Item: **V. d.ii.**

Tuesday, August 15, 2023

SUBJECT: **APPROVAL OF THE FY2024-25 (SECOND YEAR) LEGISLATIVE BUDGET REQUEST FOR FLORIDA ATLANTIC UNIVERSITY'S COLLEGE OF MEDICINE - APPLYING ARTIFICIAL INTELLIGENCE ACROSS THE COMMUNITY HEALTH CONTINUUM / ENROLLMENT EXPANSION**

PROPOSED BOARD ACTION

Approval of the FY2024-25 Florida Atlantic University College of Medicine Legislative Budget Request - Applying Artificial Intelligence across the Community Health Continuum / Enrollment Expansion.

BACKGROUND INFORMATION

Each year, in anticipation of the upcoming state legislative session, State University System (SUS) institutions are required to submit their operational legislative budget requests (LBR) to the Board of Governors (BOG) for review. The College of Medicine Legislative Budget Request - *Applying Artificial Intelligence across the Community Health Continuum / Enrollment Expansion* is classified as a university of distinction request. As was discussed and approved by this Board, FAU identified artificial intelligence and data-related sciences as its distinction focus. Moreover, as previously stated in the LBR documents that were approved by the Board prior to the start of the 2023 Legislative Session, the *Applying Artificial Intelligence across the Community Health Continuum / Enrollment Expansion* totals $30.6 million ($23.8 million in recurring operational funds and $6.8 million in nonrecurring funds).

The LBR strives to integrate artificial intelligence into the curriculum of healthcare professions, including nursing, medicine, and the health sciences. As a newer medical school, the nimble aspects and novel approaches lend themselves well to such innovative programs such as integrative AI. Furthermore, by fostering collaborations and creating interprofessional training among programs in medicine, nursing, engineering, education, business, sciences, education, and the arts, FAU is uniquely positioned to quickly integrate its existing resources for maximum impact. In addition, the LBR seeks to expand the size of the College of Medicine's undergraduate, residency and fellowship programs to address the growing healthcare needs of the state of Florida.

During the 2023 Legislative Session, Florida Atlantic University secured $5 million of recurring operational funding for the College of Medicine's LBR. The 2024 LBR - *Applying Artificial Intelligence*

across the Community Health Continuum / Enrollment Expansion documents have been updated to reflect the funds received during the 2023 Legislative Session. Given the scope and cost of the College of Medicine's proposal, the university understood that this would be a multiyear endeavor. In turn, the university devised a multiyear funding and implementation strategy.

In 2019, the BOG implemented a requirement that an institution's Board of Trustees approve the LBRs that are submitted to the BOG. This year, the BOG also has provided guidance that asks university boards to ensure that LBRs are board approved prior to the BOG meeting on August 29-30, 2023.

IMPLEMENTATION PLAN/DATE

The attached LBR was submitted to the Board of Governors Data Request System on July 15, 2023 with a notation that it was pending approval by the FAU Board of Trustees. Upon approval by the Board, the Provost's Office will advise BOG staff that the BOT has reviewed and supports the requests.

FISCAL IMPLICATIONS

See attached LBR for proposed budget estimates.

Supporting Documentation: FAU College of Medicine FY 2024-25 Legislative Budget Request - Applying Artificial Intelligence across the Community Health Continuum / Enrollment Expansion

Presented by: Mr. Ryan Britton, Executive Director of Government Relations **Phone:** 561-297-2583

State University System
Education and General
2024-2025 Legislative Budget Request
Form I

University(s):	Florida Atlantic University
Request Title:	**Applying Artificial Intelligence across the Community Health Continuum / Enrollment Expansion**
Date Request Approved by University Board of Trustees:	**August 15, 2023 (pending)**
Recurring Funds Requested:	**$18.8M**
Non-Recurring Funds Requested:	**$6.8M**
Total Funds Requested:	**$25.6M**
Please check the request type below:	
Shared Services/System-Wide Request	☐
Unique Request	☒

I. **Purpose –** *1. Describe the overall purpose of the plan, specific goal(s) and metrics, specific activities that will help achieve the goal(s), and how these goals and initiatives align with strategic priorities and the 2021 University Accountability Plan established by your institution (include whether this is a new or expanded service/program). If expanded, what has been accomplished with the current service/program? 2. Describe any projected impact on academic programs, student enrollments, and student services. University of Distinction proposals should also address the requirements outlined in the separate guidance document.*

Florida Atlantic University's Charles E. Schmidt College of Medicine Operations received $5 million in recurring funding. The recurring funding is going towards integrating artificial intelligence into the curriculum of healthcare professions, including nursing, medicine, and the health sciences. As a newer medical school, the nimble aspects and novel approaches lend themselves well to such innovative programs such as integrative AI. Furthermore, by fostering collaborations and creating interprofessional training among programs in medicine, nursing, engineering, education, business, sciences, education, and the arts FAU is uniquely positioned to quickly integrate its existing resources for maximum impact. Finally, establishing a Center for Artificial Intelligence in Community Medicine and expanding the size of the College of Medicine's residency and fellowship programs to address the growing healthcare needs of the state of Florida.

Additional recurring funding will support Florida's demand for healthcare is continually growing even as the workforce supply is increasingly shrinking, and the competency "toolkit" needed to deliver care is constantly evolving. To address these challenges, Florida Atlantic University requests recurring and non-recurring funding to support its growing focus on **Applying Artificial Intelligence across the Community Health Continuum / Enrollment Expansion.**

This legislative budget request aligns with FAU's longstanding strategic focus on health and community partnerships as noted in the Key Initiatives & Investments section outlining "excellent student service, growth in research and scholarly activity, and first-choice university" prominence on page 5 of the institution's *2023 Accountability Plan.*

Additionally, this request aligns with the 'community-based academic and research activities' articulated on page 9 of FAU's *Strategic Plan for the Race to Excellence, 2015-2025,* which prefaces FAU's commitment to "institutionalize a culture of collaborative and experiential engagement with community partners that recognizes and values the dynamic and reciprocal exchange of knowledge, ideas, and resources to identify community concerns, build consensus, implement resolution and evaluate success."

In accordance with the overarching goal of this program to move institutions towards preeminent status, our bold vision focuses on the rapidly-rising rankings of the Colleges of Medicine and Engineering/ Computer Science to leverage their complementary strengths with the dual goals of achieving even greater recognition for national excellence while making a sizable impact on the workforce supply and transforming care delivery to the most vulnerable members of our communities (i.e., aged, underserved). In alignment with the strategic goals of this program, our ambitious plan includes an innovative strategy to develop a workforce of the future to provide data-driven efficient care and improved access to healthcare in our community. Specifically, we will meet patients where they reside using AI and data driven applications that produce positive outcomes. To do this, we aim to 1) grow the number of providers trained based on the needs of our vision, 2) instill new core competencies, 3) build novel interprofessional teams, and 4) create a transformative community care model of personalized care outside the walls of traditional healthcare facilities (Table 1). In developing an investment strategy to achieve these goals, our purposeful intent is recruiting talented people and empowering them through data-driven processes, rather than investing in buildings, to provide the greatest return. Ultimately, our success in bringing transformational change to the community health delivery system in Florida is dependent on the additional funding made available through this request. This request is part of our larger initiative of FAU Health Network which transcends the competitive landscape with all partners in the healthcare space regionally to serve the 3.2 Million people in Broward, Palm Beach and Martin County.

State Goals	FAU's Goals
Identifies a core competency unique to State University System and is poised to achieve excellence at the state/national level	Focuses on health sciences and AI to achieve excellence across the community health continuum at the state/national levels by: ✓ Creating a "Research core for Artificial Intelligence in Health Research" to Harness the Power of AI in research ✓ targeting performance indicators; and ✓ improving state/national rankings

Focuses on a critical workforce need(s) in Florida	Addresses workforce shortages and changing needs in the healthcare industry by:
	✓ increasing medical student class size and adding AI competency to curriculum ✓ expanding residency/fellowship programs, which reduce unnecessary hospital admissions or readmissions ✓ enhancing medical/graduate curricula to promote new core competencies required for 21st century practices
Fosters health/STEM economy in Florida	Transforms the community care model by: ✓ developing FAU Medicine as a model for data-driven care emphasizing mobile, pre- and post-hospital medicine ✓ platform for interdisciplinary training ✓ harnessing innovation to improve accessibility, quality, and value of healthcare

1.1   Targeting AI in Medicine to achieve excellence in health programs

As first approved in 2020, FAU selected AI and data analytics as a key focus. The university has made rapid progress to develop the required metrics and goals that will be leveraged to create a Center for AI in Healthcare to further propel the individual colleges and institution towards pre-eminent status. Healthcare worker shortages have reached a critical stage in Florida. The 2020 census revealed that the fastest growing states, including Florida, consistently rank lowest when it comes to health and healthcare. Specifically, Florida added 3 million residents and ranked 41st overall healthcare in 2020. Its residents have rising chronic disease burden and high levels of premature death from treatable conditions, while at the same time, lack access and affordability to healthcare systems. Due to the increased demand with the rising population and diminishing work force, the overall workforce shortage in healthcare in Florida is increasingly concerning. Active intervention is necessary to rethink how health care is delivered. _We propose using predictive analytics to determine which care can safely be administered outside of hospitals—in patients' homes and communities—to streamline processes which allow for the delivery of this optimized care, and to train the healthcare workforce of the future in interprofessional settings on data driven care._ To do this, we will leverage our existing strengths in our community focused college of medicine, coupled with our institutional strengths in business, data science and AI, and educational programs in health sciences.

