

University of Maryland College Park Budget Analysis February, 2019

President's Comments Requested

Page 11 - The President should comment on why the cost of attendance has significantly increased for low-income families and what actions will be taken to decrease the financial burden on these families.

The University of Maryland is committed to providing access and affordability to a world class education for all of our students. We believe that exhibit 6 (page 11) in the budget analysis is focused on a narrow subset of our neediest students and therefore somewhat distorts the overall picture of our efforts to increase aid for our neediest students.

Exhibit 6 references the comparison between UMCP Cost of Attendance and Average Net Price in certain income ranges. It shows that the average Net Price (COA minus federal, state and institutional grants and scholarships) for the lowest income (below \$30,000) first-time full-time freshmen increased from FY15-FY17. However, as detailed below, *UMCP's overall need-based financial aid expenditures to students with a family income below \$30,000 increased by more than 22% from FY15 to FY17, and by more than 77% from FY13 to FY18.*

- The increase in average Net Price for the lowest income first time full time freshman from FY15-FY17 can be explained by a change after FY15 in financial aid awarding strategy, moving away from a model designed to preference first year students.
- UMCP's financial aid awarding strategy has since changed to more equitably divide our need-based financial aid budget among first-time full-time freshmen, transfers and continuing students. This adjustment was made to support all students with financial need to better assist throughout their studies until graduation.
- Exhibit 6 includes only first-time full-time freshmen, a cohort which represents roughly 15% of UMCP's total undergraduate population.
- Net Price does not fully illustrate an institution's commitment to low income students. Net Price considers all scholarships and grants offered, including federal, state and institutional. A better measure than Net Price is institutional financial aid expenditures to our lowest income students (below \$30,000). Also relevant is the number of students at the lowest income level (below \$30,000) enrolled who received institutional needbased financial aid. These data are included below.

All UMCP Undergraduate Students Institutional Need-Based Financial Aid Expenditures										
	FY									
Family Income Level	2013	2014	2015	2016	2017	2018				
	\$5,140,37	\$5,633,95	\$6,541,41	\$6,824,86	\$8,395,10	\$9,125,93				
Family Income \$30k or less	8	9	7	0	6	4				

UMCP's need-based financial aid expenditures to students with a family income below \$30,000 increased by more than 22% from FY15 to FY17, and by more than 77% from FY13 to FY18.

All UMCP Undergraduate Students Receiving Institutional Need-Based Grants									
	FY								
Family Income Level	2013	2014	2015	2016	2017	2018			
Family Income \$30k or less	1,346	1,503	1,672	2,368	2,338	2,373			

The number of students with a family income below \$30,000 to whom UMCP awarded institutional need-based grant aid increased by almost 40% from FY15 to FY17, and by more than 76% from FY13 to FY18.

Page 25 - The Presidents should comment of the progress on developing a mechanism that would permit the joint reporting of the UM campuses.

In accordance with the Strategic Partnership Act of 2016, on December 1, 2016, UMB President Jay Perman and UMCP President Wallace Loh submitted recommendations to the Chancellor of the University System of Maryland mechanisms that would permit the joint reporting for national university rankings of the campuses of the University of Maryland, including reporting under a unified federal identification number.

Subsequently, the Presidents with the Joint Steering Council for the Strategic Partnership, have taken steps to implement those recommendations. These include the following actions:

• UMB and UMCP are actively pursuing changes to the reporting requirements of the National Science Foundation (NSF) to be allowed to report as one institution in NSF's annual Higher Education Research and Development (HERD) Survey. The survey serves as the preeminent rankings report for higher education institutions engaged in

sponsored research in the US. The NSF has a long-standing practice of reporting an institution's research funding based upon a finding that it has one president with overall responsibility. For the University of Maryland (as defined by statute in 2016) to fit in with that definition, it would need to demonstrate significant and convincing evidence to the NSF that it is functioning in a manner similar to a university having one president.

