Our major activity for Phase II (Blueprint the Future State) was to perform an external scan to identify the key trends that will affect the USM’s future environment. We organized our analyses into 5 major categories that align with USM emerging priorities.

Higher Education Trends within:
- Access, Affordability and College Readiness
- Enrollment
- Academic Innovation
- Research
- Workforce and Labor Market

What will higher education look like in the short-term and long-term?
The following slides contain Huron’s detailed external scan prepared for the USM. Huron researched and analyzed major trends that will affect the future of higher education and public university systems. Based on areas of emphasis discovered in Phase I and feedback from the BOR strategic planning work group, Huron pursued analysis in a few key areas:

- **Section A**: Access, Affordability, and College Readiness
- **Section B**: Enrollment
- **Section C**: Academic Innovation
- **Section D**: Research
- **Section E**: Workforce and Labor Market
- **Section F**: System Benchmarking Case Studies
Section A: Access, Affordability, and College Readiness

Research Questions:

What are the major trends affecting access and affordability in higher education?

What trends exist in K-12 education that will likely impact higher education in the future?

What are the major trends that will impact HBCUs?

How will the theme of diversity and inclusion in higher education evolve?

What are the key challenges related to partnerships between community colleges and 4-year institutions?
RESEARCH TOPICS

COVID-19 Impact, K-12 Response, and Higher Ed Implications

Diversity & Inclusion

HBCUs

Community College Partnerships
Exasperated by the COVID-19 pandemic, lack of access and affordability in quality higher education has perpetuated inequality for low-income and minority students.

The “Degree Divide”
Minority and low-income students continue to fall behind in regards to graduation rates.

Workforce Realities
Over 70% of future jobs will require education beyond high school¹.

Compounding Crises
COVID-19 has impacted low-income students disproportionately.

Black & Hispanic students are 14-16% less likely than Whites to have a college degree².

Public institutions spend an average of $1,000 less per student of color compared to Whites, and 54% of young African Americans carry student loans ³,⁴.

College enrollment fell by over 26% this fall among students from high-minority high schools ⁵.

The most vulnerable students who have the most to gain from a college education are bearing the brunt of the pandemic effects...[without] intentional ways to support low-income students of color to enroll in and stay in college, we will see these disparities in college enrollment persist.” – Audrey Dow, SVP (Campaign for College Opportunity)

Sources:
1. Georgetown Center on Education & Workforce
2. Center for American Progress
3. UNCF
4. The Chronicle
K-12 TRENDS AND IMPACT ON HIGHER EDUCATION

During the pandemic, many K-12 schools across the nation have stressed the theme of equity. Higher education can learn from these emphasis areas and adapt practices to better support students.

“If you want to glimpse the post-pandemic future of higher education, you might want to see what’s occurring in K-12 schools today. There you will see a stress on equity that is likely to shape college teaching and learning post-pandemic.”


K-12 trends that will shape higher ed in the short-term and long-term:

- Prioritizing Equity
- Embracing differentiated instruction
- Skills and Outcomes Focus
- Life Skills and Social and Emotional Learning
- Redesigning Assessment of Learning
- Addressing Non-academic Barriers to Student Success (e.g., food security, Wi-Fi, quiet places to study)

Relevance to Emerging Priorities
- Access and Affordability
- Diversity & Inclusion
- Systemness
HBCUs: Impact and Challenges

Historically Black Colleges & Universities (HBCUs) can be powerful engines for creating systemic change and opportunity. Despite having a powerful impact on graduating students, HBCUs face challenges in enrollment, funding, and low graduation rates.

The Powerful Impact of HBCUs

Despite HBCU’s only being 3% of four-year colleges in the U.S., they have graduated:

- 80% of black judges
- 50% of black doctors
- 50% of black teachers
- 17% of black bachelor degree earners
- 2/3 of low-income HBCU students end up in the middle class or better

Although 70% of HBCU students are low-income and HBCU endowments are 70% smaller than non-HBCUs...

Challenges for HBCUs

- **Declining Enrollment**
  Due to COVID-19 the populations typically served by HBCUs have been impacted disproportionately

- **Lack of Funding**
  Endowments of all 101 historically black colleges total only $3.4 billion, according to the college fund. That’s less than a single Ivy League school.

- **Low Graduation Rates**
  With lower funding levels, HBCUs struggle to provide necessary financial aid or student support to critical to student success

Source: US Department of Education; HBCUs Make America Strong, UNCF; The Hechinger Report;
Over the past year, upwards of $400M has been donated to HBCUs. In addition, MD governor signed legislation in March to settle the USM Coalition case, which will provide $577M to the four HBCUs in MD.

### MacKenzie Scott donates $4.2 billion to 384 organizations

By Jazmin Goodwin, CNN Business

Updated 6:28 PM ET, Tue December 15, 2020

In the latest round of giving, Scott donated $40 million to Morgan State University, an HBCU in Baltimore. The gift is the largest single private donation in the university’s history, and the largest donation ever, at a university.

Other HBCUs including donations.

### Google CEO and HBCU leaders discuss talent pipeline for Black tech workers

By Chauncey Alcorn, CNN Business

Updated 10:01 AM ET, Tue March 16, 2021

### Netflix CEO’s $120 million donation to historically black colleges highlights inequities in college funding

Published: June 20, 2020 at 11:11 a.m. ET

At a time when the nation is focused on systemic racism in our society and institutions, Hastings and Qillin said in a statement that they hoped the gift would encourage other tech companies to invest in HBCUs.

### Apple launches major new Racial Equity and Justice Initiative projects to challenge systemic racism, advance racial equity nationwide

January 19, 2021

The company split the first round into three areas, including a $25 million donation to the Propel Center, a learning hub for Historically Black Colleges and Universities.

