



TEXAS A&M UNIVERSITY
Statistics

STRATEGIC PLAN



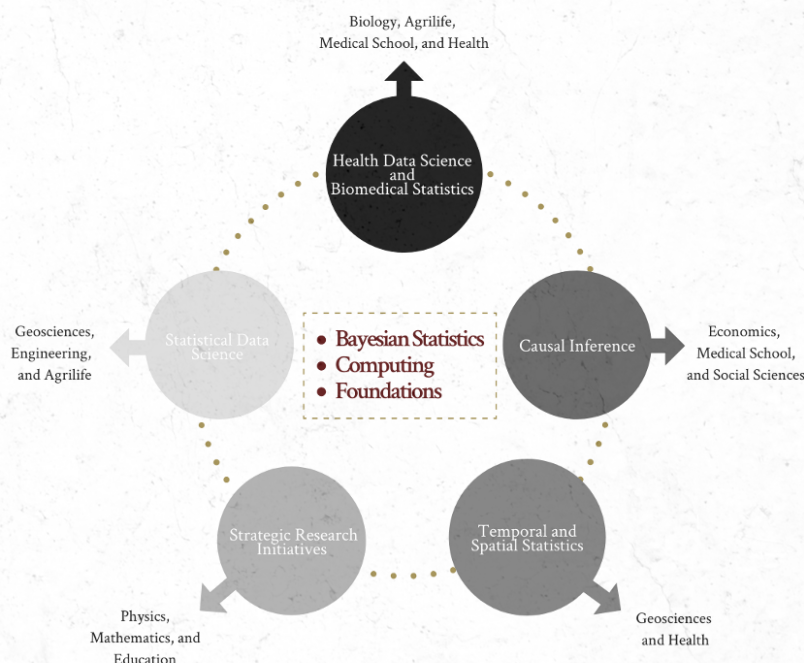
Introduction

In August of 2021, the Department of Statistics' faculty, staff, and students, along with alumni and key shareholders, gathered together to consider the department's future. Using the SOAR (Strengths, Opportunities, Aspirations, and Results) framework, meeting participants discovered the department's strengths, identified opportunities, and envisioned a shared future for the department. After the SOAR meeting, smaller workgroups met to articulate and refine the priorities identified at the SOAR meeting. The end result is the Department of Statistics Strategic Plan. While the plan is comprehensive and long-range (10 years), it is inclusive, offering everyone in the department the opportunity to deploy their aptitudes and resources toward the goals and objectives to which they are best equipped to contribute.



Strategic Priority 1: Our excellent academic environment fosters world-class, modern, impactful research

The Statistics Department will advance five research goals that were initially identified during the SOAR meeting and refined by working group suggestions and Statistics faculty feedback. These research goals significantly enhance the existing strengths and unique capabilities of the Statistics Department and look to the future of statistical research by identifying innovative strategic initiatives that require new statistical foundations, methodology, computational thinking, and infrastructure. Our five identified research goals are facilitated by three overarching departmental research strengths: our excellence in Bayesian Statistics, in Statistical Computing, and Theoretical Foundations.



Some objectives common for all goals are: sponsoring RA positions with inter-departmental faculty who conduct research on the interface of two or more identified goals, providing resources for focused workshops, and in future junior hires target the excellent candidates with research interest in one or more stated goals.

Goal 1: Strengthen our leadership in *Statistical Data Science*

Strategy 1: Facilitate research opportunities in data science

- Establish a data science research group that combines and leverages the expertise of members of the statistics department in tackling important data-science problems
- Provide department resources to support data-science research projects, including funding and computational resources
- Regularly organize focused academic conferences, workshops and lecture series, and increase departmental presence in TAMIDS

- Pending the funding for NSF of TRIPODS-FIDS, work with the Provost Office to make FIDS a permanent research institute with Statistics playing one of the pivotal roles

Strategy 2: Enhance our reputation in data-science research

- Select one or two focus research areas each year in which faculty, post-docs and students collaborate in a vertical collaboration model with reading and seminar groups, and support short-term visitors from the focus areas
- Create fellowships that provide support to students and post-docs who are heavily involved in the collaborative projects originated from the research group
- Given its increasing appeal to science and engineering, focus future hiring in the area of Data Science

Goal 2: Develop a strong research group in *Causality*

Strategy 1: Become renowned for causal research, education, and training in 5-10 years

- In the medium term, target senior faculty hires that will increase our visibility in causal research and attract junior faculty
- Arrange short-term visits of renowned researchers to foster mutually beneficial collaborations, improve our department's visibility in the causal research community, and instigate our interest and awareness in contemporary problems in causal research
- Organize workshops on causality through external funds such as NSF-CBMS or internal funds
- Establish internal funds to encourage collaboration by financially supporting students who will be jointly advised by two or more faculty members to work on causal research
- Provide incentives to faculty members to jointly develop Causal Inference courses

