TEXAS A&M
UNIVERSITY

# First Year Graduate Student Seminar

September 11, 2019

**Today:**

Outreach opportunities and other things students should start doing now to prepare for the job search

**Next meeting:**

Sept. 17, 2019. Panel discussion: adjusting to graduate school

# Preparing for Job Search

- Taking advantage of outreach opportunities (Ola and Ayo just talked about this)
- A broader view of the job market
- Types of jobs in mathematics
- Other things students should start doing now to prepare for the job search

# US News & World Reports

- Criteria: Median salary; Employment rate; 10-year growth volume; Future jobs prospects; Stress level; Work-life balance.

- Comparison Point: Median income for a household in the US in 2017 was $61,372.

# US News & World Reports Top Jobs for 2019

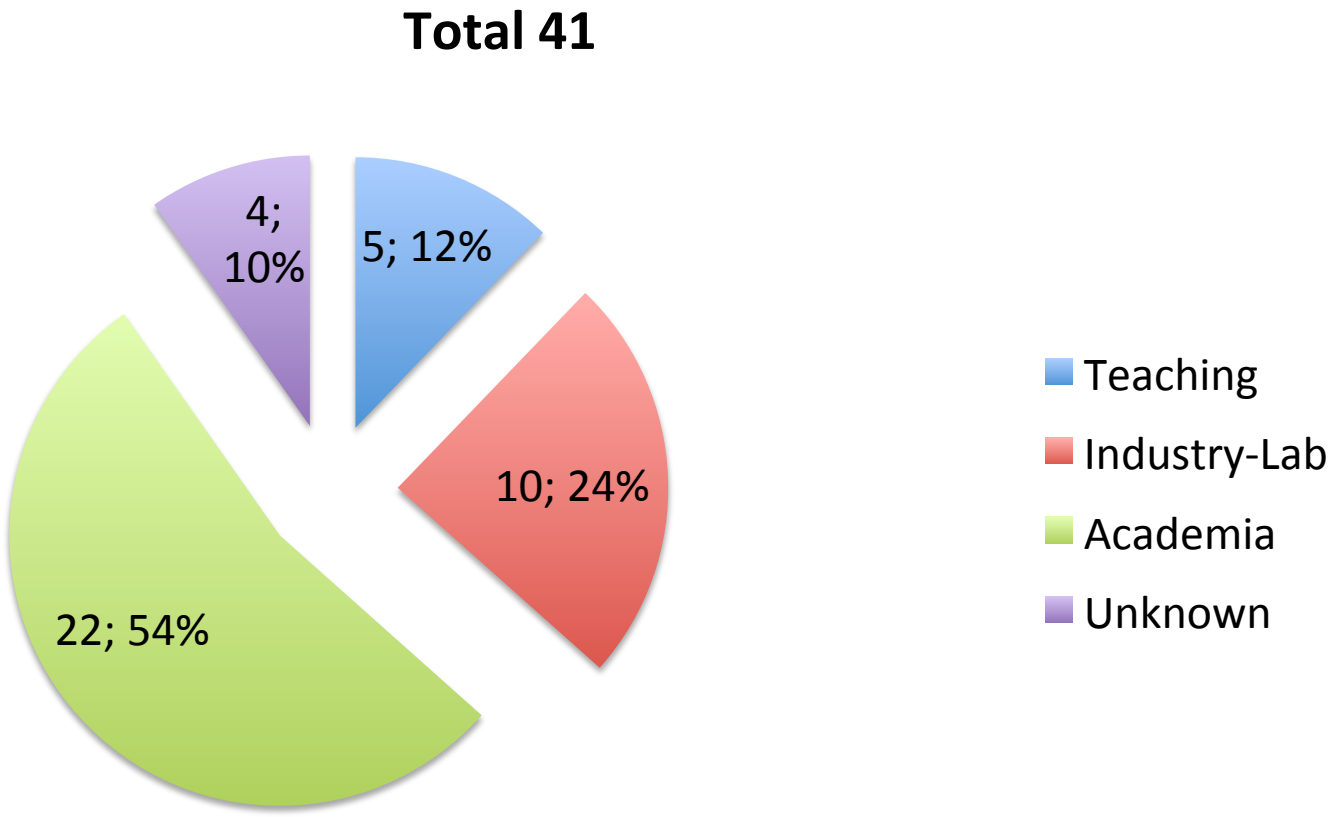
| Rank | Job | Median Salary |
|---|---|---|
| 1 | Software Developer | $101,790 |
| 2 | Statistician | $84,060 |
| 3 | Physical Assistant | $104,860 |
| 9 | Physician | $192,930 |
| 17 | Mathematician | $103,010 |
| 33 | Actuary | $101,560 |
| 34 | Operation Research Analyst | $81,390 |
| 42 | Lawyer | $119,250 |
| 51 | Web Developer | $67,990 |
| 59 | Plumber | $52,590 |
| 76 | High School Teacher | $59,170 |