### Largest Gift in Howard University History Sparks Conversation About HBCU Donations

February 6, 2020 - 4:21 PM ET

Howard University recently announced the largest individual gift in its history. The $10 million gift has some asking: Are historically black schools getting their due from private foundations?
HBCUs AND THE FUTURE

Empowering more students to achieve a complete, high-quality education through HBCUs can be a strategy for institutions to bridge the equity gap in the United States and tangibly focus on Diversity, Equity and Inclusion initiatives.

“HBCUs have long been a bridge toward more equitable education for people of color, as well as a path to upward mobility…[playing] a critical role in closing the achievement gap by making higher education available to minority and low-income students, many of whom are the first in their families to go to college.”

– World Economic Forum

HBCU trends that will shape higher ed in the short-term and long-term:

- Events of 2020 have brought HBCUs to the spotlight and have attracted philanthropists
- More leaders than ever are HBCU graduates
- Increasing national recognition that HBCUs are a vital component of any strategy to address systemic inequities
- Graduates are in demand: During the past five years, the hiring-rate trend for alumni of the 105 HBCUs has consistently outpaced similar data for overall LinkedIn U.S. membership. HBCU alumni hiring was less affected by the pandemic than the workforce at large.

Source: World Economic Forum, LinkedIn Economic Graph Research and Insights; Bloomberg
DIVERSITY AND INCLUSION: STUDENTS

While overall high school graduates are expected to decline sharply, the high school population is also projected to become increasingly diverse.

Increasing Student Diversity (WICHE projections, December 2020)

<table>
<thead>
<tr>
<th>Year</th>
<th>White</th>
<th>Hispanic</th>
<th>Black</th>
<th>Asian or Pacific Islander</th>
<th>American Indian/Alaska Native</th>
<th>Two or More Races</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>51%</td>
<td>25%</td>
<td>14%</td>
<td>6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td>46%</td>
<td>28%</td>
<td>14%</td>
<td>7%</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>2030</td>
<td>44%</td>
<td>28%</td>
<td>13%</td>
<td>7%</td>
<td>6%</td>
<td></td>
</tr>
<tr>
<td>2036</td>
<td>43%</td>
<td>28%</td>
<td>14%</td>
<td>8%</td>
<td>6%</td>
<td></td>
</tr>
</tbody>
</table>

Over the next 15 years, institutions can expect a sizable increase in the Hispanic college-going population percentage, a reduction in the white college-going population, and stable trends in the Black college-going population percentage.

Sources: 1. Western Interstate Commission for Higher Education (IHE report, December 2020)
DIVERSITY AND INCLUSION: FACULTY

There are few Black, Native American, and Hispanic/Latinx faculty members across the nation. With student demographics changing, the need for more diverse faculty may only heighten in years to come.

Current Situation

- **12%**
  - Black college students in the US

- **5.4%**
  - Black faculty in the US

Potential Solutions

Short-Term

Improve faculty recruitment and the hiring process to identify more diverse pools of qualified candidates.

Long-Term

Foster more underrepresented students of color in pursuing PhDs.

By 2026, the U.S. Bureau of Labor Statistics projects, the U.S. will need 13% (or 17,000) more faculty members than in 2016 -- one of the highest growth rates of any job sector.

COMMUNITY COLLEGE PARTNERSHIPS

While partnerships between community colleges and four-year institutions are prevalent, many partnerships lack student focus that allows students to seamlessly transfer to four-year institution.

Current Situation

The first partnership between community colleges and four-year institutions was formed in the state of California, but now are common throughout the US.

When a community college has a strong partnership with a four-year college or university, students may view the community college as a stepping-stone before transferring.

More than a third of college students transfer at least once, but 43 percent of the credits they earn are lost in the process.

Salient Example

In 2018, George Mason University and Northern Virginia Community College were named one of the “nation’s most successful partnerships” by the American Association of Community Colleges

Key Characteristics

- Single point of entry for admissions, advising, and financial aid.
- Students assigned success coaches who stick with them through graduation.
- Requirements and corresponding courses are clearly spelled out on transfer website.

Key Outcomes

- Half of George Mason’s incoming class are community-college transfers
- Transfer students’ graduation rates are slightly higher than those who start out at the four-year college.

Sources: 1. Federal Government Accountability Office 2. Chronicle
Section B: Enrollment

**Research Questions:**

*How will demographic changes across the nation and in Maryland affect the addressable market of traditional college students?*

*What impact might the COVID-19 pandemic have on student migration patterns?*

*What are the most recent trends with regard to international students?*

*What are non-traditional students’ goals and preferences for educational offerings?*
RESEARCH TOPICS

- Traditional Student Population Changes
- Potential Shifts in Student Migration
- Decline in International Students
THE “DEMOGRAPHIC CLIFF”

Higher education institutions will be challenged by demographic and population trends over the next 10-15 years. The addressable market of traditional students in the United States is expected to peak in 2025 and eventually fall below 2015 levels by 2035.

Following a peak in 2025, the number of high school graduates in Maryland is projected to decline from 2025-2035 but will stay above 2015 levels. The USM should be prepared to expand and contract as a result.

The COVID-19 pandemic and students’ and parents’ increased price-sensitivity due to economic uncertainty may affect longstanding undergraduate student migration patterns and lead students to stay closer to home.

Undergraduate Student Migration

Reliance on Out-of-State Students across the United States

States that rely on a high percentage of out-of-state students are at an increased risk of reduced enrollment if the COVID-19 pandemic and economic uncertainty leads students to decide to stay in or return to their home states.