- In FY18, the UMCP and UMB Presidents together appointed a single, joint, vice president for research (VPR) to further develop and nurture the goal of building a transformative research enterprise. Effective July 1, 2018, Laurie Locascio, PhD, assumed this role. Reporting to the Presidents, she is charged with bringing discovery and research closer together, reducing barriers for UMB and UMCP to work with each other, and expanding opportunities to attract significant new funding. A petition to NSF for exception is strengthened by one VPR and the Maryland legislation.
- A unified University of Maryland Office of Research now manages the entire research administration process and reports to Dr. Locascio. It features a single reporting office for institutional research reporting to external agencies; a combined electronic research administration system; and a shared services approach to administration. A research office website serves as a portal to the research enterprise that comprises the University of Maryland.
- UMB and UMCP are identified as the University of Maryland by a single, federal identification
 - D-U-N-S number through Dun and Bradstreet.
- In July 2018, the UMB and UMCP Provosts, the VPR, and UMB/UMCP research administration leadership met with NSF to discuss the merging of research data for the purpose of joint reporting. NSF asked UMB and UMCP to propose a modification to its policy for joint reporting. The modified language proposed that a single executive officer would be responsible for overseeing research operations as an accepted criteria for joining campuses in the NSF rankings, rather than a single president overseeing research operations.
- Subsequently, NSF sent the proposed language to the Council on Government Relations (COGR) for their concurrence. At this time, NSF is waiting for COGR to approve or deny the language.

2019 TESTIMONY TO THE MARYLAND GENERAL ASSEMBLY

- A D V A N C I N G M A R Y L A N D

PRESENTED BY WALLACE D. LOH, PRESIDENT UNIVERSITY OF MARYLAND

EXCELLENCE AND IMPACT



As 2019 begins, student and faculty excellence define the state's flagship university.

Our latest freshman class was our strongest yet, coming with record high credentials—a reflection of the university's academic success and national standing. The curriculum is growing to meet the changing needs of undergraduates and those seeking advanced degrees, including career professionals. New, advanced facilities are helping researchers and students define the future. Our research enterprise leads in many fields nationally and internationally.

This has helped attract some \$2 billion in privatepublic investment to Greater College Park, sparking an explosion of economic development. Our growing Discovery District is enhancing the university's reputation as an innovation hub, particularly in computing and data science.

Faculty, students and staff deliver a wide range of services to citizens, businesses and decision makers statewide. The University of Maryland Extension's advice to farmers raised their average profitability more than \$14,000 in 2017. It is also helping urban farmers in Baltimore and Prince George's County establish financial viability while providing fresh food.

These accomplishments and impacts are made possible by your unwavering support. Thank you.

We will continue using it to power Maryland today and tomorrow.

Sincerely,

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WALLACE D. LOH *President*, University of Maryland



EDUCATING A TOP WORKFORCE

Academic Success

86.2% GRADUATION RATE (2012 COHORT)

Highest six-year graduation rate in the University System of Maryland (USM)

11,161 DEGREES AWARDED (FY 2018)

Bachelor's: 7,559 Master's: 2,930 Doctoral: 672

4,332 STEM DEGREES AWARDED (FY 2018)

Most in the state, up 10% over 2017

Graduates' Job Readiness (2017)

92% PLACEMENT RATE (job or advanced education)

47% WORK IN MARYLAND

\$52,608 MEDIAN SALARY

77% HAD AT LEAST ONE INTERNSHIP Student Profile (Fall 2018)

41,200 TOTAL ENROLLMENT

Graduate students: 10,438 Undergraduates: 30,762

74.4% MARYLAND RESIDENTS (Undergraduates)

43% MINORITY UNDERGRADUATES

21.3% UNDERREPRESENTED MINORITY UNDERGRADUATES Freshman Credentials (Fall 2018)

4.28 AVERAGE GPA

SAT SCORES

1460 (75th percentile) 1380 (midpoint) 1310 (25th percentile)

From 33,568 new freshman applications, 4,714 enrolled



EXPANDING EDUCATIONAL EXCELLENCE

Select Rankings

KIPLINGER'S PERSONAL FINANCE'S BEST COLLEGE VALUES (2018): No. 10 among U.S. public institutions (in-state)

FORBES MAGAZINE'S AMERICA'S TOP COLLEGES (2018):

No. 12 among U.S. public institutions

MONEY MAGAZINE'S BEST COLLEGES (2018):

No. 18 among U.S. public institutions (No. 1 in Maryland)

THE PRINCETON REVIEW'S TOP SCHOOLS FOR UNDERGRADUATE ENTREPRENEURSHIP (2019): No. 8

THE ECONOMIST (2018): No. 11 U.S. executive MBA programs

CSRANKINGS.ORG (2018): No. 10 U.S. computer science program

No. 7 for artificial intelligence among U.S. public institutions

U.S. NEWS & WORLD REPORT (2018):

Global: No. 15 among U.S. public institutions

Best U.S. colleges: No. 22 among U.S. public institutions

Online MBA programs: No. 8

Graduate programs: 34 in the top 20, including No. 1 in the U.S. for criminology; No. 1 for educational counseling; No. 2 for African-American studies; No. 12 for aerospace engineering **12 New Programs** including doctoral and master's in environmental health sciences; a minor in naval science; and a new low-cost online MBA.