1.1A   **Enhancing Institutional Excellence at National Level.**
FAU Health Network. More than 3.2 million residents currently live in Broward,

Palm Beach and Martin counties — collectively the largest metropolitan population in the state. As Florida's population continues to grow daily, so do its anticipated doctor, nursing and healthcare workforce shortages. In an effort to meet our area's growing healthcare needs, the launch of the FAU Health Network, the President of FAU, John Kelly, and the Chair of the FAU Board of Trustees Brad Levine announced the inception of FAU Health Network. The mission of this network is to transcend the competitive landscape through education and research collaborations between the regions' leading public and private academic and medical leaders. Internally, we have created FAU Health Network to maximize interactions between colleges at FAU, including nursing, medicine, engineering, science, education, business, social work and arts and letters to expand our ability to train the needed workforce in an interprofessional environment. Our regional partners in Palm Beach, Broward and Martin offer an outstanding opportunity for dynamic faculty and learner experiences, as well as provide connectivity to the local healthcare community, ensuring the recruitment and retention of our superbly skilled healthcare professionals. These collaborative academic endeavors will allow for the innovative solutions necessary to tackle the workforce crisis. While patient care needs are paramount, expanding the region's health-related teaching and research endeavors are also vital in producing future "thought leaders" and driving the next wave of advances in medicine, all designed to meet the diverse needs of South Florida.

Strengths of College of Medicine. The Charles E. Schmidt College of Medicine (COM) is one of newest and rapidly rising medical schools from among 155 accredited medical in the U.S. With more than 90 full and part-time faculty and more than 1,300 affiliate faculty, the college matriculates 72 medical students each year and has been nationally recognized for its innovative educational and research programs. Specifically, the COM is ranked for the first time in its history at #106 in Best Medical Schools: Research in the *2023-2024 U.S. News and World Report*. This rise in ranking is driven by several achievements during the past five years, which include LCME re-accreditation for the full eight years, a stellar record of student success metrics, and a nearly 3-fold increase in external research funding.

Collectively, these achievements attest to a growing record of excellence in medical and graduate education programs, which are continuously expanding to include dual degree programs (e.g., BS/MD, MD/MBA, MD/PhD) designed to meet regional and national workforce needs development. Most recently, the COM, in collaboration with the COECS, developed a program for FAU High School MD Direct Pathway Program students to have the opportunity to obtain a Master's in AI from the COECS prior to matriculation into medical school. The "Genomics and Predictive Health" graduate certification has recently been launched. The COM, which currently receives nearly $30 million support from the National Institutes of Health (NIH), is seeking to transform the practice of medicine by engaging in cutting-edge research to optimize patient care. We will collaborate across colleges with existing AI and data science experts to model not only the data but also best practices for care delivery and cost savings. With this request, we seek to differentiate ourselves from other medical schools by providing an innovative, interprofessional education focused on delivery of personalized, data driven patient care at places where patients reside. Ultimately, this LBR support will enable us to increase recognition and achieve our aspirational goal of being ranked in the top 75 of all COMs.

1.1B Creating a "Research Core for Artificial Intelligence in Health Research" to Harness the Power of AI in research and health care delivery

The purpose of this core is to serve as a catalyst for larger institutional change by bringing together data experts and health scientists across colleges, departments, and pillars to become a leader in AI driven and AI assisted health research to include basic science, translational science, and clinical research.

a. A research core research may be defined as shared resources providing access to instruments, technologies, services, as well as expert consultation and other services to scientific and clinical investigators. The typical core is a discrete unit within an institution and has dedicated personnel, equipment, and space for operations. In general, a core generally **the mitigates costs associated with providing services through** NIH or other federal grants.

b. A core may specialty equipment that multiple investigators across disciplines would use such as electron microscopes, advanced imaging, or (as in this case) high speed computing equipment.

c. While the personnel of this core facility may be expected to carry out their own research and secure external funding, they are primarily expected to support projects of other faculty as co-investigators on research projects that make use of AI.

II. As a background, AI has rapidly emerged as a transformative force in the field of healthcare and health related research. Over the past decade, AI has revolutionized medical diagnosis, treatment planning, and patient care by leveraging advanced algorithms and machine learning techniques. By analyzing vast amounts of data, including medical records, imaging scans, and genomic information, AI can identify patterns, predict disease outcomes, enable early detection of diseases such as cancer, and assist clinicians in making more accurate diagnosis. Furthermore, AI-driven research is enabling personalized medicine by considering individual patient characteristics, genetic profiles, and lifestyle factors to deliver tailored treatment plans. As AI continues to evolve, its integration into healthcare will improve patient outcomes, increase operational efficiency and advance our understanding of complex diseases. **Types of applications that the AI core would serve and examples**

a. **Basic science:** AI can contribute to fundamental science by assisting researchers in analyzing large databases, identifying patterns, and uncovering new insights, such as analyzing genomic data to identify genetic markers associated with diseases.

b. **Translational research:** AI can bridge the gap between basic science discoveries and their application into clinical settings. By integrating AI into translational research, researchers can develop computational models to predict treatment outcomes, optimize drug delivery protocols or identify potential biomarkers for diagnostic purposes.

c. **Clinical research:** AI can play a vital role in clinical research by analyzing electronic medical records, imaging, or other patient data to enhance diagnostic accuracy, predict disease progression, optimize treatment plans and help identify patients at higher risk for adverse events.

d. **Education research:** By leveraging AI, researchers can personalize learning experiences, analyze educational data, develop adaptive learning platforms, assess student performance and optimize instructional strategies to enhance educational outcomes.

e. **Improvement science:** AI can help identify inefficiencies in healthcare workflows, recommend process optimizations and support quality improvement initiatives.

f. **Population health science:** AI can analyze population data to identify health trends, patterns and risk factors. Researchers can use AI as a tool to develop predictive models for disease outbreaks or to identify populations at risk.

g. **Precision medicine science:** AI can contribute to precision medicine by analyzing diverse patient data (including genomics, clinical records, lifestyle information), creating algorithms that can optimize treatment strategies based on individual's unique characteristics.

III. **This core can span Colleges across FAU**

a. By strategically harnessing the power of AI, we aim to enhance and elevate academic endeavors across all Colleges within our institution. AI has emerged as a revolutionary

technology with vast applications, including advanced data analytics, personalized learning experiences, and streamlined administrative processes. Integrating AI into FAU's academic framework will promote innovative research collaborations, optimize resource allocation and will foster interdisciplinary cooperation. Investing in AI-driven initiatives will empower our faculty and students to explore new frontiers of knowledge, advance scientific discoveries, and excel in a rapidly evolving digital landscape. **Future internal partners may include:**

      i. College of Engineering and Computer Science
      ii. College of Business
      iii. College of Nursing
      iv. College of Social Work & Criminal Justice
      v. College of Arts and Letters
      vi. College of Science
      vii. College of Education

    b. External collaborations
      i. Other Florida Universities and Colleges
      ii. Other institutes and healthcare partners

IV.   Sustainability

    a. Extramural funding support routine expenses for the core in the long-term. Although reoccurring support will be essential, the fundamental expenses associated with the core should be off-set (at least in part) with extramural funding. However, as traditional extramural funding has waned in the past 10 years, in order for our institutions to remain competitive from an academic standpoint, regional (university general fund) and state investments will be essential.

      i. "The average medical school investment applied to externally supported research projects was an additional $0.53 for each dollar of sponsored research received. This amounted to an average investment of $111 million with a 95% confidence interval between $90 million and $132 million per medical school." Source: AAMC *Academic Medicine Investment in Medical Research, 2015,* n=46 medical school institutions.

      ii. From 2018 to 2021 the RO1 Success rate has decrease by 8% demonstrating the increased competition for NIH dollars.

      iii. The NIH salary cap has not kept pace with the market. The current average salary for a PI focused on AI is an average of $314,000, yet the current NIH cap for salary support is $203,700.

