Year In Review

2019

**Office of Data Analysis and Strategy
Division of Academic Affairs**

ECU · **BRODY SCHOOL OF MEDICINE**

Contents

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Welcome Message

It is not everyday one sees the establishment of a new office at an institution. It takes hours of research and collaborative efforts to get off the ground with new ideas and projects. Strategies are essential to establish relationships and partnerships, but most importantly define the office purpose and develop its identity. In this our first Year in Review, we provide a synopsis of what the Office of Data Analysis and Strategy has accomplished in its establishment in 2018.

- We completed over 20 projects, the most important one being the initial stages of creating the educational data warehouse at the Brody School of Medicine.
- We received over a dozen requests for data and services
- We started the process to close gaps of business intelligence needs at Brody School of Medicine
- And started our scholarship activity by having nine abstracts accepted for presentations and posters at various conferences

The drivers for the work done and our success have been our supporters and partners, and along with staff that has brought an abundance of skills, ideas, and determination to move the Office forward. Thank you for making our beginning a remarkable one. Nevertheless, this is just our beginning; We are planning crucial projects, collaborations, and innovation in the years ahead. We have a tremendous amount of work to do! We are committed to providing our partners and stakeholders with excellence and quality in our service and products. We look forward to another year of success.
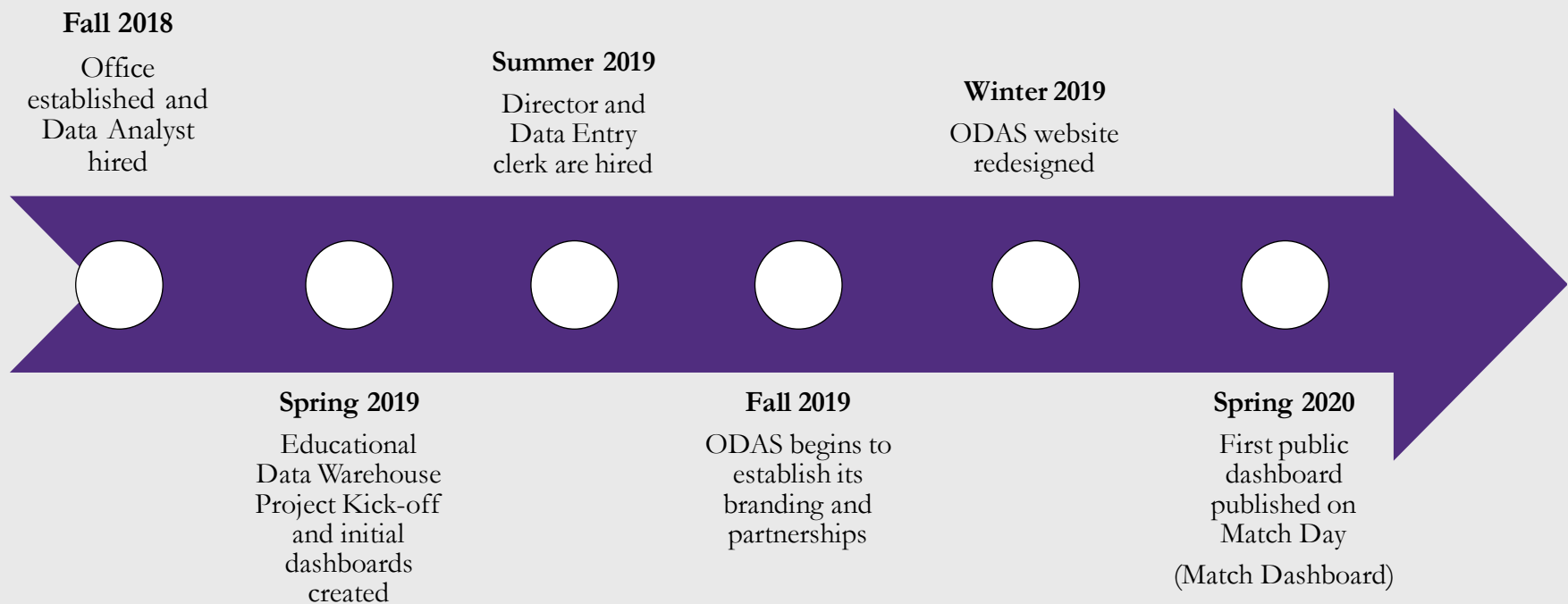

Sincerely,

Jhojana Infante Linares

Jhojana Infante Linares
Director

History

The Office of Data Analysis and Strategy (ODAS) at the Brody School of Medicine (BSOM) was established in Fall 2018 after evaluating gaps and needs for the School in data analysis and visualization (business intelligence), improvements in data governance guidelines and infrastructure, and processing workflows. The Office is charged with supporting accreditation and continuous quality improvement efforts and needs, as well as scholarship and enhancement of the medical education academic environment.