Historical High School Graduate Migration Trends in Maryland, 2014-2018

<table>
<thead>
<tr>
<th>Year</th>
<th>Residents Leaving Maryland</th>
<th>Non-Residents Entering Maryland</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>15,772</td>
<td>7,340</td>
</tr>
<tr>
<td>2015</td>
<td>15,769</td>
<td>7,347</td>
</tr>
<tr>
<td>2016</td>
<td>15,237</td>
<td>7,268</td>
</tr>
<tr>
<td>2017</td>
<td>15,235</td>
<td>7,668</td>
</tr>
<tr>
<td>2018</td>
<td>15,154</td>
<td>7,839</td>
</tr>
</tbody>
</table>

Case Study: NJ Come Home Program

In response to the COVID-19 pandemic and concurrent economic contraction, 10 four-year public New Jersey institutions are incentivizing residents who are enrolled at out-of-state institutions to return to New Jersey to finish their degrees by:

- Offering them a streamlined transfer application process.
- Providing them with additional financial aid and scholarship program opportunities.

Source: Moody’s Investor Service, “Shifts in student migration would benefit some universities and harm others”, National Center for Education Statistics, Digest of Education Statistics
Higher education institutions face a variety of risks if international student enrollment continues to decrease, a trend which will likely be exasparated by the COVID-19 pandemic.

## International Student Migration

### Year-over-Year % Change in New International Student Enrollment in the U.S., 2014-2019

<table>
<thead>
<tr>
<th>Year</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>8.8%</td>
</tr>
<tr>
<td>2015</td>
<td>2.4%</td>
</tr>
<tr>
<td>2016</td>
<td>-3.3%</td>
</tr>
<tr>
<td>2017</td>
<td>-6.6%</td>
</tr>
<tr>
<td>2018</td>
<td>-0.9%</td>
</tr>
<tr>
<td>2019</td>
<td>-0.6%</td>
</tr>
</tbody>
</table>

Even before the pandemic, new international student enrollment at higher education institutions in the U.S. was on the decline, with attendance falling for the fourth year in a row in the fall of 2019.

### Continued Declines in International Student Enrollment

A variety of factors contribute to continued declines in international student enrollment, such as:
- Improving educational options at home
- Tougher visa restrictions in the U.S.
- Health concerns due to COVID-19
- The current political environment in the U.S.

### Implications of Declines in International Student Enrollment

If international student enrollment continues to decrease, higher education institutions will be adversely impacted by:
- Declining revenue
- Less social and cultural diversity on campus

Section C:

Academic Innovation

Research Questions:

How does digital transformation affect teaching and learning?

How will delivery models evolve to become more flexible?

How is lifelong learning evolving?
Research Topics

- Digital Transformation for Teaching and Learning
- Hybrid and HyFlex Learning Environments
- Addressing Lifelong Learning Needs
Digital Transformation for Teaching and Learning

Universities quickly shifted to remote instruction in 2020. Going forward, there will be increased acceleration of the education ecosystem that support digital learning.

Digital Newcomers
- Little experience and availability of online courses and online teaching
- Limited access to digital tools
- Opportunities for significant advancement to catch up

Emerging Adopters
- Successfully experimented with digital learning in pockets
- Experienced faculty and instructors see the value
- Opportunities to increase adoption and accelerate digital transformation with leadership support and intentionality

Advanced Institutions
- Possess robust technical infrastructure, vast digital context, and experienced faculty
- Opportunities to scale infrastructure to deliver across all programs in multiple modalities
- Can also accelerate pedagogical innovation and further equity and inclusivity

Source: James DeVaney, Gideon Shimshon, Matthew Rascoff, and Jeff Maggioncalda; Harvard Business Review
**EXAMPLE: DATA SCIENCE AND WORKFORCE DEVELOPMENT**

Ohio State has applied digital transformation to teaching, learning and workforce development.

**Ohio State’s Strategic Priorities**

- **Real-World Applications**: Create unique, interdisciplinary spaces for OSU stakeholders and partners to collaborate on technology solutions that address global problems
- **Workforce Development**: Offer opportunities for students and community members to network, share and access tools and resources, and enhance their career-readiness in technology-driven fields
- **Blended Learning**: Provide an immersive and engaging collection of shared tools, platforms, and learning experiences for every incoming freshman

**Translational Data Analytics Institute (TDAI)**

- Started as an initiative bringing together students, faculty, and community partners
- Expanded to an institute offering an innovative professional master’s degree and providing event space and cross-disciplinary learning opportunities

**President’s Digital Flagship Objectives**

- Modernize the Student Experience
- Resolve Access Disparities
- Provide Exceptional Workforce Preparation

Source: The Ohio State University
**EXAMPLE: ACADEMIC INNOVATION**

Michigan is investing $50M over five years to support new education models and learning experiences by advancing curricular innovation, educational data and research, and academic technology.

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**Center for Academic Innovation Scope**

University of Michigan’s Center is a coordinating resource and clearinghouse of activity across the institution.

- Manage a portfolio of custom-built software applications
- Online Teaching Academy to build faculty competency
- Academic Innovation Fund to support and incentivize experimentation
- User experience and course operations specialists to provide support
- Public engagement programs support open access
- Manage *Michigan Online* gateway platform
- Offer experiential student fellowships to help integrate with the university’s traditional residential model

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Source: University of Michigan
HYBRID AND HYFLEX LEARNING MODELS

Preparation for the Fall term at the onset of the pandemic also reignited the dialogue about hybrid and hyflex delivery.

Definitions

- A hybrid approach to course delivery combines face-to-face classroom instruction with online activities
- HyFlex (or hybrid-flexible) calls for courses to be created in a way that gives students complete control over how and when to participate, either in-person or online.

Principles for HyFlex Course Design

- **Learner Choice:** Provide meaningful alternative participation modes and enable students to choose between participation modes daily, weekly, or topically.
- **Equivalency:** Provide learning activities in all participation modes which lead to equivalent learning outcomes.
- **Reusability:** Utilize artifacts from learning activities in each participation mode as “learning objects” for all students.
- **Accessibility:** Equip students with technology skills and equitable access to all participation modes.

LIFELONG LEARNING (1 OF 2)

Higher education institutions have an opportunity to increase enrollment of non-traditional students in the post-pandemic environment, which will require new recruitment strategies and academic innovation to meet the needs of these learners.