         1. NIH funding source: https://www.aamc.org/data-reports/interactive-data/iii-ten-year-trends

    b. Purchased services from external collaborators
    c. Focused philanthropy
      i. Example of Fairfax Wood endowment to support use of AI and nanotech in amyloidosis treatment
      ii. Example of DeSantis foundation to use AI in AD research and care

V.   Staffing and effort

    a. Director with deep expertise in AI, data science methodologies, and biomedical research
    b. Faculty (3) with expertise in AI and data science, and ideally with special expertise in one of the following:
      i. Basic science research
      ii. Translational research
      iii. Clinical Research
    c. Staff core of data analysts
    d. Advisory board to include ethics, meaningful use, equity expertise.

VI.   Future expansion potential to a Service Center as FAU healthcare grows in scope and operations

    a. Healthcare applications (examples)

   i. Personalized medicine: by considering individual patient characteristics. AI can assist in predicting drug responses, recommending tailored therapies, and improving patient outcomes.

   ii. Predictive analytics: by analyzing patient data and historical records, AI can identify individuals at high risk of developing certain conditions, allowing for early intervention and preventive measures.

   iii. Real-time monitoring for early warnings of patient care adverse outcomes

   iv. Matching patients seeking consultation with best-suited, available providers

   v. Improved diagnostics: As examples, AI can help identify abnormalities in mammograms for breast cancer screenings or detect lesions in lung scans for early detection of lung cancer.

   vi. Transcription assistance to improve efficiency and accuracy in documentation (electronic medical records) and healthcare workflows.

  b. Health care education applications

  c. Public Health applications

  d. Social Science applications

4.1 Space for new medical student expansion 37,230 gross square feet
4.2 Space for Mobile Medicine 25,000 gross square feet
4.3 Space for new Center for AI in Medicine 4800 gross square feet

	Facility Project Title	Fiscal Year	Amount Requested	Priority Number
1.	Space for new medical student/resident/graduate student expansion (37,230 sq ft lease)		$1,858,770	
2.	Space for Mobile Medicine (25,000 sq ft lease)		$ 925,000	
3.	Space for new Center for AI in Medicine (4,800 sg ft of leased space)		$ 177,600	

- ***Hub for Academic-Business Partnerships in digital health*** Located in FAU Tech runway, the "Center for AI in Community Medicine" will offer a nurturing ecosystem to support entrepreneurship in digital health in South Florida by providing a collaborative space in which data, content, and business experts can come together to accelerate the path from discovery to clinical implementation. A public-private partnership, Tech Runway includes a collaborative working space providing innovators with room to transform and grow their ventures from ideation to the scaling stage. This shared, community-driven location offers access to established and reputable businesses and service providers, who directly contribute to the entrepreneurial network. Tech Runway also works with forward-thinking philanthropic individuals and organizations that can catapult a company, its ideas and entrepreneurs to the next level of success, showcasing the region as a center of innovation.

These academic-business partnerships will provide real life training for our undergraduate, graduate, and health profession students in emerging field of digital health to align with the workforce. Growth in the technology sector, in general, is a clear priority for the State of Florida. More specifically, the Council of 100's Project Sunrise refers to the need to focus on "Information and Technology" as an occupational area

that is primed for growth. Furthermore, the report details Florida's gaps in terms of technological infrastructure. This AI/Data proposal would attend to both recommendations. In addition, the Florida Chamber of Commerce's Florida 2030: The Blueprint to Secure Florida's Future talks about the need to "introduce and develop Internet of Things, artificial intelligence, and other emerging technology within state, regional, and local infrastructure" (p. 9). Finally, as a Hispanic serving institution, there is a unique opportunity to contribute to a diversified workforce where roughly only 20% of workers in the AI and data sciences field are black or of Hispanic origin.

Finally, these alliances will serve as a hub to foster entrepreneurship in the digital health revolution. Market trends expect advanced wearable technologies, smart home and health sensors, and powerful analytics platforms to generate more than $120 billion in the current year. Bringing together the "Center for AI in Community Medicine", the newly launched "Center for SMART Health", and community partners in South Florida will enable state-of-the-art patient-centered and community-based health care. Affecting providers, patients, and insurers alike, this digital health care revolution will require deploying data-driven strategies which will in turn foster regional economic growth.

1.2 Addresses critical workforce shortages and changing needs in the healthcare industry In 2021, Florida had a total of 58,822 physicians at a rate of 273.9 physicians per 100,000 people, which was slightly over the median of states nationally (Figure 1). Florida is ranked 31/50 for primary care physicians with a rate of 88.5 physicians per 100,000 people and ranked 42/50 for general surgeons with a rate of 7 surgeons per 100,000 people (Figure 1)[2, 3]. Interestingly, only 13.1% of physicians in Florida are 39

Figure 1. Florida Physician Workforce Profile.

2019-2020				
State Population:	21,477,737	Total Female Physicians:	18,604	
Population ≤ age 24	5,993,235	Total MD or DO Students:	6,064	
Total Active Physicians:	58,822	Total Residents:	7,341	
Primary Care Physicians:	19,018			

For additional data, including maps and tables, please see the 2021 State Physician Workforce Data Report online at www.aamc.org/workforce

		FL	FL Rank	State Median
Physician Supply	Active Physicians per 100,000 Population, 2020	273.9	25	272.0
	Total Active Patient Care Physicians per 100,000 Population, 2020	246.5	21	239.8
	Active Primary Care Physicians per 100,000 Population, 2020	88.5	31	94.7
	Active Patient Care Primary Care Physicians per 100,000 Population, 2020	81.5	30	84.5
	Active General Surgeons per 100,000 Population, 2020	7.0	42	7.7
	Active Patient Care General Surgeons per 100,000 Population, 2020	6.1	42	7.0
	Percentage of Active Physicians Who Are Female, 2020	31.7%	39	36.1%
	Percentage of Active Physicians Who Are International Medical Graduates (IMGs), 2020	35.9%	3	19.7%
	Percentage of Active Physicians Who Are Age 60 or Older, 2020	38.4%	5	32.9%
	Percent of Active Physicians Who Identify as Asian, 2020	14.5%	23	13.7%
	Percent of Active Physicians Who Identify as Black or African American, 2020	5.9%	12	3.8%
	Percent of Active Physicians Who Identify as Hispanic, Latino or of Spanish Origin, 2020	15.8%	1	3.2%
	Percent of Active Physicians Who Identify as American Indian or Alaska Native, 2020	0.3%	34	0.4%
	Percent of Active Physicians Who Identify as Native Hawaiian or Other Pacific Islander, 2020	0.1%	26	0.1%
	Percent of Active Physicians Who Identify as Other Race/Ethnicity, 2020	2.9%	1	1.4%
	Percent of Active Physicians Who Identify as White, 2020	50.0%	47	67.3%
Undergraduate Medical Education (UME)	MD and DO Student Enrollment per 100,000 Population, AY 2019-2020 & 2020-2021	28.2	38	38.6
	Student Enrollment at Public MD and DO Schools per 100,000 Population, AY 2019-2020 & 2020-2021	14.5	31	21.5
	Percentage Change in Student Enrollment at MD and DO Schools, 2010-2020	75.6%	8	31.2%
	Percentage of MD Students Matriculating In-State, AY 2020-2021	58.1%	29	67.6%
Graduate Medical Education (GME)	Total Residents/Fellows in ACGME Programs per 100,000 Population as of December 31, 2019	34.2	23	32.7
	Total Residents/Fellows in Primary Care ACGME Programs per 100,000 Population as of Dec. 31, 2019	13.9	20	12.7
	Percentage of Residents in ACGME Programs Who Are IMGs as of December 31, 2019	32.2%	7	19.2%
	Ratio of Residents and Fellows (GME) to Medical Students (UME), AY 2019-2020 & 2020-2021	1.2	15	1.0
	Percent Change in Residents and Fellows in ACGME-Accredited Programs, 2010-2020	107.7%	4	24.4%
Retention	Percentage of Physicians Retained in State from Undergraduate Medical Education (UME), 2020	47.4%	10	39.7%
	Percentage of Physicians Retained in State from Public UME, 2020	50.7%	9	43.7%
	Percentage of Physicians Retained in State from Graduate Medical Education (GME), 2020	59.0%	4	45.1%
	Percentage of Physicians Retained in State from UME and GME Combined, 2020	78.8%	5	69.7%

State Rank: How the state ranks compared to the other 49. Rank of 1 goes to the state with the highest value for the category.
State Median: The value in the middle of the 50 states, with 25 states above the median and 25 states below (excludes the District of Columbia and Puerto Rico).
Due to changes in the Census data tables, population data was only available for ages ≤ 24, compared to ages ≤ 21 in previous reports.
* Data not shown, for states with less than 10 physicians.
— Indicated that category is not applicable because some states do not have data on this
N.R. = "Not Ranked"
Source: 2021 State Physician Workforce Data Report.Population estimates as of July 1, 2019 are from the U.S. Census Bureau (Release date: December 2019).

years old or younger, whereas 38.4% are 60 and older[2]. Thus, the workforce shortage will likely be exacerbated by a high retirement rate and low incoming rate of new physicians. Taking a further look at medical education rates, Florida ranks 38th out of 50 for undergraduate medical education (UME) student enrollment with an enrollment rate of 28.2 per 100,000 people. Despite the lower enrollment rate, 58% of enrollments consist of Florida residents suggesting a high retention rate. Additionally, Florida has a higher rate of residents and fellows in graduate medical education (GME) programs, suggesting that while more students seek UME in other states, students come to Florida for higher level training. About 47% of physicians trained in Florida remain and are active physicians, of these 50.7% came from medical schools and 59% came from residency and fellowship programs (Figure 1).