Goal 3: Establish a Research Center for *Temporal and Spatial Statistics*

Strategy 1: Maintain and strengthen our reputation in the research areas of time series and spatial statistics

- Target junior faculty hires whose research interests focus on the nonstationary spatio-temporal statistics, computational methods for large data sets, and applications in emerging technologies
- In the medium term, target senior faculty hires with a track record in leading and managing large grants and who can expand our strong collaborative research within statistics and across colleges and disciplines

Strategy 2: Increase the impact and visibility of temporal and spatial statistics

- Expand strong collaborative research across the TAMU system including the Medical School, School of Geosciences, Energy Institute, AgriLife, Texas A&M Transportation Institute, Mays Business School, College of Architecture, Department of Economics
- Sponsor seminars/workshops/conferences to enhance collaborations with domain scientists

Goal 4: Establish a Center for *Health Data Science and Biomedical Statistics*

Strategy 1: Build on existing strength to become leaders in cross-domain Health Data Science

- Over the timeline of this strategic plan, focus some faculty hiring in these specific areas: biomedical data integration, electronic health record data and causal research, and spatio-temporal applications

Strategy 2: Provide resources to support biomedical research activities

- Provide support for cloud-based data storage and computing services that meets compliance requirements for HIPAA-, FERPA- and NIST-regulated data

Strategy 3: Increase impact and visibility of Health Data Science research

- Create and maintain the center website, which highlights faculty research groups and has marketing/promotional materials on faculty research
- Sponsor seminars and conferences through the center to increase visibility

Goal 5: Undertake new strategic research initiatives

Strategy 1: Build a program for researching improved methods of *Statistics Education*

- Form a working group of faculty who are interested in leading or participating in statistics education research projects
- Use undergraduate service courses as proving grounds for proposed research strategies

Strategy 2: Build up research capacity in *Quantum Information Science (QIS)*

- Establish a new graduate course in statistical aspects of QIS
- Host a renowned statistician for a semester-long visit to initiate research with the interested TAMU faculty and teach the QIS seminar course.

Strategy 3: Increase research efforts in *Astrostatistics*

- Provide teaching release to motivate and support our current mid-career faculty to enter the field of astrostatistics
- Build strategic connections with the Astronomy faculty from Department of Physics and Astronomy for joint research, grant applications, and publications
- Capitalize on TAMU's presence in the consortium of Giant Magellan Telescope once completed

Strategy 4: Strengthen our research capacity in *Topological Data Analysis (TDA)*

- In medium term, jointly with Mathematics Department, target a mid-career level hire in TDA to strengthen departmental foundational research and compete for extramural funding
- Establish graduate level cross-listed course in TDA that will be co-taught with TAMU Department of Mathematics

Priority 2: We provide the highest quality educational opportunities in statistics

We endeavor to attract the best students from diverse backgrounds, provide them with exceptional classroom, laboratory, and real-world opportunities to develop their skills, and connect them with rewarding, impactful careers. Our recruitment plans include specific goals for undergraduates, Masters students (including those in our Online Learning program), and PhD students. To better serve students in all of our programs, we will enhance educational outcomes by modernizing our curriculum, incorporating state-of-the-art technology in our classrooms, emphasizing data science as a discipline, and fostering connections between students and faculty.

Goal 1: Increase quality and quantity of students at all levels

Strategy 1: Increase quality and quantity of undergraduate students

- Collaborate with high schools for recruitment (e.g., appoint current students as ambassadors and build relationships with AP STAT teachers)
- Organize summer boot camps and host data science competitions

Strategy 2: Build on existing efforts to recruit, encourage, and assist MS students

- Create tools and services that enhance students' sense of inclusion and belonging in the Statistics Department (e.g., boot camp for incoming students, student messaging and collaboration services, and peer mentoring)
- Improve recruitment by revising our website and by targeting in-state universities (especially those with large enrollment of underrepresented students)

Strategy 3: Successfully recruit the best graduate students

- Engage more faculty and increase contacts (interviews, visits) to actively attract top candidates
- Broaden our Online Programs' student base by including students located internationally
- Invest more resources (faculty and funds) for recruiting underrepresented minority students
- Actively recruit the best undergraduate students for the 3+2 program

Goal 2: Improve and modernize teaching / learning in all programs

Strategy 1: Continuously improve the undergraduate program

- Create and expand undergraduate research opportunities (e.g., involve undergraduate students for statistical consulting projects)
- Teaching methodology and curriculum redesign and assessment by collecting feedback from industries, alumni and current students.