If you were to enroll in additional education or training sometime within the next six months, what would be your goal? (adults age 25-64)

- A certificate or license, 26%
- An associate's degree, 12%
- A graduate degree, 12%
- Courses to pursue personal interests, 14%
- A bachelor's degree, 14%
- Courses to get skills needed for work, 23%

Since the pandemic began, American adults have expressed a preference for nondegree credentials and skills-training options for education and training.

If you were to enroll in additional education or training sometime within the next six months, what would you prefer?

<table>
<thead>
<tr>
<th></th>
<th>25-34</th>
<th>35-44</th>
<th>45-54</th>
<th>55-64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online</td>
<td>42%</td>
<td>48%</td>
<td>35%</td>
<td>23%</td>
</tr>
<tr>
<td>Hybrid</td>
<td>44%</td>
<td>29%</td>
<td>24%</td>
<td>20%</td>
</tr>
<tr>
<td>In-Person</td>
<td>55%</td>
<td>29%</td>
<td>29%</td>
<td>26%</td>
</tr>
</tbody>
</table>

Overall, non-traditional students prefer online options to hybrid and in-person options; however, there is some variance across age groups.

Source: Strada Center for Education Consumer Insights, "COVID-19 Work and Education Survey"
LIFELONG LEARNING (2 OF 2)

Relevance to work or a requirement for the professional field are key drivers for adult learners pursing education in the next six months.

How important are the following reasons for your preference for skills training, nondegree programs, or degree programs over the alternatives?

- **38%**
  - **Relevance**
    - Required in my field of work
    - Better fit for my personal needs
    - More applied / relevant to my work

- **28%**
  - **Streamlined**
    - Faster
    - Cheaper
    - More convenient

- **24%**
  - **Value**
    - Better value
    - More benefit to my job or career advancement

- **10%**
  - **Stackability**
    - Lead to additional education or training

Source: Strada Education Network; adults ages 18 years or older surveyed in August 2020
Section D:

Research

Research Questions:

How will research in higher education (e.g., funding sources, priority research areas, focus on interdisciplinary) evolve in the future?
RESEARCH TOPICS

- Funding Trends
- Trending Research Disciplines
R&D OVERVIEW

The United States remains the world’s top R&D performer, and total of R&D has expanded steadily since 2010, due particularly to sizable annual increases in business R&D performance. If these trends continue, R&D expenditures could reach $797 billion in 2025.

Definitions:

- **In basic research** the objective of the sponsoring agency is to gain more complete knowledge or understanding of the fundamental aspects of phenomena and of observable facts, without specific applications toward processes or products in mind.

- **In applied research** the objective of the sponsoring agency is to gain knowledge or understanding necessary for determining the means by which a recognized need may be met.

- **Development** is systematic use of the knowledge or understanding gained from research, directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes, and processes.

Source: National Center for Science and Engineering Statistics, National Science Foundation, *National Patterns of R&D Resources*
R&D PERFORMANCE, FUNDING, AND TRENDS

In 2017, the business sector led the U.S. in the funding and performance of development and applied research, while nearly half of U.S. basic research was performed by higher education institutions (48%) and funded by the federal government (42%).

Key Trends in Development

- Higher education has increased investment in technology transfer offices and incubators for start-ups on campus.
- Health-related industries and the digital economy have an outsized impact on innovation rates across the economy.

Key Trends in Applied Research

- Applied research as a percentage of overall R&D is growing within higher education, which is a trend that is expected to continue.
- Higher education is increasingly seeking corporate sponsorship of applied research projects.

Key Trends in Basic Research

- Between 2000 and 2017, the overall share of basic research funded by the business sector increased from 19% to 29%.
- Basic research is becoming increasingly interdisciplinary.

Source: National Center for Science and Engineering Statistics, National Science Foundation, National Patterns of R&D Resources
R&D in the life sciences and engineering have been longstanding areas of focus within higher education, and the federal government provides most of the funding for this R&D. There will likely be an increased focus on climate research in the future.

### Higher Education R&D Expenditures by Field

<table>
<thead>
<tr>
<th>Field</th>
<th>2019 Expenditures</th>
<th>10-year CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health sciences</td>
<td>$27.3 million</td>
<td>3.9%</td>
</tr>
<tr>
<td>Biological and biomedical sciences</td>
<td>$15.4 million</td>
<td>3.9%</td>
</tr>
<tr>
<td>Agricultural sciences</td>
<td>$3.4 million</td>
<td>1.5%</td>
</tr>
<tr>
<td>Electrical, electronic, and</td>
<td>$2.9 million</td>
<td>4.1%</td>
</tr>
<tr>
<td>communications engineering</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer and information sciences</td>
<td>$2.6 million</td>
<td>5.4%</td>
</tr>
<tr>
<td>Physics</td>
<td>$2.3 million</td>
<td>1.7%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>$2.0 million</td>
<td>1.3%</td>
</tr>
<tr>
<td>Mechanical engineering</td>
<td>$1.7 million</td>
<td>1.8%</td>
</tr>
<tr>
<td>Education</td>
<td>$1.5 million</td>
<td>4.8%</td>
</tr>
<tr>
<td>Bioengineering and biomedical</td>
<td>$1.5 million</td>
<td>7.7%</td>
</tr>
<tr>
<td>engineering</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


### President Biden’s Plan for R&D in the U.S.

President Biden recently called on Congress to invest $180 billion in researchers, laboratories, and universities across the United States in order to support economic growth, sustain global leadership in new technologies, and address the climate crisis. Among other things, President Biden’s plan would provide:

- $50 billion in funding to the NSF to focus on fields like semiconductors and advanced computing, advanced communications technology, advanced energy technologies, and biotechnology.
- $40 billion in funding allocated across the federal R&D agencies to improve research infrastructure across the country.
- $35 billion in funding to achieve technology breakthroughs that would address the climate crisis and position America as the global leader in clean energy technology and clean energy jobs.
- $25 billion in funding for enhanced R&D at HBCUs across the nation.
Section E: Workforce and Labor Market

Research Questions:

What broad workforce trends have been accelerated by the COVID-19 pandemic?