As an integral part of our community, FAU's COM has made valuable contributions to the physician workforce that has dynamically impacted and diversified the care of our communities. In recent graduating classes as many as 50% of our women and 30% or our historically under-represented medical students remained in Florida for their residency and fellowship training. Even more compelling an average of 50% of our graduated residents and fellows stay on to practice in our state. As our state's population grows, the COM's strong track record of training physicians that remain in Florida aligns with the charge to Florida's medical schools to grow our physician workforce.

Integrating AI within our UME will allow FAU to become even more competitive with medical schools all across the country. Over the next five years, we will further innovate the curriculum by incorporating new core competencies required for 21st century healthcare aim and train increased numbers of medical students and residents/fellows with these skill sets. To reach that goal, we will rely on strategic investments made possible through this LBR funding.

1.2A Enhancing medical and graduate curricula to promote requisite knowledge and skills in AI and medicine to practice and advance science in 21st century.

From the beginning, COM has offered an integrative curriculum combining "high tech, high touch" to produce highly competent, humanistic doctors. At the same time, we recognize firsthand how digital data is revolutionizing our understanding of patient and population health that has the potential to solve critical challenges to healthcare delivery. Due to the rapid expansion of AI, big data, remote monitoring, geocoding, social networking, and an increasing array of health apps, there is a compelling need to define AI-related clinical competencies for health care professionals. The recognition that future doctors must become experts in skills that are not currently emphasized in medical training identifies a critical need to expand medical education to better prepare doctors to practice 21st century medicine. Specifically, this LBR proposes to develop a future "physician and scientist toolkit", by leveraging existing

Figure 2. Florida Physicians' Toolkit.
Source: Stanford Medicine 2020 Health Trends Report.
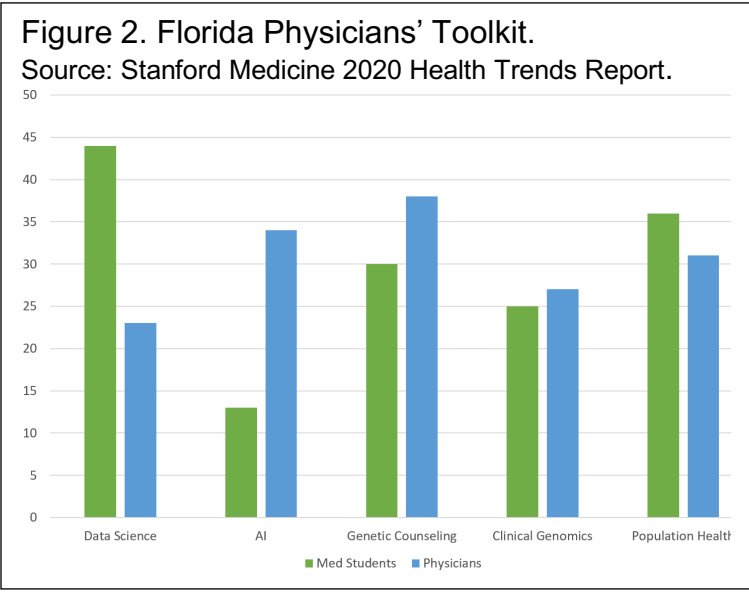
academic programs and
strategically expanding faculty efforts to develop a transdisciplinary curriculum for medical/graduate students, residents, and other health providers. Academic Medicine published an article in March 2023 defining the "Competencies for the Use of Artificial Intelligence–Based Tools by Health Care Professionals" as follows:

(1) basic knowledge of AI: explain what AI is and describe its health care applications;

(2) social and ethical implications of AI: explain how social, economic, and political systems influence AI-based tools and how these relationships impact justice, equity, and ethics;

(3) AI-enhanced clinical encounters: carry out AI-enhanced clinical encounters that integrate diverse sources of information in creating patient-centered care plans;

(4) evidence-based evaluation of AI-based tools: evaluate the quality, accuracy, safety, contextual appropriateness, and biases of AI-based tools and their underlying data sets in providing care to patients and populations;

(5) workflow analysis for AI-based tools: analyze and adapt to changes in teams, roles, responsibilities, and workflows resulting from implementation of AI-based tools; and

(6) practice-based learning and improvement regarding AI-based tools: participate in continuing professional development and practice-based improvement activities related to use of AI tools in health care.

As revealed by a recent national survey of medical students, residents, and doctors, there are high levels of interest but low levels of readiness to implement the technologies projected to have the most transformative potential for health care. Notably, 73% of medical students/residents and 47% of doctors reported the need for additional training to better prepare themselves for emerging innovations. These survey data further revealed the top five areas that need to be most urgently addressed, notably AI and data science; genomics, genetic counseling, and precision medicine; and population health (Fig. 2).

Through strategic investment made possible by this LBR, we propose to launch new academic programs in "Predictive, Precision, and Population Health" as one of the few in the country that is specifically designed to address these five competency requirements for future doctors and biomedical   scientists. Predictive models can address population health initiatives by identifying the most vulnerable patients and providing personalized solutions to maximize the quality, efficiency, and effectiveness of health care. Such models leverage multiple information sources, data driven technologies, and evidence-based interventions, but their successful implementation depends on a workforce with the requisite education and training to drive the questions and provide actionable recommendations.

Building upon COM's newly launched "Genomics and Predictive Health" graduate certificate for medical, master's and Ph.D. students, we will integrate AI and predictive analytics in community medicine into our innovative interprofessional curriculum and develop a doctoral program in "Predictive Community Health." The promise of predictive health derives from the recent explosion in "big data" which reflects the variety and volume of information that is now collected as part of routine patient care. By analyzing the past trends and patterns in the data, new causes for common diseases can be identified along with targeted treatments for individual patients. And, by leveraging the power of AI and machine learning, new ways of predicting, preventing, and managing diseases are now possible. At the time of its inception, this certificate was one of only two such programs offered within the State University System. While housed within the College of Medicine, the certificate leverages an interdisciplinary group of faculty throughout the university who contribute to its success. Recognizing the lack of

understanding of health providers and researchers is a major barrier to the implementation of a more proactive and personalized approach to population health, both medical and graduate students will have the opportunity to train in this emerging field through completion of an integrated set of genomics and predictive health courses. Moving forward, advanced degrees will further expand the programming to include additional coursework and practical experiences in data science, clinical investigation, and health systems implementation that will be integrated into the medical and graduate curricula as described below.

Undergraduate/Graduate Medical Education. Doctors and trainees alike show high interest to better understand how to apply AI in their practice. At the same time, they must also be able to shape how AI will play roles in the patient-doctor relationship, clinical decision-making, practice management and workflow. Instilling a foundation in AI and data literacy will be a critical skill for future physicians to accommodate such roles going forward. Accordingly, AI an*d* data science content will be integrated into the MD curriculum by layering content onto the existing foundational and clinical science courses, problem-based learning (PBL) patient case scenarios and providing medical students with the opportunity to conduct scholarly/research projects utilizing large, de-identified clinical database to ask real world questions. Further the *2019 National Human Genomic Research Institute (NHGRI) Training Task Force Report* cites a growing need for tailored curriculum development for doctors that develops the requisite genomic competencies that will become part and parcel of personalized medicine and patient care. Likewise, the *NHGRI Genomic Literacy, Education, and Engagement Initiative* reports similar shortages of other genomics competent health providers (e.g., counselors, nurses). Future generation of scientists will also need a solid grounding in AI, data analytics, and omics-based approaches to teach future generations of medical students and conduct patient-centered research. To this end, the LBR proposes to reimagine medical education by incorporating a "big data" literacy component necessary for all our health science students to inform clinical decision making.

1.2B <u>Increasing medical student class size</u>.