Fall 2018

Office established and Data Analyst hired

Summer 2019

Director and Data Entry clerk are hired

Winter 2019

ODAS website redesigned

Spring 2019

Educational Data Warehouse Project Kick-off and initial dashboards created

Fall 2019

ODAS begins to establish its branding and partnerships

Spring 2020

First public dashboard published on Match Day

(Match Dashboard)

Mission

To provide insightful knowledge and information to support decision making, quality improvement, data management, and educational strategies at Brody School of Medicine.

Vision

Proactively deliver innovative and data-centric solutions to support the School's mission and impact medical education communities in eastern North Carolina and beyond.

Core Values

Professionalism
Maintain integrity, good judgment and competency in all matters

Reliability
Produce consistent, accurate and useful solutions.

Objectivity
Maintain a neutral position and do not allow biases to interfere with our daily operations and decisions.
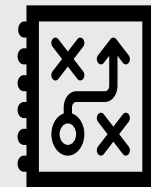
Teamwork
Demonstrate commitment to working with others and create a collaborative environment.
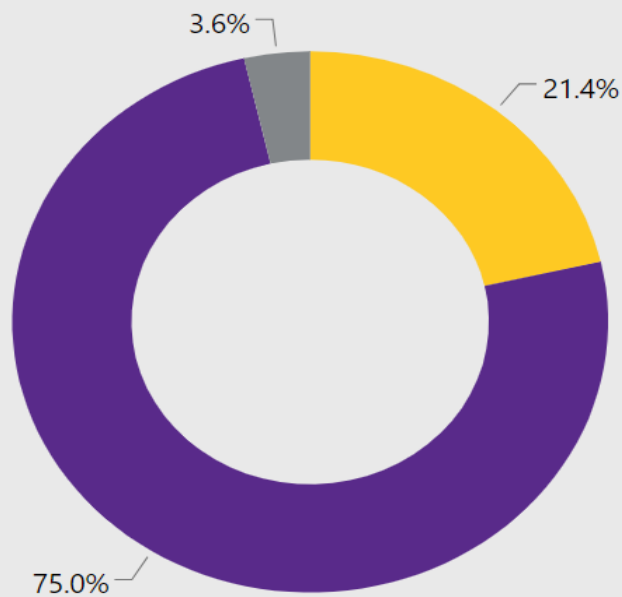
Adaptability
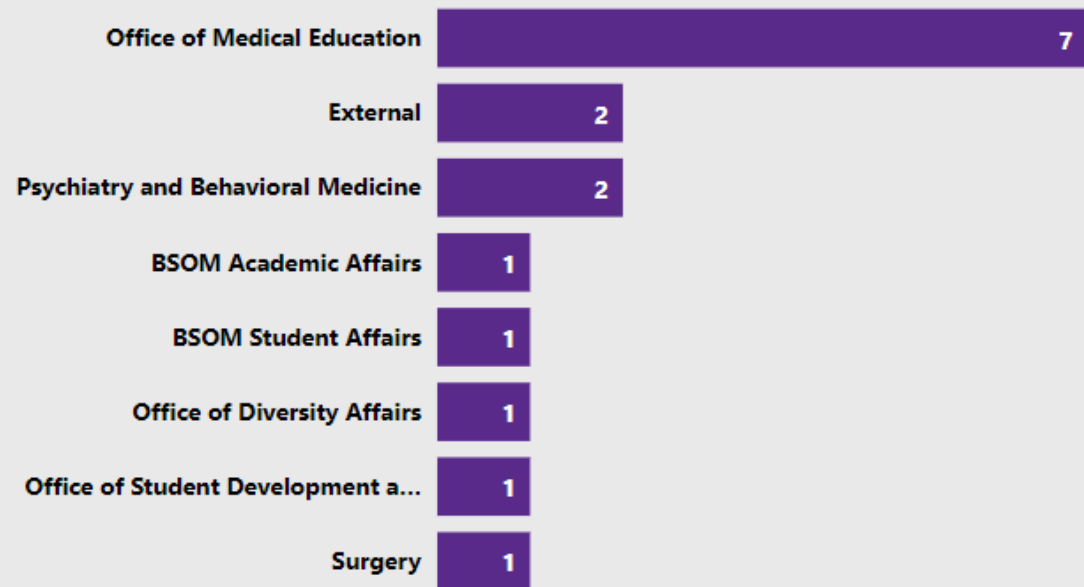Embrace change as a path to grow and improve.
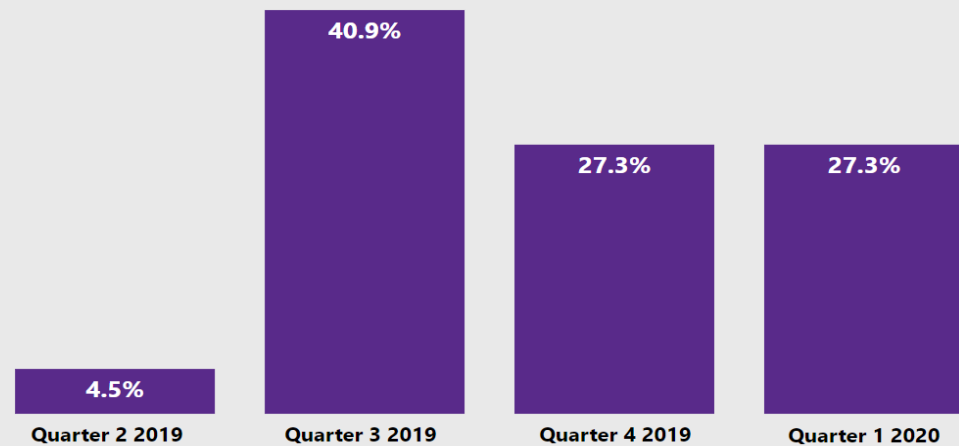
Fact Sheet