What sectors and jobs are demonstrating high / low / no growth in Maryland, the Mid-Atlantic region, and the United States?

What is the projected need for postsecondary credentials that fall outside of traditional degree-based structures?

How can systems leverage corporate partnerships to prepare students for work?
RESEARCH TOPICS

Growing Industries in Maryland

Shortages of High-Quality Teachers

The Market for Non-Traditional Students

Corporate Partnerships
COVID-19: BROAD WORKFORCE TRENDS

COVID-19 has accelerated three trends that will continue to reshape the nature of work after the pandemic. The extent to which these trends will affect specific jobs depends in part on the physical proximity and frequency of interaction that the job requires.

REMOTE / HYBRID WORK

The sudden shift to remote work has led companies to reconsider work models and balance flexibility with greater effectiveness of in-person work. Jobs in computer-based offices are most likely to adopt remote/hybrid models.

AUTOMATION

In the wake of COVID-19, companies may increase investment in automation and AI to control their cost base and improve efficiency. Jobs requiring high physical proximity and frequency of interaction are at an increased risk of disruption.

DIGITALIZATION

New users have adopted digital technology in areas like e-commerce and telemedicine. This has propelled growth in delivery, transportation, and warehouse jobs, while causing declines among in-store retail jobs.

Source: MGI, "The Future of Work after COVID-19"
INDUSTRY TRENDS IN THE UNITED STATES (1 OF 2)

Overall employment is projected to grow 2.9% in the United States between 2021-2025 and 6.0% between 2021-2031. The fastest growing industries are: (1) Health Care and Social Assistance, (2) Professional, Scientific, and Technical Services, (3) Education Services, (4) Transportation and Warehousing, and (5) Arts, Entertainment, and Recreation..

<table>
<thead>
<tr>
<th>Industry</th>
<th>2021 Jobs</th>
<th>2025 Jobs</th>
<th>'21-'25 Change</th>
<th>2031 Jobs</th>
<th>'21-'31 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>24,690,143</td>
<td>24,992,243</td>
<td>1.2%</td>
<td>25,347,956</td>
<td>2.7%</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>20,747,728</td>
<td>22,247,130</td>
<td>7.2%</td>
<td>23,952,207</td>
<td>15.4%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>15,165,830</td>
<td>15,144,172</td>
<td>-0.1%</td>
<td>15,203,045</td>
<td>0.2%</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>12,839,720</td>
<td>13,206,559</td>
<td>2.9%</td>
<td>13,801,730</td>
<td>7.5%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12,564,160</td>
<td>12,617,690</td>
<td>0.4%</td>
<td>12,461,153</td>
<td>-0.8%</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>9,856,351</td>
<td>10,458,629</td>
<td>6.1%</td>
<td>11,057,442</td>
<td>12.2%</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management and Remediation Services</td>
<td>9,098,077</td>
<td>9,350,804</td>
<td>2.8%</td>
<td>9,616,267</td>
<td>5.7%</td>
</tr>
<tr>
<td>Construction</td>
<td>7,657,454</td>
<td>7,908,709</td>
<td>3.3%</td>
<td>8,094,089</td>
<td>5.7%</td>
</tr>
<tr>
<td>Other Services (Except Public Administration)</td>
<td>7,027,065</td>
<td>7,212,668</td>
<td>2.6%</td>
<td>7,453,016</td>
<td>6.1%</td>
</tr>
<tr>
<td>Finance and Insurance</td>
<td>6,561,658</td>
<td>6,707,733</td>
<td>2.2%</td>
<td>6,785,108</td>
<td>3.4%</td>
</tr>
</tbody>
</table>

Source: EMSI (Note: Industries are in descending order of # of 2021 jobs; shading indicates above average growth relative to overall employment growth in the U.S. [green] or decline [red].)
Overall employment is projected to grow 2.9% in the United States between 2021-2025 and 6.0% between 2021-2031. The fastest growing industries are: (1) Health Care and Social Assistance, (2) Professional, Scientific, and Technical Services, (3) Education Services, (4) Transportation and Warehousing, and (5) Arts, Entertainment, and Recreation.

### Relevance to Emerging Priorities

**Workforce Development, Academic Innovation**

<table>
<thead>
<tr>
<th>Industry</th>
<th>2021 Jobs</th>
<th>2025 Jobs</th>
<th>'21-'25 Change</th>
<th>2031 Jobs</th>
<th>'21-'31 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation and Warehousing</td>
<td>5,942,246</td>
<td>6,235,202</td>
<td>4.9%</td>
<td>6,407,848</td>
<td>7.8%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>5,827,390</td>
<td>5,860,051</td>
<td>0.6%</td>
<td>5,863,228</td>
<td>0.6%</td>
</tr>
<tr>
<td>Educational Services</td>
<td>3,922,702</td>
<td>4,157,724</td>
<td>6.0%</td>
<td>4,432,542</td>
<td>13.0%</td>
</tr>
<tr>
<td>Information</td>
<td>2,834,837</td>
<td>2,875,886</td>
<td>1.4%</td>
<td>2,915,806</td>
<td>2.9%</td>
</tr>
<tr>
<td>Management of Companies and Enterprises</td>
<td>2,416,605</td>
<td>2,507,072</td>
<td>3.7%</td>
<td>2,576,886</td>
<td>6.6%</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>2,349,529</td>
<td>2,391,381</td>
<td>1.8%</td>
<td>2,394,330</td>
<td>1.9%</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>2,201,719</td>
<td>2,294,352</td>
<td>4.2%</td>
<td>2,432,089</td>
<td>10.5%</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing, and Hunting</td>
<td>1,503,870</td>
<td>1,542,166</td>
<td>2.5%</td>
<td>1,581,374</td>
<td>5.2%</td>
</tr>
<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction</td>
<td>632,036</td>
<td>664,145</td>
<td>5.1%</td>
<td>715,977</td>
<td>13.3%</td>
</tr>
<tr>
<td>Utilities</td>
<td>550,249</td>
<td>547,051</td>
<td>-0.6%</td>
<td>529,702</td>
<td>-3.7%</td>
</tr>
</tbody>
</table>