In 2020, COM earned full LCME re-accreditation for the maximal window of 8 years, a particularly impressive feat for a new medical school. The feedback received from the accrediting body reported several notable strengths, including our "high tech, high touch" curriculum and the valuable contributions of our graduates who return to practice medicine in South Florida. Our medical education program has received accolades for its early engagement of trainees in community-based clinical settings and interacting in small group sessions that instill problem-solving, critical thinking, and collaborative learning skills that are essential for doctors practicing today.
　　Despite the many strengths, COM has experienced a flat budget for over ten years with increasingly challenging inflationary pressures. The school has continued to innovate and produce a small cadre of well-trained graduates. Moreover, attesting to demand, this past year saw the highest ever number of applications with nearly 100 applicants for each spot in our medical school class. With the next accreditation cycle several years away, we believe now is the perfect time to invest the resources into growing the class size and redesigning the curriculum to better prepare doctors to practice 21st century medicine, including in effective use and implementation of AI.

Through strategic investments from this LBR, the necessary expansion of key faculty

and space will ensure our continuing success in performance metrics and LCME accreditation.

		Increased Numbers Dependent on LBR Funding					
	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29
M1	67	72	80	80	88	96	104	104
M2	64	67	72	80	80	88	96	104
M3	64	64	67	72	80	80	88	96
M4	64	64	64	67	72	80	80	88
Total Students	259	267	283	299	320	344	368	392

Accordingly, COM will expand the number of high quality, well trained medical students graduating from our program to meet the needs of a rapidly expanding and aging population of Florida and healthcare workforce shortages. Last spring, we successfully received approval from the LCME to expand to 72 students for AY 2022-2023. With the $5 million recurring operational funds received by the Florida Legislature this year, we will now be able to move forward with expansion to 80 matriculated students for AY 2023-2024. The AY 2023-2024 program encompasses 283 medical students with projected growth to 392 trainees over the next five years. These students will not only aid in resolving our workforce needs in the state, but will also be educated with this new curriculum to provide data driven efficient healthcare in our communities. Additional faculty and staff resources as well as space will be needed to maintain the high-quality problem-based learning curriculum that develops critically thinking future physicians who learn team-based and interdisciplinary practices. Increasing research development and opportunities in our undergraduate medical education program will further engage and train our learners to be well positioned for the quickly evolving healthcare landscape. Expanding our curriculum to include innovative training in the key competencies that need to be obtained to optimize the use of AI in the healthcare system to improve outcomes and increase access will ultimately serve FL's ongoing concern of physician shortage and access to healthcare. Given our retention rates to date, this could provide a near doubling of new doctors in our Florida communities beginning in FY 2028-29. Of these, one third are expected to go into primary care.

1.2C Expanding breadth of residency and fellowship programs.

The College of Medicine's Consortium for Graduate Medical Education (GME) consist of eight leading hospitals in Palm Beach County and with five Accreditation Council for Graduate Medical Education (ACGME) accredited residencies including internal medicine, surgery, emergency medicine (EM), psychiatry, and neurology and five fellowship programs including Hospice and Palliative Care, Cardiovascular Disease, Vascular Surgery, Pulmonary & Critical Care, and Geriatrics. The current programs include 177 residents and fellows with a plan to increase by another 25% with strategic investment from this LBR. To ensure that we are able to actualize our plan in community health and to further FAU's commitment to increase much needed medical residency positions in Palm Beach County, as part of this LBR funding request, the GME programs will be expanded to increase the supply of specialty and subspecialty trained physicians to meet the growing demand for a workforce with increasing knowledge of and ability to care for complex patients including in the out-of-hospital setting. LBR funding will allow for trainee and student stipend and successful recruitment of faculty to lead these efforts. Specifically, we will expand our EM residency and offer EM based fellowships. We will recruit addiction psychiatry and pain management fellows and faculty to lead these fellowships. Further in light of

maintaining independence and adding quality to life in our patient population, we will initiate a physical medicine and rehabilitation (PMR) residency. Additionally, each fellowship program will graduate 1-3 fellows per year, who will be prepared to enter the workforce locally. Currently, 50% of our residents/fellows remain in Florida.

Emergency Medicine Residents/Fellows

The EM residency program will be expanded from 6 to 8 residents per year to provide added workforce in community paramedicine and to provide a stream of physicians for our proposed fellowship programs. This year, there was a substantial reduction nationally of students pursuing emergency medicine likely due to the ramifications of the pandemic with an unprecedented 555 open positions at the end of Match week. Florida was one of the states with the most unfilled positions. In contrast the strength of our program was evident by a full complement of residents and over 10% of our medical school graduates pursuing a career in the field. To build upon this strength, EM based fellowships are necessary to attract the best and the brightest. The LBR will allow for creation of these opportunities in the areas of emergency medical services. The additional residents, fellows and faculty will be integral to patient care. Fellowships are described as below:

Emergency Medical Services (EMS) Fellowship. The EM residency program will be expanded to provide a pipeline into a new *EMS fellowship program*, which will be designed specifically to train emergency medicine physicians to develop expertise in prehospital medicine. EMS-trained physicians elevate prehospital care by bringing evidence-based medicine and data-driven decisions to care mostly provided by EMTs and paramedics. Additionally, EMS physicians oversee the emergency dispatch process, whereby decisions are made about which 911 calls need which resources. The EMS fellow will work closely with the medical directors of local EMS agencies across Palm Beach County, Broward County, and Martin County.

Addiction Psychiatry Fellowship. This program would bring a lot of value to our community in Florida given the ongoing opioid crisis within our state amidst the national epidemic and the recognition that there is a lack of resources to adequately treat patients with substance use disorders. This fellowship will be the first step in a process of building a framework to properly treat and refer these patients for continued care. It will also serve to attract subject matter specialists in the fields of addiction psychiatry and addiction medicine to serve as faculty, work clinically, and synergize with our ongoing research initiatives. We have an existing psychiatry residency program and faculty trained in addiction medicine.

Pain Medicine Fellowship. This program will focus on how to best care for patients with acute and chronic pain, including prevention of opioid addiction cycle. The fellow will learn the medical, interventional, physical, and behavioral aspects of pain medicine. We have an existing neurology residency program and faculty trained in pain medicine.

Physical Medicine & Rehabilitation (PM&R) Residency training program. Physiatry plays an important role in the post-acute care (PAC) to promote the functional recovery of older adults, such as the growing demographics of Florida, prevent unnecessary hospital readmissions, and avoid premature admission to long-term care facilities. It is one of the newer subspecialty areas of medicine that focuses on functional independence and quality of life.

Proposed increases in GME Programs

| | | | Future Years - Increased Numbers Dependent on LBR Funding | | | |
| | Current | | | | | |
Program	FY23	FY24	FY25	FY26	FY27	FY28
Emergency Medicine Residents	18	18	20	22	24	24
Emergency Medicine Related Fellowships			3	3	3	3
Physical Medicine & Rehabilitation Residents			6	12	18	24
Addiction and Pain Management Fellowships			2	2	2	2
Total Residents/Fellows	18	18	28	33	38	41

1.2   Transforming the community care model to foster an innovation economy

This program will come full circle by providing the necessary funds to foster an innovation economy in healthcare. As one of fastest growing states in the nation, Florida ranks 41st in healthcare delivery (https://www.census.gov/programs-surveys/decennial-census/decade/2020/2020-census-results.html), which represents both a major drain and a large barrier to economic growth. Notably, this creates an opportunity for FAU to lead the charge in South Florida to launch a "Center for AI and Community Medicine" which will become a talent hub and attraction for businesses and employers interested in joining the digital health revolution in Palm Beach and surrounding counties. And, driving the digital healthcare sector can further diversify Florida's economy which was hard hit by the pandemic through lost tourism. Finally, the proposed expansion of FAU Medicine into the mobile/prehospital medicine arena will transform the community care model by reducing unnecessary hospital admissions and readmissions, which in part are responsible for unnecessary healthcare expenditures. Further FAU Medicine Mobile Health may limit the fragmented care that is a major barrier to higher quality and lower cost care. As these interventions are based on healthcare data analytics, we aim to educate the healthcare workforce of tomorrow in these techniques as well as healthcare. The lack of professionals with data analytics training and critical thinking skills are the biggest barrier to adoption of AI and predictive analytics in healthcare Altogether, this LBR will provide needed resources for AI and data science academic programs to engage and enhance training of health professional workforces necessary to realize promise of 21st century medicine by investing in key faculty hires, graduate student stipends, and workforce development with substantial returns on investment, including a growing body of literature showing a strong relationship between information exchange systems and improved health outcomes, quality outcomes and provider/patient satisfaction[7], which are all major generators of revenue over time.