Requests by Type

- 3.6%
- 21.4%
- 75.0%

- ● Centralized Data Request
- ● Consultation
- ● Dashboard/Report Access and Support

Requests by Department/Office

Department/Office	Count
Office of Medical Education	7
External	2
Psychiatry and Behavioral Medicine	2
BSOM Academic Affairs	1
BSOM Student Affairs	1
Office of Diversity Affairs	1
Office of Student Development a…	1
Surgery	1

Requests by Quarter

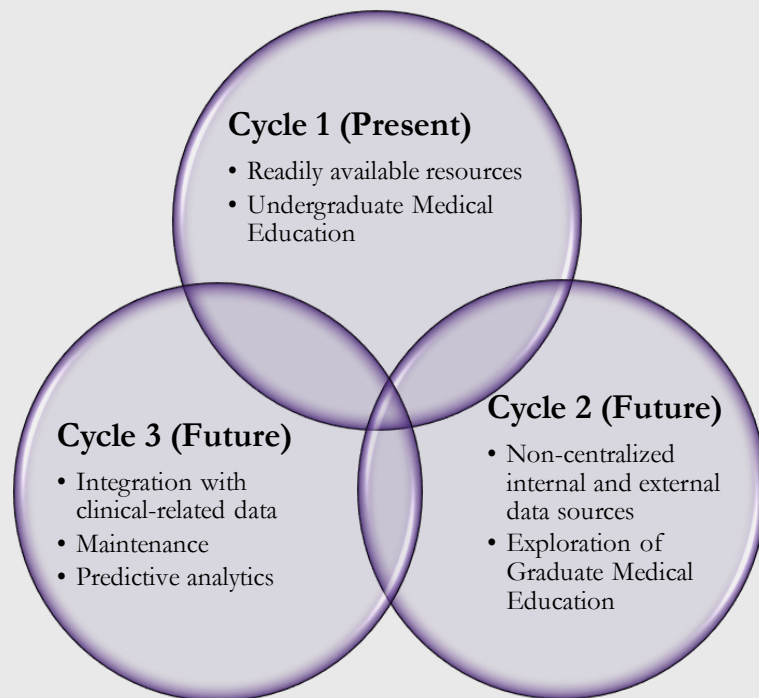| Quarter	Percentage
Quarter 2 2019	4.5%
Quarter 3 2019	40.9%
Quarter 4 2019	27.3%
Quarter 1 2020	27.3%

Educational Data Warehouse

The educational data warehouse is a repository of data from various educational applications used at the Brody School of Medicine (BSOM). Additionally, it provides a centralized platform to integrate data from multiple applications, like the learning management system, student information system, computer-based testing, and others, allowing users to see learner's progression in their medical education from admission to graduation and beyond. This one-place of data storage eases data availability for purposes of scholarship, medical education research, reporting, continuous process improvement, and monitoring of programs' quality. The warehouse is being developed in approximately three cycles. Each cycle is comprised of a series of projects, and each project has multiple phases.