Source: EMSI (Note: Industries are in descending order of # of 2021 jobs; shading indicates above average growth relative to overall employment growth in the U.S. [green] or decline [red].)
INDUSTRY TRENDS IN MARYLAND (1 OF 2)

Overall employment is projected to grow 3.3% in Maryland between 2021-2025 and 7.7% between 2021-2031. The fastest growing industries are: (1) Management of Companies and Enterprises, (2) Transportation and Warehousing, (3) Health Care and Social Assistance, (4) Professional, Scientific, and Technical Services, and (5) Education Services.

<table>
<thead>
<tr>
<th>Industry</th>
<th>2021 Jobs</th>
<th>2025 Jobs</th>
<th>'21-'25 Change</th>
<th>2031 Jobs</th>
<th>'21-'31 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>587,730</td>
<td>600,487</td>
<td>2.2%</td>
<td>617,410</td>
<td>5.0%</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>384,401</td>
<td>410,375</td>
<td>6.8%</td>
<td>443,760</td>
<td>15.4%</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>266,396</td>
<td>284,200</td>
<td>6.7%</td>
<td>305,298</td>
<td>14.6%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>263,754</td>
<td>259,542</td>
<td>-1.6%</td>
<td>258,686</td>
<td>-1.9%</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>211,302</td>
<td>216,330</td>
<td>2.4%</td>
<td>227,034</td>
<td>7.4%</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management and Remediation Services</td>
<td>170,889</td>
<td>177,179</td>
<td>3.7%</td>
<td>185,014</td>
<td>8.3%</td>
</tr>
<tr>
<td>Construction</td>
<td>168,957</td>
<td>172,077</td>
<td>1.8%</td>
<td>175,265</td>
<td>3.7%</td>
</tr>
<tr>
<td>Other Services (Except Public Administration)</td>
<td>136,755</td>
<td>140,697</td>
<td>2.9%</td>
<td>147,113</td>
<td>7.6%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>113,599</td>
<td>118,962</td>
<td>4.7%</td>
<td>123,444</td>
<td>8.7%</td>
</tr>
<tr>
<td>Transportation and Warehousing</td>
<td>100,776</td>
<td>108,904</td>
<td>8.1%</td>
<td>115,650</td>
<td>14.8%</td>
</tr>
</tbody>
</table>

Source: EMSI (Note: Industries are in descending order of # of 2021 jobs; shading indicates above average growth relative to overall employment growth in Maryland [green] or decline [red].)
Overall employment is projected to grow 3.3% in Maryland between 2021-2025 and 7.7% between 2021-2031. The fastest growing industries are: (1) Management of Companies and Enterprises, (2) Transportation and Warehousing, (3) Health Care and Social Assistance, (4) Professional, Scientific, and Technical Services, and (5) Education Services.

<table>
<thead>
<tr>
<th>Industry</th>
<th>2021 Jobs</th>
<th>2025 Jobs</th>
<th>'21-'25 Change</th>
<th>2031 Jobs</th>
<th>'21-'31 Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance and Insurance</td>
<td>95,579</td>
<td>96,429</td>
<td>0.9%</td>
<td>97,694</td>
<td>2.2%</td>
</tr>
<tr>
<td>Educational Services</td>
<td>88,361</td>
<td>93,463</td>
<td>5.8%</td>
<td>100,418</td>
<td>13.6%</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>85,460</td>
<td>87,066</td>
<td>1.9%</td>
<td>89,241</td>
<td>4.4%</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>46,326</td>
<td>46,471</td>
<td>0.3%</td>
<td>46,301</td>
<td>-0.1%</td>
</tr>
<tr>
<td>Arts, Entertainment, and Recreation</td>
<td>38,489</td>
<td>38,865</td>
<td>1.0%</td>
<td>40,381</td>
<td>4.9%</td>
</tr>
<tr>
<td>Management of Companies and Enterprises</td>
<td>28,607</td>
<td>30,942</td>
<td>8.2%</td>
<td>33,372</td>
<td>16.7%</td>
</tr>
<tr>
<td>Information</td>
<td>34,401</td>
<td>33,597</td>
<td>-2.3%</td>
<td>33,312</td>
<td>-3.2%</td>
</tr>
<tr>
<td>Utilities</td>
<td>9,789</td>
<td>9,779</td>
<td>-0.1%</td>
<td>9,533</td>
<td>-2.6%</td>
</tr>
<tr>
<td>Agriculture, Forestry, Fishing, and Hunting</td>
<td>8,571</td>
<td>9,056</td>
<td>5.7%</td>
<td>9,748</td>
<td>13.7%</td>
</tr>
<tr>
<td>Mining, Quarrying, and Oil and Gas Extraction</td>
<td>1,195</td>
<td>1,345</td>
<td>12.5%</td>
<td>1,519</td>
<td>27.1%</td>
</tr>
</tbody>
</table>

Source: EMSI (Note: Industries are in descending order of # of 2021 jobs; shading indicates above average growth relative to overall employment growth in Maryland [green] or decline [red].)
**HIGH-GROWTH INDUSTRIES: REGIONAL SPECIALIZATION**

Maryland, Virginia, and Washington D.C. have above average per capita employment in Professional, Scientific, and Technical Services, Government (not pictured), and Education Services. Neighboring states have above average per capita employment Health Care and Social Assistance and Education Services.