1.3 A   By developing FAU Medicine Mobile Health as a model for team-based and data-driven care with emphasis on mobile/prehospital medicine. In the current healthcare model, fragmentation of care represents a major impediment and highlights the overriding need for better coordination, in-home monitoring, and care management across the spectrum. Key to developing this futuristic model is bringing together interdisciplinary teams capable of leveraging new technologies and deploying data driven strategies to deliver more personalized care and attenuating issues before they lead to hospitalization. This transformation in the care continuum is seen as the next step in dramatically improving essential healthcare in our region. As a first step, we propose to utilize the strengths of the existing Emergency Medicine program to develop and pilot the application of data driven approaches in the field of mobile health and prehospital medicine. Working with psychiatry, physical medicine and rehabilitation and geriatrics will broaden the scope with existing strengths. Our accrediting bodies have noted the strength of our geriatrics student experience and fellowship program. The interface between emergency services and geriatrics at FAU has already resulted in a number of publications and grants. With a nationally recognized, interdisciplinary team in chronic pain and substance use disorders led by Dean Julie Pilitsis, the fundamental building blocks for our vision are in place.

Mobile Health /Prehospital Medicine

Mobile medicine or Mobile Integrated Healthcare (MIH) allows for patient-centered, innovative delivery of needs-based care in the patient's home or mobile environment. MIH offers a novel and emerging approach to coordinating care, reducing unnecessary

medical spending, and improving quality. For South Palm Beach County, this fills a need that is not being captured, made increasingly evident throughout the pandemic. Many of the citizens are elderly with complex medical conditions were hospital visits and admissions are more problematic than helpful and thus should be reserved for cases where the patient truly needs this level of care. Studies suggest that approximately 15% of all Medicare beneficiaries transported to the emergency department (ED) by emergency medical services (EMS) were either nonemergent or emergent and primary care treatable, costing approximately $1 billion per year. Additionally, unplanned rehospitalizations cost Medicare $26 billion annually, with an estimated $17 billion spent on potentially avoidable readmissions. Emergency, urgent, or unplanned care also is often disconnected from the patient's ongoing health care management, resulting in additional financial burden related to duplicate testing, an increase in the risk of medical errors, and a lack of communication and coordination between care teams and settings. MIH interventions have the potential to close some of these gaps while decreasing cost and improving patient experience.

The practice will initially serve the City of Boca Raton, with a population of 101,000. As demand for the services increase, the program will also be available throughout Palm Beach County, with a population of 1.5 million. Specifically, we will work with Boca Raton EMS and Fire to determine how to best utilize our 911 triage system and EMS response team. Experts in FAU College of Business will aid in data-driven models to inform best practices for triage and ultimately for care that can be delivered at home or in the mobile environment. Previous literature has shown efficacy when using decision tree modeling structure for diagnostics. Due to nature of our mobile health care, diagnosis will be crucial to inform next steps, however, we will not have a fully equipped emergency room. Such models can be applied to our system to effectively diagnose patients using cost-effective and efficient methods. Additional health economic model software has been created by Daniel Pollard and Gordon Fuller to assess major trauma triage. This software can serve as a foundation as we create our model to better fit our needs. Healthcare economics models will be created using the expertise of Paul Sergius Koku and Sharmila Vishwasrao, with the help of Ravi Behara, a specialist on AI in healthcare.

The FAU Medicine Mobile Health team will be overseen and led by physicians and additionally composed of registered nurses, paramedics, EMTs, nurse practitioners, physician assistants, social workers, and students of all disciplines. With physician oversight, the team will provide direct and virtual care of patients, including evaluation of acute and chronic medical and psychosocial complaints. Teams will perform screening exams to determine patient acuity and triage patients to appropriate settings. Services provided by the team will include acute home health visits, performance of minor procedures, medication reconciliation, home/living condition evaluations, psychological crisis stabilization, psychosocial need evaluations, and child/family services. Telehealth will be utilized as needed. FAU College of Nursing and Social Work are fully supportive of this initiative and planning sessions with Deans George, Luna and Pilitsis are underway.

Ultimately, FAU Medicine Mobile Health will act as a liaison between EMS agencies, our hospital partners, and additional community resources in providing prehospital care outside of emergency response. The practice will intervene when requested for both patients seeking healthcare for problems not warranting acute hospitalization, as well as patients who may need assistance with chronic diseases in the prevention of hospitalization. The practice will engage with its community partners to establish referrals to this program. Referral sources will include hospitals, EMS providers/fire departments, physicians, social service agencies, and patients themselves. Similar

programs have been established at neighboring schools such as Florida International University (FIU) in Miami and University of Florida (UF) in Gainesville. FIU has partnered with Baptist Health South Florida to launch the Neighborhood HELP program in which medical, nursing, social work, and physician assistant students deliver household-centered primary care services. Analysis of outcomes revealed that this initiative has been very valuable to the community. Specifically, in the first 6 years of the program, 7,452 visits were conducted at 848 households. Additionally, in the first two years alone, use of preventative care increased, and use of emergency room decreased as a result of these visits. Not only did households receive free health and social services, but graduating students reported more experience with health disparities and clinical interprofessional education and were rated highly by residency programs for cultural sensitivity, teamwork, and accountability. UF developed a similar program called the Mobile Outreach Clinic (MOC) which serves the medically under-served and low-income community in rural areas in and around Alachua county. However, these programs differ from our proposal in that they provide mobile primary care and the MOC still requires patients to travel. Our proposal echoes the multidisciplinary nature but rather serves to address fragmented care around hospital admission and ED visits.

Such a model will allow us to increase access to care for a growing population where medical facilities have been unable to keep up. Further as workforce shortages especially in nursing but also in physicians escalates in Florida, this multi-disciplinary approach will aid in revamping who delivers care and how it is delivered through interprofessional collaborations while maintaining scope of practice for all involved. According to the Bureau of Labor Statistics employment of healthcare clinical social workers is projected to grow 13 percent from 2020 to 2030. Healthcare clinical social workers will continue to be needed to assist patients and their families adjust to new treatments, medications, and lifestyle. FAU Medicine Mobile Health will fill in the gaps in the healthcare system and establish continuity of care by working with EMS and hospital partners to enhance and supplement existing healthcare delivery throughout the community. This program will decrease burden on the 911 system, saving resources of fire departments that provide EMS care. The program will furthermore decrease preventable readmissions and save hospitals money on observation visits. The FAU College of Business will aid the team in assessing where the greatest cost-saving opportunities lie. Further, they will determine how revenue can best be generated in order to create financial sustainability. These data will be shared with all stakeholders regularly to continue forward momentum of this community-based project. The program will be implemented as below:

Phases of Implementation

1 - Fellowship creation and residency expansion. EMS, clinical informatics, simulation, addiction medicine, physical medicine rehabilitation and pain management. Workforce: physician program director for each fellowship, physician core faculty members, program coordinators.

2 - Hospital follow-up to prevent readmission. Geographics: City of Boca Raton. Workforce: physician team leader with nurse, social work and paramedic team. Identification of appropriate patients and interventions to be targeted through data analytics from the state of Florida's Biospatial Database. These data can be augmented with partnerships with our hospital networks who already work with us in the GME consortium. Our AI data analytics team developed through this LBR will partner with experts currently working in FAU COECS and Business.

3- Integration of 911 to prevent unnecessary hospital transports. Geographics: City of Boca Raton. Workforce includes a nurse and paramedic team to evaluate patients for the acute problem for which 911 was called, along with telehealth consultation by a physician team leader. Data analytics will be used to identify patients not in need of acute hospitalization, with intervention performed eliminating need for EMS transport. Our focus groups suggest that the main needs are in addiction medicine, psychiatry and physical medicine and rehabilitation. The proposed LBR funding includes leasing of space to provide these services with our new and existing faculty/partnerships.

4 -Services for care- The LBR will allow funding of FAU MobileHealth vans to serve the community and provide assessment and basic services. These vans will have electronic medical records that are linked to our internal system.

1.3 B   By leveraging this model as a hands-on platform for interdisciplinary training. Physicians are but one part of developing the healthcare workforce that will be required to address the growing and complex needs of our communities. The labor market forecast shows significant employment demand in healthcare and computer/information services in the coming years. Specifically, registered nurses have a projected growth rate of 13% over the next 10 years. However, in Florida, only 5% of students complete a registered nursing degree. Similarly, healthcare administration is projecting a 37.5% growth rate over the next 10 years, but there is a declining conferral rate and a projected occupational gap. And, even lower proportions of new graduates in these areas have a working knowledge of the myriad applications of AI and data analytics in medicine. Further, healthcare, business/finance, IT/math, and engineering are four areas showing promise of advanced wages and long-term resiliency, however they only represent 32% of all job postings in Florida. In this regard, there is a compelling need for new educational programs that offer immersive and practical experiential learning in a team-based venue. This is a central tenet of our FAU Health Network initiative as our healthcare workforce can and should learn some of these applications together, supporting teamwork from the beginning of their education.

Within the educational programs offered by FAU's Colleges of Medicine, Nursing, and Social Work, the unique opportunity exists to integrate learners in the FAU Medicine Mobile Health practice. Physician, nurse, and social worker members of the Mobile Health team will serve as clinical preceptors to students. Rotations will be established into the existing curricula, integrating students and adding human resources into the care teams. The clinical practice will serve as a training ground for increased EM and PMR residents and for EMS, Clinical Informatics, Simulation, Addiction Medicine, and Pain Medicine fellows. While faculty members will be leading patient care, fellows will be learning the specific subspecialties. A model will be created to develop a pipeline of multidisciplinary learners to go from trainees to new clinicians who will immediately be able to work within FAU Medicine Mobile Health.