Cycle 1 (Present)
- Readily available resources
- Undergraduate Medical Education

Cycle 3 (Future)
- Integration with clinical-related data
- Maintenance
- Predictive analytics

Cycle 2 (Future)
- Non-centralized internal and external data sources
- Exploration of Graduate Medical Education

Initial data warehousing project: Identify data sources and data stewards within the Brody School of Medicine; recruitment of ITCS allies led to the charter of new warehousing project: Medical Faculty and Student Information System (Project MFASIS)

Initial application of data warehouse initiatives: Initial datasets to be housed within the educational data warehouse, including AAMC Graduate Questionnaire results, NRMP Residency Program Match results, NBME and USMLE exam data, and graduation rate results, and used to support new dashboard development initiatives.

Reports and Visualizations

The ODAS develops and maintains a wide range of reports and visualizations. We provide solutions that enable the BSOM community to access data from multiple systems and develop visualizations to share information across departments and the general public. ODAS desires report users to gain valuable insights into the educational data by revealing and communicating patterns, trends, and correlations. The ODAS also provides support for statistical analysis and predictive analytics in medical education.
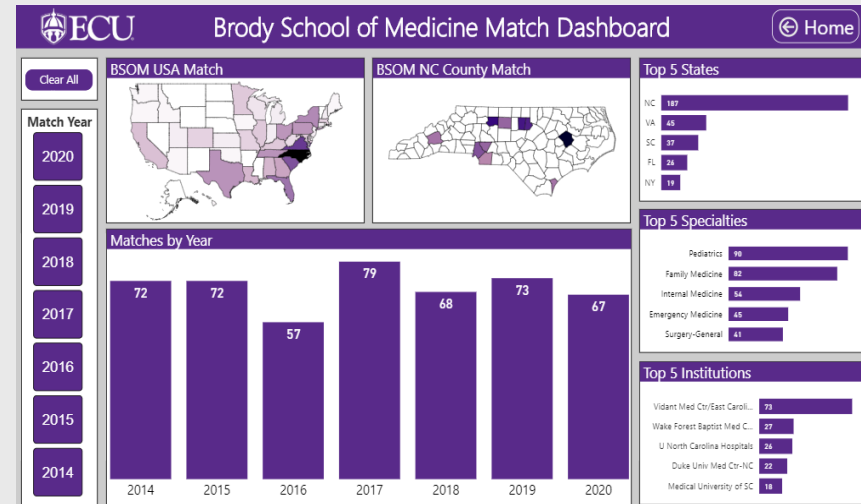
Match Dashboard (version 1.0): Development of a PowerBI report to replicate a legacy report in a static pdf format that was available each year on the Office of Student Affairs website. This version included data for all students on the annual NRMP report, including those that do not match. The report is to be filtered by internal stakeholders to review trends in residency matching.

Public Match Dashboard (version 2.0): Launched to report residency program matches for the Class of 2020. This PowerBI dashboard contains information from the past five years that is accessible via the Office of Data Analysis and Strategy metrics page. This year's launch was timely as it provided a source of information to those that could not gather in Greenville to celebrate once Match Day festivities were altered due to COVID-19 guidelines.
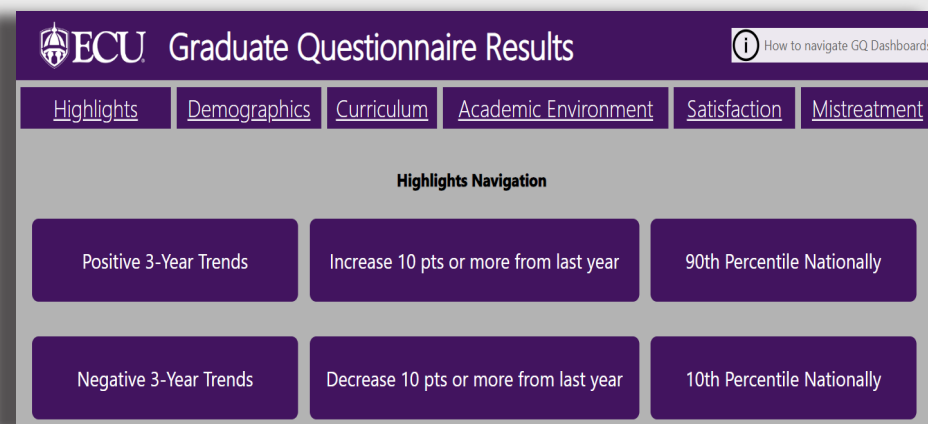
Reports and Visualizations

AAMC Graduation Questionnaire (GQ) Dashboard (version 1.0): Development of a PowerBI visualization to report results of every question from the 2018 AAMC GQ for BSOM and all medical schools for the past five years. In this version, questions were grouped by type (ex. Likert 4, Yes/No, or List).