College of Education revamped its degree programs to help the state address critical teaching shortages.

School of Public Policy's first undergraduate class received degrees in May.

College of Agriculture and Natural Resources' freshman class nearly doubled in 2018.



Philip Merrill College of Journalism The college revamped its undergraduate curriculum, and enrollment doubled in 2018.

Real-world impact: Investigation by Capital News Service students led a nursing home operator to pay \$2.2 million to settle a state lawsuit.

Diversity

DIVERSE: ISSUES IN HIGHER EDUCATION "TOP MINORITY DEGREE PRODUCER" (2018):

Undergraduate (African-Americans): No. 2 social sciences; No. 4 agriculture; No. 4 foreign language; No. 5 natural resources

Master's (African-Americans): No. 4 engineering; (all minorities) No. 3 interdisciplinary studies Doctoral (all minorities): No. 1 mathematics

Graduate degrees (African-Americans): No. 1 in Big Ten for engineering and education

CAMPUS PRIDE (2018): A top LGBTQ-friendly college

BEST COLLEGES (2018): No. 2 among U.S. public institutions for LGBTQ students; No. 7 overall



The university's "Year of Immigration" programs stimulate campus conversation and deepen knowledge of critical immigration, migration and refugee issues. They also help students, faculty and staff engage with neighboring immigrant and international communities.



↑ The Brendan Iribe Center will

open in Spring 2019, supporting advanced research, education and innovation in fields like virtual and augmented reality.

→ Construction is beginning on the E.A. Fernandez IDEA Factory for engineering research and innovation.



Do Good Initiative

Top Do Good Competition Winners

1,433 STUDENTS TAKING DO GOOD-RELATED COURSES (2017-18)

250 TEAMS IN DO GOOD CHALLENGE (2018)



← **Synapto**, a student biotech startup, won first place for its effort to revolutionize early Alzheimer's diagnosis.



← Terp Thon, a

student charity dance marathon, won first place for raising over \$4.2 million in nine years on behalf of Children's National Health System.

Scholarship Success



8 BOREN SCHOLARSHIPS For study of critical foreign languages

11 FULBRIGHT SCHOLARSHIPS For international educational exchange

28 GILMAN SCHOLARSHIPS U.S. Department of State

4 GOLDWATER SCHOLARSHIPS STEM studies

4 HOLLINGS SCHOLARSHIPS National Oceanic and Atmospheric Administration

SETTING THE STANDARD



↑ **An aerospace engineering team** took second place in a Northrop Grumman student design competition for "ExoHand," a device to control a robot's gripper.

A team of Terp graduate students won the U.S. Department of Housing and Urban Development's 2018 Affordable Housing Competition for designing Beacon Crossing, an affordable 154-unit project for seniors and adults with disabilities.

Professor of higher education **Alberto Cabrera** and associate professor of school psychology **Colleen O'Neal** won Fulbright awards.



Elizabeth Acevedo M.F.A. '16 won the 2018 National Book Award in Young People's Literature for her debut novel, "The Poet X."



 The National Academy of Sciences awarded assistant professor of urban planning
Marccus Hendricks an Early-Career Gulf Research Fellowship to study infrastructure and environmental hazards.



↑ **David Driskell**, distinguished university professor emeritus of art, and engineering professor **Elaine Oran** were elected to the American Academy of Arts and Sciences. Oran was also named an elected fellow of the American Association for the Advancement of Science.

Journalism professor **Linda Steiner** won the International Communication Association's Teresa Award for the Advancement of Feminist Scholarship.

Christine Antonsen MBA '18 won Women in Technology's Rising Star award.

Peter Reuter, professor of criminology and public policy, won the 2019 Stockholm Prize in Criminology for his research on drug enforcement.



↑ Finance professor **Michael Faulkender** was confirmed to the post of assistant secretary of the treasury for economic policy.



↑ Michel Cukier, associate professor and director of the Advanced Cybersecurity Experience for Students program, was honored by the SANS Institute as a 2018 "Difference Maker."