The Clinical Skills Simulation Centers (CSSC) operated by FAU College of Medicine is a premier venue for providing training interdisciplinary teams through the use of state-of-the-art patient care simulation experiences. Using high-tech facilities and realistic training environments, the centers provide healthcare simulation for medical students, residents, registered nurses, nursing students and emergency response healthcare providers. Hands-on simulation as well as professional certifications in Basic Life Support (BLS), Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS) and Advanced Trauma Life Support (ATLS) assists both individuals and teams to develop awareness and acumen to improve critical thinking, real-time communication, teamwork and collaboration to address urgent and emergent issues.

Hundreds of customizable scenarios have been developed, requiring novel responses from participants. High fidelity mannequins including adult male and female, pediatric, neonatal, and obstetrics birthing mannequins respond to pharmacology, ventilation, and other treatments. The latest scenarios introduce trainees to telehealth. The CSSC has also been at the forefront of providing interprofessional education experiences, bringing together trainees from social work, nursing and medical schools to learn how to work together to manage patients' conditions.

Since its inception in 2006, the CSSC has provided training to more than 10,000 healthcare providers, including 42 of FAU's Emergency Medicine (EM) residents, 84 of FAU's General Surgery residents and 225 of FAU's Internal Medicine residents. Healthcare providers and trainees from other institutions include HCA Southeast Division; HealthTrust/HCA; local nursing schools; Palm Beach County Graduate Medical Education Consortium; Morse Life Health Systems, Manor House, among others. Additionally, the CSSC has had contracts with local fire and rescue units. Many facilitators employed by CSSC are former or current active Emergency Medical Technicians (EMT).

In particular, the CSSC provides training for EM residents focused on critical decision making, communication, high acuity, low opportunity procedures and presentations, crisis resource management and disaster response. Many of these skills would be very challenging to effectively train without the simulation center. FAU's residents enjoy this form of training because they are able to apply best practices in medical education, including small group and hands-on training. Ultimately, they practice leadership and communication strategies that improve their ability to practice, prepare and analyze every aspect of emergency medicine. Simulation training can be applied to multiple different arenas, including virtual reality, augmented reality, mobile healthcare, telehealth and numerous other future residency training requirements. As educational needs change, the simulation modality should also be changed to help meet that need.

Both the CSSC and COM IT have begun pursuing augmented and virtual training modalities with vendors and faculty to bring training for all disciplines to the next level. Using virtual reality, scenarios have been created to introduce students to difficult patient encounters in end-of-life situations and with blind patients. There is great promise in using AR and VR in the anatomy/morphology curriculum as well as in the simulation curriculum. Ultimately, AR and VR will be important in the delivery of clinical services to patients and these pioneering efforts will further inform the deployment of data-driven strategies related to accessibility, quality, and value of healthcare to foster economic growth (1.3C). Our proposed advances in patient care and delivery across the community health spectrum can be expected to accelerate the shift from volume-based to value-based healthcare that is more personalized and convenient for patients, is optimized for patient outcomes, and reduces healthcare costs. In developing this innovative model, FAU will become a hub for a whole range of businesses at the crossroads between digital data, remote monitoring, and healthcare delivery to further diversify the local economy. And, operating at this intersection will further leverage academic- private-public collaborations to drive an innovation economy and establish FAU and its Tech Runway as a model for such engagement in South Florida.

- *FAU Tech Runway*. FAU Tech Runway is FAU's Start-up Incubator and Accelerator program that provides an infrastructure and programming for student-, faculty/community- and community-led entrepreneurship resulting in small businesses. The trademark "Venture Class" includes mentoring,

introductions to early-stage capital, grants and seed funding. Programming focuses on providing the tools necessary to become successful entrepreneurs that are provided in a rigorous bootcamp. Further, the program provides access to business and technology events, allowing networking within the regional innovation environment. Through the "Launch Competition", the program accepting applications into the Venture Class, participants are screened for their likelihood to benefit in this program. Interwoven into the Venture Class is the NSF-iCorps approach that enforces customer discovery to improve the entrepreneurial outlook and product development. The FAU Wave student entrepreneurial program provides young entrepreneurs an opportunity to develop ideas before making the commitment of creating a company. This program serves as a feeder program to the Venture Class. Lastly, all participants in the Venture Class have access to a "Tech Runway Investor Network", are encouraged to give pitch presentations to this network in an effort to secure funding for their idea.

- *Palm Beach Life Sciences Cluster.* The Palm Beach Life Sciences Cluster is home to 200 biotech companies involved in the research/ development and manufacturing of medical devices, pharmaceuticals, and biotechnologies. The Cluster is conveniently located near the nation's top healthcare systems facilitating business development from "bench to bedside". Companies in this group are supported by academic partnerships with top institutions like FAU, COM, Scripps Florida Research Institute, and the Max Planck Florida Institute. Palm Beach County's central location among world-renowned research institutions and universities allows for collaboration with internationally recognized research institutes to explore a variety of fields.

II. **Return on Investment -** *Describe the outcome(s) anticipated, dashboard indicator(s) to be improved, or return on investment. <u>Be specific.</u> For example, if this issue focuses on improving retention rates, indicate the current retention rate and the expected increase in the retention rate. Similarly, if the issue focuses on expanding access to academic programs or student services, indicate the current and expected outcomes. University of Distinction proposals should also address the requirements outlined in the separate guidance document.*

The Return on Investment (ROI) will be measured through metrics that are directly related to the key goals of this LBR request. Specifically, the ROI will be assessed by progress toward the objectives and key performance targets set forth in FAU's Strategic Plan: Race to Excellence, as well as COM's Strategic Plan. With their implementation, both FAU and COM have established robust tracking systems for measuring progress toward their synergistic goals, using institutional data alongside statewide and national benchmarks. Through the strategic investments made possible by this LBR request, we anticipate substantial impact in terms of attaining national excellence, expanding the number, core competencies, and success of our medical/graduate trainees, broadening faculty expertise in emerging areas of precision medicine and community health, improving our research productivity, and fostering an innovation economy.

2.1 Enhancing the State of Florida's reputation for research and excellence
Despite the fact that Florida is the third most populous state in the country, the state only ranks 9th in federal research expenditures ($1,626,712 in 2020), 33rd in industry R&D expenditures ($26,548 in 2020) (https://www.nsf.gov/statistics/2018/nsb20181/data) and 11th overall with 2020 expenditures totaling $2,727,590. The responsibility for positively impacting this figure has fallen on the backs of a select few preeminent institutions, as well as those that are designated as very-high research institutions in terms of their Carnegie Classifications by the Center for Postsecondary Research. This plan thrusts FAU forward from its current designation as a high research institution, helping the state with its standing in research funding, and stimulating the economy as it does so. The National Institutes of Health (NIH) estimate that every "$1.00 increase in public basic research stimulates an additional $8.35 of industry R&D investment after 8 years" (https://www.nih.gov/about-nih/what-wedo/impact-nih-research/our-society). With the 2025 target of FAU reaching $200 million in research expenditures, the university projects that its efforts to expand its research enterprise will result in approximately $1.4 billion impact in private sector R&D by 2033. This particular formula does not take into account the economic impact of the increased numbers of degrees awarded at a more efficient pace, or the likewise precipitous rise in the region's tertiary economy that supports the university, its employees, and its students.

2.2. Increasing Florida's healthcare workforce
An increase in Florida's healthcare workforce will not only provide more jobs to Florida residents but will also bring more healthcare to Florida society. Further, with a larger workforce, facilities can increase their daily patient load while reducing physician burnout and higher costs. Currently, Florida has the second lowest number of primary care physicians and lowest number of general surgeons even as the older average age of Florida residents demands more physicians and increased healthcare utilization. By increasing the number of available physicians, primary care offices will be able to serve a greater number of patients and families. Lack of sufficient primary care increases the utilization of higher cost specialty care. This transition to specialty care occurs either because of access or by disease progression due to delay in care. Physician burn-out may result. Ultimately, we expect our plan to offer significant ROI by increasing the

availability of physicians and healthcare analytics experts subsequently increasing patient load per medical facility. In addition to physicians, the LBR includes an interprofessional component designed to similarly increase the number of nurses, social workers, and other healthcare professionals.