Source: EMSI
Overall, employment is projected to grow 4.7% from 2021-2025 for occupations requiring a Bachelor’s degree and less than five years of experience in Maryland. Software Developers and Quality Assurance Analysts make up one of the largest and fastest growing occupations.

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Relevant Skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registered Nurses</td>
<td>Active Listening, Social Perceptiveness</td>
</tr>
<tr>
<td>Software Developers and Quality Assurance Analysts</td>
<td>Critical Thinking, Programming</td>
</tr>
<tr>
<td>Project Management and Business Operations Specialists</td>
<td>Decision Making, Systems Thinking</td>
</tr>
<tr>
<td>Elementary School Teachers</td>
<td>Instructing, Speaking, Learning Strategies</td>
</tr>
<tr>
<td>Accountants and Auditors</td>
<td>Active Listening, Reading Comprehension</td>
</tr>
</tbody>
</table>

* Note: Occupations requiring a Bachelor’s degree and < 5 years of experience

Source: EMSI; O*NET Online

**5 Largest Occupations in Maryland, # of Jobs Projected in 2025***

- Registered Nurses: 59,581
- Software Developers and Quality Assurance Analysts: 36,852
- Project Management and Business Operations Specialists: 34,995
- Elementary School Teachers: 28,701
- Accountants and Auditors: 28,377

* Note: Occupations requiring a Bachelor’s degree and < 5 years of experience

**10 Fastest Growing Occupations in Maryland, % Employment Change Projected from 2021 – 2025***

- Substance Abuse, Behavioral Disorder, and Mental Health Counselors: 13.0%
- Data Scientists and Mathematical Science Occupations, All Other: 12.5%
- Software Developers and Quality Assurance Analysts: 12.0%
- Information Security Analysts: 11.7%
- Medical and Health Services Managers: 11.5%
- Industrial Engineers: 10.0%
- Market Research Analysts and Marketing Specialists: 9.9%
- Fundraisers: 9.5%
- Operations Research Analysts: 9.1%
- Film and Video Editors: 8.2%

* Note: Occupations requiring a Bachelor’s degree and < 5 years of experience
**Occupations in Maryland: Master’s Degrees**

Overall, employment is projected to grow 6.8% from 2021-2025 for occupations requiring a Master’s degree and less than five years of experience in Maryland. Nurse Practitioners make up one of the largest and fastest growing occupations.

### 5 Largest Occupations in Maryland, # of Jobs Projected in 2025*

<table>
<thead>
<tr>
<th>Occupation</th>
<th># of Jobs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Educational, Guidance, and Career Counselors</td>
<td>7,046</td>
</tr>
<tr>
<td>Acupuncturists and Healthcare Diagnosing or Treating Practitioners</td>
<td>6,226</td>
</tr>
<tr>
<td>Nurse Practitioners</td>
<td>5,063</td>
</tr>
<tr>
<td>Healthcare Social Workers</td>
<td>4,585</td>
</tr>
<tr>
<td>Education Administrators, Postsecondary</td>
<td>4,473</td>
</tr>
</tbody>
</table>

* Note: Occupations requiring a Master’s degree and < 5 years of experience.

### 10 Fastest Growing Occupations in Maryland, % Employment Change Projected from 2021 – 2025*

<table>
<thead>
<tr>
<th>Occupation</th>
<th>% Employment Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse Practitioners</td>
<td>20.1%</td>
</tr>
<tr>
<td>Genetic Counselors</td>
<td>16.7%</td>
</tr>
<tr>
<td>Physician Assistants</td>
<td>12.3%</td>
</tr>
<tr>
<td>Statisticians</td>
<td>11.0%</td>
</tr>
<tr>
<td>Mental Health and Substance Abuse Social Workers</td>
<td>10.1%</td>
</tr>
<tr>
<td>Nurse Anesthetists</td>
<td>9.5%</td>
</tr>
<tr>
<td>Speech-Language Pathologists</td>
<td>9.2%</td>
</tr>
<tr>
<td>Marriage and Family Therapists</td>
<td>9.1%</td>
</tr>
<tr>
<td>Economists</td>
<td>8.6%</td>
</tr>
<tr>
<td>Orthotists and Prosthetists</td>
<td>8.2%</td>
</tr>
</tbody>
</table>

* Note: Occupations requiring a Master’s degree and < 5 years of experience.

---

Source: EMSI; O*NET Online

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Overall, employment is projected to grow 3.5% from 2021-2025 for occupations requiring a postsecondary non-degree award in Maryland. Medical Assistants make up one of the largest and fastest growing occupations.

**5 Largest Occupations in Maryland, # of Jobs Projected in 2025***

- **Nursing Assistants**: 30,994
- **Heavy and Tractor-Trailer Truck Drivers**: 28,889
- **Medical Assistants**: 15,152
- **Automotive Service Technicians and Mechanics**: 13,471
- **Hairdressers, Hairstylists, and Cosmetologists**: 11,489

* Note: Occupations requiring a postsecondary non-degree award.

**10 Fastest Growing Occupations in Maryland, % Employment Change Projected from 2021 – 2025***

- **Wind Turbine Service Technicians**: 15.5%
- **Computer Numerically Controlled Tool Programmers**: 13.6%
- **Psychiatric Technicians**: 10.0%
- **Phlebotomists**: 10.0%
- **Medical Assistants**: 9.2%
- **Ship Engineers**: 7.3%
- **Captains, Mates, and Pilots of Water Vessels**: 6.9%
- **Tool and Die Makers**: 6.5%
- **Licensed Practical and Licensed Vocational Nurses**: 6.4%
- **Ophthalmic Medical Technicians**: 6.4%

* Note: Occupations requiring a postsecondary non-degree award.