Strategy 2: Continuously improve MS program

- Retain our leadership in quality and national ranking of MS program
- Incorporate data-driven strategies based, in part, on communication with employers of our MS graduates

- Advance our classroom technology services (e.g., by adopting technology for capturing writing on whiteboard and cloud-based computing)
- Improve assessment of courses and learning objectives

Strategy 3: Improve and modernize teaching and learning in the Ph.D. program

- Conduct regular and consistent reading groups and/or Frontiers classes with multiple faculty
- Develop a mentoring plan for new students that engages senior graduate students
- Update and modernize courses starting with core courses
- Promote participation in Stats Cafe (student-organized seminars), encouraging students to do a presentation, preferably at least twice over the course of their program

Strategy 4: Elevate Data Science in our teaching and learning endeavors

- Emphasize programming and statistical computing in curriculums
- Modernize existing classes with more real-world data examples
- Develop advanced courses in data science and machine learning
- Seek feedback from alumni in academia, industry, and government for ways to improve, focus and modernize the program
- Offer all current and new Statistics DS MS courses online to provide a MS and Certificate with a DS emphasis to our online students.

Priority 3: People in the Statistics Department are supported, productive, and thriving

The Texas A&M Statistics Department has a longstanding reputation for being a collegial and welcoming place to work. It also has numerous important interactions with other departments and programs throughout the university. We endeavor to make these characteristics even more so as the department grows and the university and community change. There has, however, been a less comparable increase in the number of staff. Additionally, proactively mentoring both staff and faculty is becoming standard practice, in addition to providing means for development.

Goal 1: Support staff operations by investing in our people

Strategy 1: Recruit and retain exceptional staff members

- Assess and restructure job positions consistent with ongoing university organizational changes and based on an internal analysis of our current positions, and staff member strengths
- Recruit Business Administrator and possibly additional staff to fulfill needs after restructuring of the current positions

Strategy 2: Provide resources to promote professional development and success for staff members

- Create a mentoring culture for staff
- Build an official staff development program for all positions and ranks
- Through departmental awards recognize those who work selflessly for the betterment of the department

Strategy 3: Encourage continuous communication and a sense of belonging within staff

- Facilitate meaningful interactions among the staff within our department through quarterly joint faculty/staff meetings
- Facilitate cooperation and the use of shared tools and resources to empower success among our staff

Goal 2: Support faculty in their research & teaching missions

Strategy 1: Find new ways to meet intangible needs of faculty

- Provide startup funds for APT faculty to use at their discretion
- Conduct annual anonymous survey of department operations to identify problems and propose solutions more quickly
- Allow each faculty at least 1 fully-funded seminar invitation per 2 years

Strategy 2: Further enhance incentives for effective teaching

- Provide incentives for new or department-initiated course development
- Develop methods for useful peer evaluations of teaching
- Encourage more faculty to participate in distance class offerings

Strategy 3: Create an environment where successful grant submission is the norm

- Dedicate staff position to help with grant submissions and administration
- Provide incentives for large grant proposals (such as teaching reduction for writing and/or buyout for success)

Strategy 4: Establish statistical consulting center as an important point of contact for campus-wide collaboration opportunities

- Grow the Consulting Center to the point it can support a full-time director
- Hire APT faculty or MS-level statistician to handle data management and routine consulting
- The center will directly handle routine statistical consulting projects, and facilitate connections with research faculty for more advanced projects and collaborations

Priority 4: The world knows about the TAMU Statistics Department

To keep pace with the ways in which the world sends and receives information, we must update our communication methods to expand and increase our visibility. We will develop consistent messaging to convey that we have an amazing department and produce impactful research. We will focus on key areas and ensure that current information is accessible to all – both external and internal to the department.

Goal 1: Provide timely, accurate and easily accessible information to all

Strategy 1: Provide a user-friendly website that contains up-to-date information

- Evaluate and redesign our current webpages and verify that accurate information is presented

- Create a web page with information on our local community (what is there to do, see, live, etc) for prospective faculty and students

Strategy 2: Increase our social media presence to maximize exposure and to aid in the recruitment of students and faculty

- Promote faculty research and extramural funding on social media
- Promote scholarships/assistantships for underrepresented students
- Hire and train a student worker to assist with social media content

Strategy 3: Increase our department's exposure to Europe and Latin America

- Feature talks and presentations internationally via Zoom to geographic areas that are underrepresented in the department
- Use social media to target specific audiences

Strategy 4: Provide support for the department's communications goals

- Train staff to manage communications
- Provide communications training to current staff and faculty
- Create a departmental communications committee with interested faculty, staff, and students

Goal 2: Improve communications within the department

Strategy 1: Create a convenient channel for interdepartmental communications

- Utilize a messaging system that faculty, staff and students can opt into so that general departmental information can be shared
- Provide a single source location (e.g., an internal website) to collect relevant resources