AAMC Graduation Questionnaire (GQ) Dashboard Prototyping (version 2.0): Convert the previous version into a suite of PowerBI reports that were arranged by topic area for visualizing the 2019 AAMC GQ data. This version implemented a "Highlights" report that showcased the biggest improvements/concerns found in the data trends, along with a topic-driven navigation bar.

Residency Program Directors Survey Dashboard (version 1.0): Development of a PowerBI report to present survey results from the 2018 survey. Each year BSOM sends an evaluation to the residency program director for each of the previous year's graduates, specifically seeking program evaluation data related to mission goals and ILOs.

Reports and Visualizations

NBME/USMLE Performance Dashboard (version 1.0): Development of a PowerBI report to present summaries of cohort and annual performance on medical student summative evaluations. These reports include aggregate data on NBME shelf exams and USMLE Step 1, Step 2 CK, Step 2 CS, and Step 3 examinations.

Student Mistreatment Reporting: Development of annual report for Senior Associate Dean of Academic Affairs to share with stakeholders concerning trends in student mistreatment data for the 2018-2019 academic year.

Student Mistreatment SOP and Monitoring Calendar: Development of annual calendar, procedures, and protocols for the delivery of reports on student mistreatment data.

GQ and Y2Q mistreatment comparison: Present historical and most current mistreatment data collected from two annual national surveys administered by AAMC; Year 2 Questionnaire (Y2Q) and Graduate Questionnaire (GQ).

Faculty Diversity Snapshot reports (version 1.0): Development of an inaugural set of annual reports for each of the 19 BSOM departments. Additionally, a report for the Dean's leadership team was also created.

Diversity Snapshot 2018-2019

Department of Bioethics and Interdisciplinary Studies

Chair Report

Compiled by the Office of Diversity Affairs with support from the Office of Data Analysis and Strategy

ECU BRODY SCHOOL OF MEDICINE

Continuous Process Improvement

The ODAS participates, coordinates, and aids in measuring improvements on the quality of the medical education program. Our staff has been highly involved in the development of a faculty-centric, committee-led continuous quality improvement process (CQI) to monitor accreditation standards established by LCME.

Consultation services are available for partners to engage in process and quality improvement of day to day operations and programming. In a business process improvement consultation, our Office analyzes critical components like the current state of the process, dataflows and software systems, identification of bottlenecks or constraints, possible improvement solutions, and implementation timeline. Additionally, the ODAS engages in educational outreach for partners and stakeholders. Throughout the year, its staff provides opportunities and participates in events like Lunch and Learn sessions.

CQI planning: ODAS played an important role in the initial task force researching the need for a systemic approach to quality improvement that led to the development of an institutional CQI plan and accreditation monitoring procedure.

Committee on Curriculum and Educational Quality (CCEQ): ODAS participates at the CCEQ and presents relevant educational data for the committee to monitor the regular review of accreditation standards.

Residency Program Director survey results: Compile data for Class of 2018 and completed a review of business processes in joined efforts with the Office of Medical Education.

Student Advancement – Leave of Absence Process: Evaluation of data collection process for student leave of absence in the student information system and streamline the process for data entry, collection, reporting, and communication among offices or department.

Additional Projects

The ODAS participates, collaborate, partners with, and provides support with other offices across BSOM on initiatives.

Student preparation for Step 2 CS: Create data collection instrument for reporting of student results for a 10-case OSCE event (clinical skills assessment) offered at the start of M4 year.

Medical program evaluation: Update and develop a matrix of outcomes measures compared with Institutional Learning Objectives (ILOs).

Second-floor digital signage: Implement and manage digital signage in partnership with ITCS to choose appropriate technology and implement a process to deliver weekly content that improves communication with Brody stakeholders, especially students.

Annual AAMC Graduation Questionnaire (GQ) reporting: Create data visualizations to report GQ results and mistreatment data during an annual meeting in Fall 2018. This work contributed to the development of a GQ dashboard requirement within Project MFASIS.