O National Science Foundation Early CAREER Award Winners



Maissam Barkeshli, assistant professor of physics, to study quantum systems

Jordan Boyd-Graber, associate professor of computer science, to study human-computer cooperation



Marine Carpuat, assistant professor of computer science, for development of language technology

Vanessa Frias-Martinez, assistant professor of information studies, to study responses to emergencies

Osvaldo Gutierrez, assistant professor of chemistry and biochemistry, to develop toxic metal replacements



Jin-Oh Hahn, associate professor of mechanical engineering, to develop novel technologies to improve care for critically-ill patients



Steven Jay, assistant professor of bioengineering, for new approaches to wound and blood vessel repair

Stuart Laurence, assistant professor of aerospace engineering, to reduce machine noise

Peter Nemes, associate professor of chemistry and biochemistry, to study cell, tissue and organ formation



Yueming "Lucy" Qiu, assistant professor of public policy, to transform analysis of home energy efficiency

ENTREPRENEURIAL TERPS MAKE DC INNO'S "25 UNDER 25"



Brianna Queen '19 is founder and CEO of Bee-Q-Box, a company that has sold more than \$100,000 in alcohol-free, silicone-free, cruelty-free, vegan cosmetics and skin-care products.



Richard Kong '21 owns Gravity Tales, a company that translates Chinese and Korean fantasy novels into English.



Jasmine Snead '18 launched Aurora Tights, a line of dance and ice skating tights in tones for all complexions and sizes.

HIGH-IMPACT RESEARCH AND INNOVATION

Research Success

\$545,314,107 TOTAL RESEARCH AWARDS

Federal: \$371,357,141

Corporations/Foundations/ Other: \$123,852,420

State: \$50,104,546

\$472,792,328 TOTAL RESEARCH EXPENDITURES



NEW GRANT-FUNDED CENTERS

Center of Excellence in Regulatory Science and Innovation (renewed)

← Howard Center for Investigative Journalism

✓ Maryland Transportation Institute



MULTIMILLION-DOLLAR RESEARCH GRANTS TO UMD WILL SUPPORT:

Building world's first practical quantum computer (with other leading institutions)

Mitigating Maryland Eastern Shore saltwater intrusion

Economic development planning for Purple Line communities

Reducing transportation energy use and emissions

Increasing human papillomavirus vaccination of African-American adolescents Assessing mental health of K-12 students

Improving cancer prevention among Baltimore African-Americans

Identifying young children's language disorders

Developing next-generation HIV immunotherapy agents

Accelerating development of pediatric medical devices

Creating new treatment for non-healing wounds

Identifying best practices to prepare a diverse science workforce



Research Tipping Points

Computing

VIRTUAL/AUGMENTED REALITY: UMD researchers found people remember information better when presented in a virtual environment—one of the first studies to assess the technology's educational impact.

ARTIFICIAL INTELLIGENCE: Maryland engineers and computer scientists found that humans do best at face recognition when assisted by artificial intelligence.

ARTIFICIAL INTELLIGENCE: A UMD entomologist is using machine learning to identify plant species at risk from climate change.

Energy and Material Science

Researchers from UMD, the U.S. Army and the U.S. Department of Energy are developing advanced battery technology to improve the range and safety of electric car batteries.

UMD engineers developed a safer highperformance, water-based zinc battery.

↓ An engineering team found a way to create a "superwood" stronger than steel.





Climate Change

POLICY: UMD Center for Global Sustainability report found actions by states, cities, businesses and universities have already put the United States two-thirds of the way to meeting its Paris Climate Agreement commitment. The center also leads research for the Global Commission on Adaptation.

MONITORING: UMD and University of Texas researchers issued the first national assessment of the scope and consequences of U.S. urban flooding.

MONITORING: UMD teams reported the Sahara Desert is expanding; documented Antarctic ice loss; concluded that more than one-fourth of recent world forests losses may be permanent; and predicted that large-scale Saharan wind and solar farms would increase rain and vegetation. ↑ Geographical sciences professor Ralph Dubayah, principal investigator of the Global Ecosystem Investigation Instrument (GEDI) mission with NASA, will use a laser in space to measure carbon content in Earth's forests.

Bioscience, Biotechnology and Health

UMD scientists working individually or on multi-institutional teams developed a breakthrough technique to combat cancer drug resistance; learned how Lyme disease outsmarts the human immune system; discovered an inherited brain pathway that can pass anxiety disorders to children; showed how easily the flu virus can be spread just by breathing; sequenced the wheat genome, creating opportunities to grow improved strains; demonstrated that drones can safely deliver human organs for transplant.