2.3 Transformative healthcare delivery model with associated metrics showing improved value and/or quality of care for chronically ill, elderly, underserved populations
Similarly, we expect this transformative healthcare delivery model to reduce costs to patients and medical institutions by eliminating unnecessary admissions and readmissions and reducing provider time. Our mobile healthcare approach will be equipped with state-of-the-art equipment capable of efficient diagnosis to inform future care. We intend to eliminate the need for patients to travel to office visits, a factor which often deters patients of low socioeconomic status and those who rely on others for transportation from going to the doctor. The elderly tends to do better at home than in a hospital and when possible treating patients where they live is ideal. Additionally, this proposal aims to expand use and education of AI and data science in healthcare to ultimately improve health outcomes, quality outcomes, and provider/ patient satisfaction, all major generators of revenue over time.

2.4 Economic benefits including growth and diversification and increased interaction with top 8 employers of FAU graduates in the community
This plan aims to foster development of new technologies that will contribute to the vast biomedical industry already established in Palm Beach County. Introduction of new companies will provide revenue for the county and state as a whole by attracting new businesses and employers looking to join the digital healthcare revolution and thus diversifying the workforce. Partnerships with world-renown institutions and top 8 employers of FAU graduates (including many hospitals and biotech companies) will raise awareness and attraction to the FAU community and increase funding from grants and investments.

III. **Personnel –** *Describe personnel hiring and retention plans, making sure to connect both plans to initiative(s) and goal(s) described in section I. State the amount of faculty FTE and staff FTE and estimated funding amounts used for retention and new hires in each category. In describing faculty hires, provide overall hiring goals, including academic area(s) of expertise and anticipated hiring level (e.g. assistant professor, associate professor, full professor. Please describe how funds used for faculty or staff retention will help the institution achieve its stated goals. University of Distinction proposals should clearly note how anticipated hires or retained individuals will help the institution elevate a program or area to national or state excellence.*

3.1 Faculty Hiring Plan. This initiative is requesting $11,202,642 of funding for 52.29 (FTE) for new faculty. This 52.29 FTE includes 70% at the Assistant Professor rank and 30% at the Associate Professor ranking. Consistently, studies show that an investment in people rather than buildings produces a greater return on investment. Increased faculty is needed to support the expansion of the medical school class size. In addition, targeting new hires in emerging areas of AI, data science, precision medicine, and population health will help to attract high quality students, provide new core competencies for 21st century medicine, and raise the national reputation of our multi-faceted academic programs. New faculty hires will also aid in the production of research to develop practical solutions for a new workforce that seeks to provide more personalized care to residents within our communities including non-traditional

settings.

Table 3: Proposed Faculty Hires

FTE	Positions	Amount Requested for New Hires (salary & f.b.)	Goal Alignment
3	Healthcare Analytics	$ 858,000	Degree attainment in areas of strategic emphasis; Research productivity; Healthcare innovation and delivery; Center for AI in Community Medicine
3	Precision Medicine	$858,000	Degree attainment in areas of strategic emphasis; Research Productivity; Healthcare innovation and delivery; Center for AI in Community Medicine
3	Population Health	$858,000	Degree attainment in areas of strategic emphasis; Research Productivity; Healthcare innovation and delivery; Center for AI in Community Medicine
2	Sensor Engineers	$ 455,000	Mobile Health; Sensor Technology for Home
2	Software Engineers	$ 455,000	Mobile Health; Sensor Technology for Home
7	Nurses	$ 910,000	Mobile Health/Mobile Integrative Health
3	Physicians	$ 780,000	Mobile Health/Mobile Integrative Health
7	Social Workers	$ 819,000	Mobile Health/Mobile Integrative Health
2.50	GME Faculty	$ 162,500	New Fellowships/ Medical Workforce Growth and Data Skills Enhancement - Graduate Medical Education
2.17	GME Faculty	$ 619,667	PMR Residency/ Medical Workforce Growth and Data Skills Enhancement - Graduate Medical Education
7.50	UME Faculty	$1,950,000	Medical Workforce Growth – Medical Students
.75	Department Chair	$ 243,750	Medical Workforce Growth – Medical Students
.75	Assistant Librarian	$ 54,600	Medical Workforce Growth – Medical Students

.75	Care of the Underserved	$ 195,000	Medical Workforce Growth – Medical Students
.75	Sim Center Coordinator	$ 53,625	. Medical Workforce Growth – Medical Students
1.50	Research Mentors	$ 448,500	Medical Workforce Growth – Medical Students
.375	Thread Director	$ 97,500	Medical Workforce Growth – Medical Students
1.875	Clerkship Directors	$ 487,500	Medical Workforce Growth – Medical Students
.75	FOM Course Director	$ 195,000	Medical Workforce Growth – Medical Students
.75	Basic Science Course Director	$ 195,000	Medical Workforce Growth – Medical Students
.75	Assistant Dean UME	$ 219,375	Medical Workforce Growth – Medical Students
.75	Assistant Dean OSA	$ 190,125	Medical Workforce Growth – Medical Students
.375	ASC Faculty	$ 97,500	Medical Workforce Growth – Medical Students

3.2 Staff Hiring Plan. This initiative is requesting $5,558,937 of funding for 53.21 (FTE) for new staff. To increase bandwidth in AI/data science in medicine, funds are requested to hire two data scientists to support key research and educational initiatives. To support increases in MD and PhD degree production and the associated faculty expansion, additional funds are requested to support the new programming.

Table 4: Proposed Staff Hires

FTE	Positions	Amount Requested for New Hires (salary & f.b.)	Goal Alignment
2	Data Scientists	$ 572,000	Center for AI
7	Informatics Specialists	$ 938,000	Center for AI
5	Fellowship	$ 544,410	New Fellowships/ Medical Workforce Growth and Data Skills Enhancement - Graduate Medical Education
5	EM Residency	$ 575,784	EM Residency/ Medical Workforce Growth and Data Skills Enhancement - Graduate Medical Education
12	PMR Residency (Residents)	$1,151,568	PMR Residency/ Medical Workforce Growth and Data Skills Enhancement - Graduate Medical Education
1	PMR Residency (Staff)	$ 134,000	PMR Residency/ Medical Workforce Growth and Data Skills Enhancement - Graduate Medical Education
1	Curriculum Coordinator CQI	$ 55,275	Medical Workforce Growth – Medical Students
1	Curriculum Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	Faculty Affairs Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	HR Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	Communications/Marketing Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	Finance Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	Medical Student Research Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	DEI Asst Director Expand Pathways and Mentoring	$ 80,400	Medical Workforce Growth – Medical Students
.375	Legal Affairs	$ 50,250	Medical Workforce Growth – Medical Students
.75	Department Coordinator	$ 45,225	Medical Workforce Growth – Medical Students

.75	IT Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	Ed Tech Specialist	$ 65,325	Medical Workforce Growth – Medical Students
.75	Care of Underserved Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	M1/M2 Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	M3 Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	M4 Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
.75	Service Learning Coordinator	$ 55,275	Medical Workforce Growth – Medical Students
1.5	Assessment Coordinator	$ 110,550	Medical Workforce Growth – Medical Students
.75	Admissions Asst Director	$ 75,375	Medical Workforce Growth – Medical Students
.75	Admissions Coordinator	$ 50,250	Medical Workforce Growth – Medical Students
.75	OSA/Pre-Matriculation Coordinator (+VSAS)	$ 50,250	Medical Workforce Growth – Medical Students
.75	Learning Specialist Assoc. Director	$ 120,600	Medical Workforce Growth – Medical Students
.75	Tutoring Prog. Coordinator	$ 50,250	Medical Workforce Growth – Medical Students
.75	Financial Aid Asst Director & Asst Registrar	$ 80,400	Medical Workforce Growth – Medical Students
.75	Counseling PhD	$ 90,450	Medical Workforce Growth – Medical Students
.75	Compliance Coordinator	$ 55,275	Medical Workforce Growth – Medical Students

IV. **Facilities** (*If this issue requires an expansion or construction of a facility, please complete the following table.*):

NA

2024-2025 Legislative Budget Request
Education and General
Position and Fiscal Summary
Operating Budget Form II
(to be completed for each issue)

University: **Florida Atlantic University**

Issue Title: **Applying Artificial Intelligence Across the Community Health Continuum**

	RECURRING	NON-RECURRING	TOTAL
Positions			
Faculty	52.29	0.00	52.29
Other (A&P/USPS)	53.21	0.00	53.21
	-------------	-------------	-------------
Total	105.50	0.00	105.50
	=========	=========	=========
Salaries and Benefits	$11,761,579	$0	$11,761,579
Other Personal Services	$0	$0	$0
Expenses	$2,702,655	$2,200,000	$4,902,655
Operating Capital Outlay	$0	$4,644,394	$4,644,394
Electronic Data Processing	$450,000	$0	$450,000
Financial Aid	$931,400	$0	$931,400
Special Category (Specific)	$0	$0	$0
		$0	$0
Leases	$2,961,370	$0	$2,961,370
	$0	$0	$0
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Total All Categories	$18,807,004	$6,844,394	$25,651,398
	=========	=========	=========