Curriculum mapping quality assurance: Assist with the review of curriculum map elements for data quality and consistency.

Course and clerkship reviews: Produce extensive pre-reports used in the 3-year review process that took place for all required courses and clerkships during 2019. The creation of these reports included data collection from multiple sources (AAMC, e-Value, and curriculum committees) and reporting visualizations.

Additional Projects

Calendaring projects: Development of block calendars, annual M3/M4 calendars, and long-range "distance calendars." It led to the formation of several committees charged with the future development of these calendars.

Annual clerkship director retreat: Complete reviews of clerkship-related data such as diagnosis and procedures logs for completion of required clinical activities, annual clerkship evaluations, and e-Value reporting.

Faculty diversity snapshot reports: Develop a process for the reporting of annual metrics related to faculty diversity in collaboration with the Office of Diversity Affairs and BSOM Office of Human Resources. Identify internal and external data sources to use as measures and benchmarks. This project led to the development of 19 departmental reports and a dean's leadership team report to be produced annually.

Clinical Foundations Seminar (coaches' analysis): Provides a summary of data collected from reports submitted each week by the CFS coaches in spring 2019. Analyze the progression of students in developing the specified skills as the course progress.

Clinical Foundations Seminar (self-assessment): Report and analyze information collected in self-assessment forms submitted each week by students enrolled in the CFS course in spring 2019.

Producing primary care physicians in NC (Brody Branding): Perform analysis of de-identified aggregated data on residency match results from 2014 to 2018 in primary care specialties for the four allopathic medical school in North Carolina. Provide descriptive metrics to compare BSOM's match outcomes with other medical schools in the state.

Additional Projects

Fall 2019 "Bring your lunch and learn": Provide an opportunity for the BSOM community and other partners to meet the ODAS and learn about current projects and services provided with a hand-on activity on the importance of business processes.

NBME results and timing of surgery and medicine clerkships: Compare students' performance in NBME exams between those who took surgery clerkship before internal medicine clerkship to those who took surgery clerkship after internal medicine clerkship at the Brody School of Medicine.

Lifestyle medicine project: "Honest broker" for identifiable educational data in the IRB for a project led by a faculty member and several BSOM students. Collect and analyze survey data and NBME/USMLE data. De-identify the data and report it to the research team.

Scholarly activity of faculty in primary care: Collect, review, and analyze data of BSOM clinical faculty across medical disciplines in relationship with scholarship activity, tenure status, and demographics.

ODAS Website: Enhancement of the Office's website to include sections about services and metrics that ODAS provides to the ECU community.

BSOM 2019 mission-related highlights: Provide updated data stories for Health Sciences Communications using data collected from AAMC surveys in 2019 like the Graduation Questionnaire.

Distinction Track Program data analysis (initial phases): Organize data collected from student characteristics assessments completed by BSOM students and conducted every year via Qualtrics. Provide survey response analysis to determine the statistical significance of data collected for the past three years. This analysis included a review of responses by instrument, cohort year, and longitudinally within each distinction track.

Looking Ahead

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In the upcoming year, the ODAS plans to continue with the exploration, development, and integration of widely used systems in the educational data warehouse. With centralized data, we pursuit to create a suite of reports and visualizations that will help administrators and students evaluated and track performance in the medical education curriculum, monitor quality of the education program, and support scholarship and accreditation efforts.

The ODAS has identified up to ten projects expected to complete within the next 18 months. These projects include:

Clinical student performance: Discover data sources and develop data tables to store student performance during the clinical phase of the medical education curriculum in the educational data warehouse.

BSOM admissions data and reporting: Storage of applicants' data not stored in the student information system in the educational data warehouse. Automation of admission documents and reports.

Residency application outcomes form: Develop a database to collect and store ERAS data. Build an interface for students to provide information on programs they received interviews from those applied through ERAS.

Curriculum historical data: Explore, identify, and store curriculum historical data from learning management system to facilitate longitudinal analysis of student performance and curriculum management.

CQI data visualizations and reports: Development of dashboard and report(s) to review various data on student performance in both the pre-clinical and clinical years of medical education, survey responses, and operations. Facilitate reporting to track and analyze student performance in pre-clinical and clinical years. Create a data reporting infrastructure and data accessibility for BSOM to be used by faculty, staff, and students.

Looking Ahead

Survey data storage and reporting: Identify internal and external surveys of which data not currently stored in the educational data warehouse. Cross-evaluate and triangulate student perception across different phases of their medical education. Evaluate longitudinal efforts in both curriculum and operation aspects of our school.