HIGH-IMPACT RESEARCH AND INNOVATION



↑ Quantum Quality

The global race to develop a quantum computer—a device exponentially more powerful than current supercomputers—runs through College Park. UMD physicist **Christopher Monroe** and his company, IonQ, unveiled two embryonic systems that have proven to be the most powerful quantum computers in the world. Monroe also played a leading role in the recent passage of the National Quantum Initiative to ensure U.S. competitiveness, helping to draft the legislation.



Filling the Innovation Pipeline



Successful Startups



↑ **GripBoost** now offers its glove grip-enhancing sprays for baseball, golf and football.

IonQ, a University of Maryland spinoff leading the race to create the first quantum computer, expanded its team 36 percent in 2018 and attracted new investors.

SecondWrite, offering advanced malware detection products, secured \$1.6 million in funding.

gel-e's bandages, designed to stop bleeding, got U.S. Food and Drug Administration clearance for prescribed and over-the-counter use, as well as a \$1.4 million Department of Defense grant and \$3.1 million in private financing.

North American Wave Engine Corporation's

jet propulsion applications raised \$1.45 million in 2018.

❑ Hazel Analytics, a joint UMD-University of California, Los Angeles startup providing food safety data and analytics to restaurants, added new national clients, including Subway, Cheesecake Factory, Chickfil-A and Jack-in-the-Box.

Zest Tea raised \$1 million in private and Maryland Momentum Fund financing for its caffeine-enhanced teas.

2018 INVENTIONS OF THE YEAR

Interface for enhanced electric vehicle charging



Flexible urinary catheter insert to detect and prevent bacterial infections



System for large-scale facial verification and search ECONOMIC Impact

\$3.16 BILLION Annual economic impact on state



2018 UMD Startups to Watch



10 / ADVANCING MARYLAND







↑ Greater College Park Economic Development

NEW AMENITIES IN 2018 AND 2019

← Cambria Hotel College Park

Lidl grocery store

Alloy by Alta Apartments

NEW DISCOVERY DISTRICT BUSINESSES

WeWork

The Hall CP

→ Immuta (data management platform)

Cybrary (cybersecurity training)



← **The new Capital One Tech Incubator**, a partnership between UMD and the Fortune 500 company, offers research opportunities in machine learning and data science, as well as a career pipeline for students.

EXPANDING FOOTPRINTS... UMD STATEWIDE



The Lab for Applied Social Science Research provided implicit bias training to 12 Maryland police departments. It is also surveying police attitudes on implicit bias, profiling and the impact of body-worn cameras.

The Center for Transition and Career Innovation for Youth with Disabilities will advance workforce readiness and college and career outcomes for youth with disabilities.

The Maryland Global Export Consulting program, in its second year, is helping state companies enter the international marketplace.

∠ The Purple Line Corridor Coalition,

led by UMD's National Center for Smart Growth, received a \$2 million grant from the Federal Transit Administration and the Maryland Transit Authority to support vibrant economic growth for communities along the 16-mile light-rail line.

TechPort, a St. Mary's County business incubator, will be managed by UMD.

↑ The University of Maryland Extension conducted 1,535 consultations with farmers (2017) to solve production problems, raising their average profitability by \$14,270. It also conducted 53,400 nutritional education consultations with Baltimore City youth.

The UMD-led Smart Cities Initiative, in

collaboration with Morgan State University, the University of Baltimore, and the Johns Hopkins University, continues its work to bring high-tech improvements to West Baltimore in safety, engagement, accessibility and quality of life, while using College Park as a testing ground for technologies.

Research in Service of the State

- Developing innovative water treatment system to clean the Port of Baltimore.
- Applying cascading pools that trap runoff to help restore the Chesapeake Bay.
- Identifying a new wave of complex street drugs.
- Improving evacuation planning for floods in Baltimore metropolitan areas (with Morgan State University).
- Assessing feasibility of Autonomous Technology Center in Western Maryland.



From viticulture, aquaculture and crops to drones, small business and first responders, UMD's impact reaches every county in Maryland.



- Unmanned Aircraft Systems Facility
- National Socio-Environmental Synthesis Center (SESYNC)
- ▲ SAFE Center for Human Trafficking Survivors
- ▲ Smart Cities Initiative
- ▲ Port of Baltimore Initiative



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