**Occupation** | **Relevant Skills**
--- | ---
Nursing Assistants | Service Orientation, Active Listening
Heavy and Tractor-Trailer Truck Drivers | Operation Monitoring, Time Management
Medical Assistants | Speaking, Active Listening
Automotive Service Technicians and Mechanics | Repairing, Troubleshooting
Hairdressers, Hairstylists, and Cosmetologists | Active Listening, Service Orientation

Source: EMSI; O*NET Online
The USM has an opportunity to distinguish itself from other public systems of higher education by forging and maintaining corporate partnerships at the system level. These partnerships could take a variety of different forms, which are outlined below.

**CENTRAL RECRUITMENT PLATFORM**
Support a central recruitment platform that all students in the System can leverage to connect with employers, apply for internships, and to locate experiential learning opportunities.

**ADVISORY BOARDS**
Establish corporate advisory boards to understand workforce needs and inform decisions about curricular and pedagogical innovation.

**CUSTOM PROGRAMS**
Provide employers with the opportunity to invest in their employees’ professional development with customized programs.

**TIERED PARTNERSHIP PROGRAMS**
Offer partnership programs with differential pricing and benefits for various tiers of membership.
Section F: System Benchmarking

Research Questions:

How do comparable system offices message the role of the system vs. the role of individual campuses?

What are some examples of innovation in peer systems?
What are examples of non-degree academic innovation?
HIGHER EDUCATION SYSTEM CASE STUDIES

University of California

SUNY

University of Wisconsin
**Higher Education Systems: The UC System**

The UC System’s Office of the President (UCOP) funds and guides system-wide programs, coordinates student support, manages the UC Systems business operations and finances, and supports the well-being of the UC System’s workforce.

### Overview of the UC System

- **Institutions:** 10 campuses
- **2020-21 In-State Tuition:** $11,442
- **Undergraduate Students:** 226,449
- **Graduate Students:** 59,267
- **2019-20 Bachelor’s Degrees:** 62,747
- **2019-20 Master’s Degrees:** 13,836

The UC System’s current strategic plan, *UC 2030: Advancing the California Dream*, lays out three system-wide goals:

- Produce 200,000 more undergrad and grad degrees by 2030
- Ensure the California Dream is for everyone
- Invest in the next generation of faculty and research

In December 2019, the UC System’s Office of the President (UCOP) published a separate strategic framework “to guide all divisions [of the UCOP] in focusing their energy and resources on actions that will best position the University of California to achieve its academic, research and public service missions.” The strategic framework also includes the mission, vision, and values of the UCOP.

### Innovation within the UC System

The UC System recently announced an open-access deal with publisher Elsevier. Under the deal, all UC lead authors will be able to publish articles in Elsevier journals openly so that anyone can read them without paying. This deal advances the UC System’s goal to have its research be openly disseminated.

In 2012, the UCOP launched the UC-HBCU Initiative to diversify and strengthen UC graduate programs. As part of the initiative, the UCOP offers a variety of grants designed to encourage UC faculty to actively engage in collaboration and cooperation with faculty and students at HBCUs.
The SUNY System is the nation’s largest public system of higher education, containing 64 campuses comprised of Doctoral Granting Institutions, University Colleges, Technology Colleges, and Community Colleges. The exact role of the SUNY System Office is unclear.

Overview of the SUNY System

- **Institutions:** 64 campuses
- **2020-21 In-State Tuition:** $7,070
- **Undergraduate Students:** 350,889
- **Graduate Students:** 43,331
- **2019-20 Bachelor’s Degrees:** 43,172
- **2019-20 Master’s Degrees:** 11,301

The SUNY System’s current strategic plan, *The Power of SUNY*, lays out six “Big Ideas”:
- SUNY and the Entrepreneurial Century
- SUNY and the Seamless Education Pipeline
- SUNY and a Healthier New York
- SUNY and an Energy-Smart New York
- SUNY and the Vibrant Community
- SUNY and the World

To support these six “Big Ideas,” the Office of Strategic Planning and Accountability coordinates implementation, produces report cards, and leads SUNY’s branding and marketing efforts.

Innovation within the SUNY System

- **53 of SUNY’s 64 campuses use one application – applySUNY – to simplify the process of applying for admission. Prospective students designate which campuses they would like to apply to, and applications are received in a central location before being distributed to admissions officers on each campus.**

- **The SUNY System contains 30 community colleges with enrollment at each community college ranging from 700 to over 10,000. These colleges provide industry credentials or certificates, guaranteed transfer pathways to a 4-year SUNY institution, or direct placement into a career.**
Higher Education Systems: The U. of Wisconsin System

Under the direction of the UW System President, the UW System Administration helps to develop, and then implements, monitors, and evaluates policies enacted by the Board of Regents, aligning university programs with the current and future needs of the state and the nation.

Overview of the U. of Wisconsin System

Institutions: 26 campuses*
2020-21 In-State Tuition: Differential
Undergraduate Students: 139,539
Graduate Students: 25,227
2019-20 Bachelor’s Degrees: 28,444
2019-20 Master’s Degrees: 7,837

The U. of Wisconsin System’s current strategic plan, 2020FWD: Moving Wisconsin and the World Forward, lays out four overarching areas of focus:

- Educational pipeline
- University experience
- Business and community mobilization
- Operational excellence

Each area of focus contains system-wide priorities and specific actions to be taken at the institutional-level. The UW System Administration office supports this strategic plan by developing an operational plan and delivering regular progress updates.

* Note: The U. of Wisconsin System has 13 universities spread across 26 campuses.

Innovation within the U. of Wisconsin System

The U. of Wisconsin System has made coordinating online education a key focus of its 2021-23 budget proposal. Project Distance Education+ includes enhanced research and marketing, expanded program/curriculum development, and improved responsiveness to trends in the marketplace. Investment will likely flow through UW Extended Campus.

To address teacher shortages in Wisconsin, UW-Madison’s School of Education initiated the Teacher Pledge Program, which enables students to receive financial assistance equal to the cost of in-state tuition and fees, plus testing and certification costs if they pledge to work at a Wisconsin preK-12 school for 3-4 years after graduation.