Inappropriate behavior data storage: Create an API connection with REDCap for nightly extraction of data submitted by learners via the Mistreatment Incident Form. Store data in the educational data warehouse to centralize data collection and securely compile confidential data for reporting.

BSOM OneStop: Allow students to view custom-built and personalized dashboards and reports about their performance in pre-clinical and non-clinical years, review documents received from external sources with their results in national examinations, access information in already established forms (i.e., Mistreatment Incident Reporting, General Feedback, Residency Application Outcomes).

Scholarship

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Brody School of Medicine MedEd Day 2019

Title: Operationalizing Educational Data at the Brody School of Medicine (Poster)

**Authors:** Smith, Jedediah S., Lancaster, Kelly, Campbell, Kendall M.

Summary: The Office of Data Analysis and Strategy was formed to capitalize on opportunities for operationalizing data and processes to improve decision making and performance. A needs assessment identified the following areas for improvement: the use of business intelligence practices (including data analysis and data visualization), project management implementation, the presence of data governance structures and guidelines, communication practices, data processing workflows, and data infrastructure.

Quality Symposium 2020

Title: The Faculty Diversity Snapshot Report: Development of a Quality Improvement Tool for Medical School Faculty Diversity (Poster)

Authors: Smith, Jedediah S., Infante Linares, Jhojana L., Corral, Irma, Campbell, Kendall M., Bright, Cedric M.

Summary: Production and delivery of annual faculty diversity snapshot reports to communicate and present relevant diversity data, metrics, and benchmarks for all clinical departments at BSOM and the Dean's leadership team.

Scholarship

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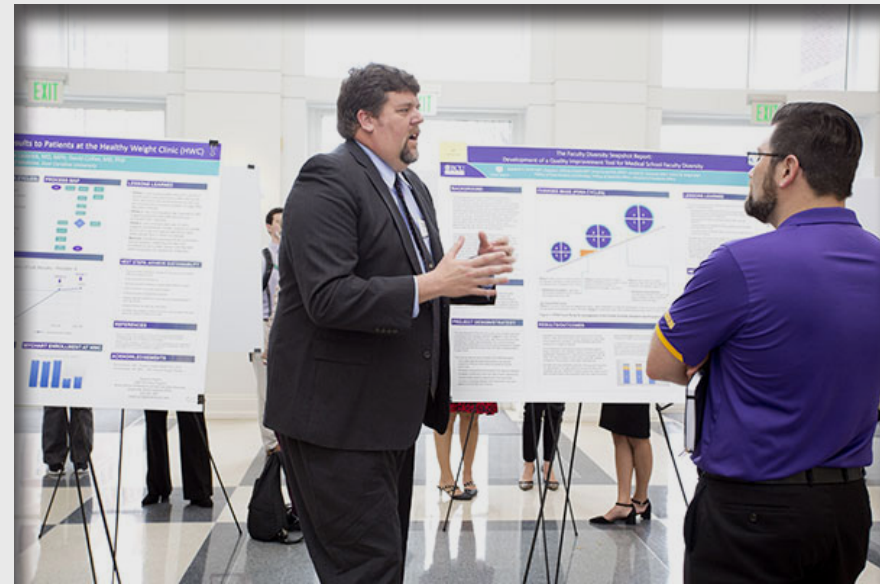
Brody School of Medicine MedEd Day 2020*

Title: Visualizing Match results with a focus in the institution mission while improving business processes (Presentation)

Authors: Infante Linares, Jhojana L., Smith, Jedediah S., Rehfeld, Otto, Stroup, Scotty, Wooden, Kendall, Molina, Hector

Summary: The Office of Data Analysis and Strategy, with assistance from Information Technology & Communications Services, improved The Brody School of Medicine at East Carolina University match result presentation tool. The project also helped enhance and standardize the collection and reporting of match data in an interactive visualization.

Title: Making Quality Improvement of Medical Education Continuous through Ongoing Monitoring of Accreditation Standards (Poster)

Authors: Alexander, Chelley K., Lee, Hugh M., Vanderpool, Gary, Smith, Jedediah S., Infante Linares, Jhojana L[1], Campbell, Kendall M. [1]Collaborator

Summary: Establish a faculty-centric, committee-led CQI process to improve the quality of the medical education program. Additionally, the CQI process monitors accreditation elements and establish an ongoing schedule for review of accreditation elements. A well-designed, CQI approach can improve school operations, ensure adherence to accreditation elements while mitigating fatigue by streamlining efforts within the School.

