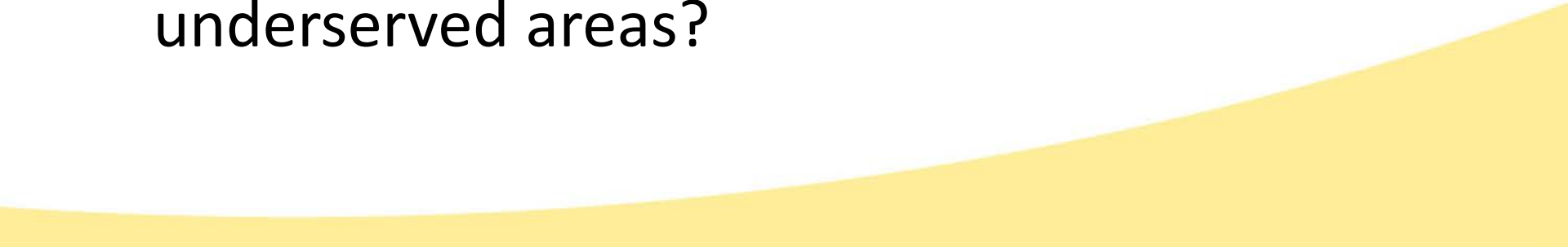
Affordability map for Physical Therapy




What Did We Learn?

- Even with high levels of graduating debt, UMB programs are affordable for the majority
 - Graduates across different race / ethnicity and parental education attainment categories accrued debt differently
 - Geography matters for debt accrual, earnings, debt repayment, and thus affordability
 - Underserved areas of the state are often also the most unaffordable
- 

What Might We Do?

- Should UMB target financial aid to vulnerable student populations – those most at risk of being unable to participate in its programs and pursue professions of their choosing?
 - Should UMB increase / decrease tuition to control affordability?
 - Should UMB advocate for (or provide) loan forgiveness for graduates to practice in underserved areas?
- 

What Else Could Happen?

- Will currently affordable areas experience a glut of graduates, driving down demand and wages?
 - Will less affordable areas see greater demand and higher wages, increasing affordability for certain professions?
 - Will future economic cycles result in fewer employment opportunities for graduates and delayed or reduced debt repayment?
- 

Next Steps

- Include more students in repayment data set
- Examine debt repayment beyond seven years
- Obtain actual wage data of graduates
 - Alumni surveys
 - Income Verification Services
- Plan and implement a prospective approach to follow students longitudinally from application and enrollment, through debt accrual, graduation, employment, and debt repayment

Thank You

For more information contact:

Gregory C. Spengler, MPA

Assistant Vice President for Institutional Research
and Accountability

University of Maryland, Baltimore

gspengler@umaryland.edu

www.umaryland.edu/institutionalresearch/

HelioCampus – www.heliocampus.com