*Brody School of Medicine MedEd Day 2020 postponed until further notice due to COVID-19

Scholarship
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Brody School of Medicine MedEd Day 2020*

Title: An Adaptable Framework for Survey Data Management in Medical Education (Poster)

Authors: Rehfeld, Otto, Smith, Jedediah S., Infante Linares, Jhojana L., Stroup, Scotty, Yeduri, Huma, Molina, Hector

Summary: Create an adaptable framework that facilitates the uploading of survey results into a centralized database. The framework must adjust to year to year changes within surveys. Survey questions are related to other survey questions via institutionally defined categories and cross-relate among surveys.

AAMC 2020 Information Technology in Academic Medicine Conference**

Title: Visualizing Match results with a focus on Institution's mission and business process improvement (Digital Demonstration and Poster)

Authors: Infante Linares, Jhojana L., Smith, Jedediah S., Rehfeld, Otto, Stroup, Scotty, Wooden, Kendall, Molina, Hector

Summary: The Office of Data Analysis and Strategy, with assistance from Information Technology & Communications Services, improved The Brody School of Medicine at East Carolina University Match result presentation tool. By replacing the legacy spreadsheet display with an interactive dashboard, the project also helped enhance and standardize the collection and reporting of Match data. This dashboard visualizes year to year analytics and analyzes mission-related outcomes using NRMP Match results. Most recently, the dashboard was used to help disseminate Match results to students' families during the COVID-19 crisis.

*Brody School of Medicine MedEd Day 2020 postponed until further notice due to COVID-19

**AAMC 2020 Information Technology in Academic Medicine Conference cancelled due to COVID-19

Scholarship

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AAMC 2020 Information Technology in Academic Medicine Conference**

Title: An Adaptable Framework for Survey Data Management in Medical Education (Poster)

Authors: Infante Linares, Jhojana L., Smith, Jedediah S., Rehfeld, Otto, Stroup, Scotty, Wooden, Kendall, Molina, Hector

Summary: Outline how to process survey results from the AAMC for input into the survey data management framework through the creating of versioning documents and a question bank.

Title: Development of the faculty diversity snapshot report: a case study in quality improvement (Poster)

Authors: Smith, Jedediah S., Infante Linares, Jhojana L., Corral, Irma, Campbell, Kendall M., Bright, Cedric M.

Summary: The production and delivery of annual faculty diversity snapshot reports are intended to increase communication of diversity data, metrics, and benchmarks to department chairs and deans. This poster outlined a process by which an institution can develop a quality improvement tool used to conduct regular assessments of collected data regarding diversity and inclusion and disseminate those results to provide actionable information to drive continuous change.

**AAMC 2020 Information Technology in Academic Medicine Conference cancelled due to COVID-19

Our Team

Jhojana Infante Linares, Director

Mrs. Infante Linares has experience in data management, reporting, and analysis in various industries and has worked in higher education institutions for the past six years.

In her current role, she supports the Brody School of Medicine in the development of an educational data warehouse and providing tools for data-driven decision-making and continuous process improvement.

She holds a Master of Science in Engineering Management and a Bachelor of Science in Industrial Engineering from the University of South Florida.

Jedediah Smith, Data Analyst

Mr. Smith has worked with educational datasets and technologies throughout his two decades of experience in public education.

His current role is to assist the Brody School of Medicine in the analysis and visualization of data, mainly focused on supporting internal and external stakeholders with reporting, data management, and communication related to outcomes.

He holds a Master of Science in Instructional Design and Technology from East Carolina University and a Bachelor of Science in Biology from Duke University.

Otto Rehfeld, Data Entry Clerk

Mr. Otto Rehfeld has worked with data entry and management during his time in the Air Force and as a manufacturing manager for a board game company.

Currently, he assists Brody School of Medicine students, staff, and faculty by managing data entry and creating data visualizations to inform decision making.

He graduated with a Bachelor of Science in Information Technology from the University of Phoenix and has an Associate Degree in Intelligence Studies and Technology from the Community College of the Air Force.

Acknowledgements

The Office of Data Analysis and Strategy thanks all of its partners and stakeholders for the support its first year of operation. We thank all for the time spent in reviewing business processes, for provide feedback and invaluable guidance, and for seeking us for our knowledge and expertise.

We look forward to expanding our partnerships and the opportunity to continue our work and collaboration with teams across Brody School of Medicine and other divisions and departments at East Carolina University.

Year In Review

2019

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Division of Academic Affairs**

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