# Type of Jobs in Mathematics

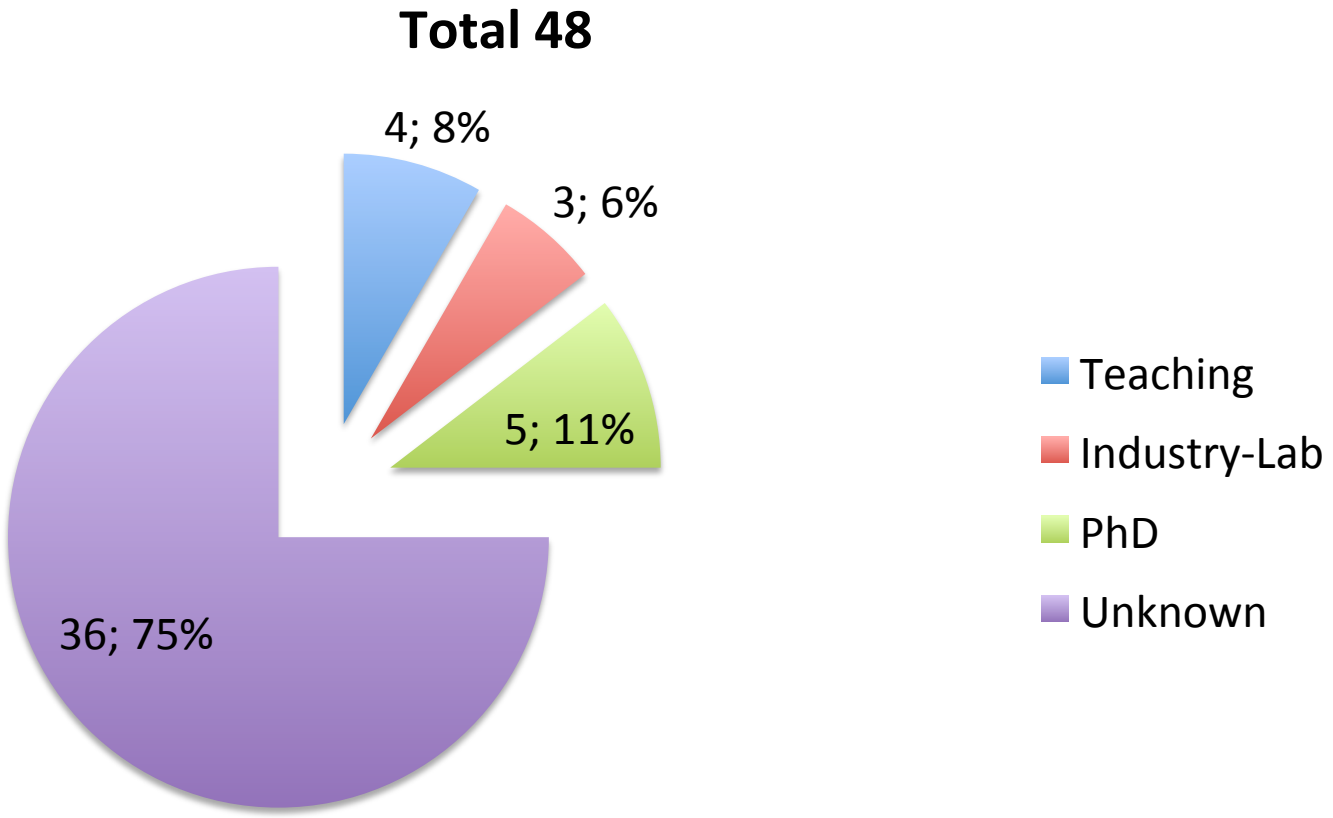
- Research Professor
- Post-doc
  - University
  - Research Institute
- Teaching Professor
  - Liberal arts colleges
  - Academic professional track faculty
  - Branch campuses of state universities or colleges
  - Community colleges
- Government
- Business/Industry

Teaching Load increases

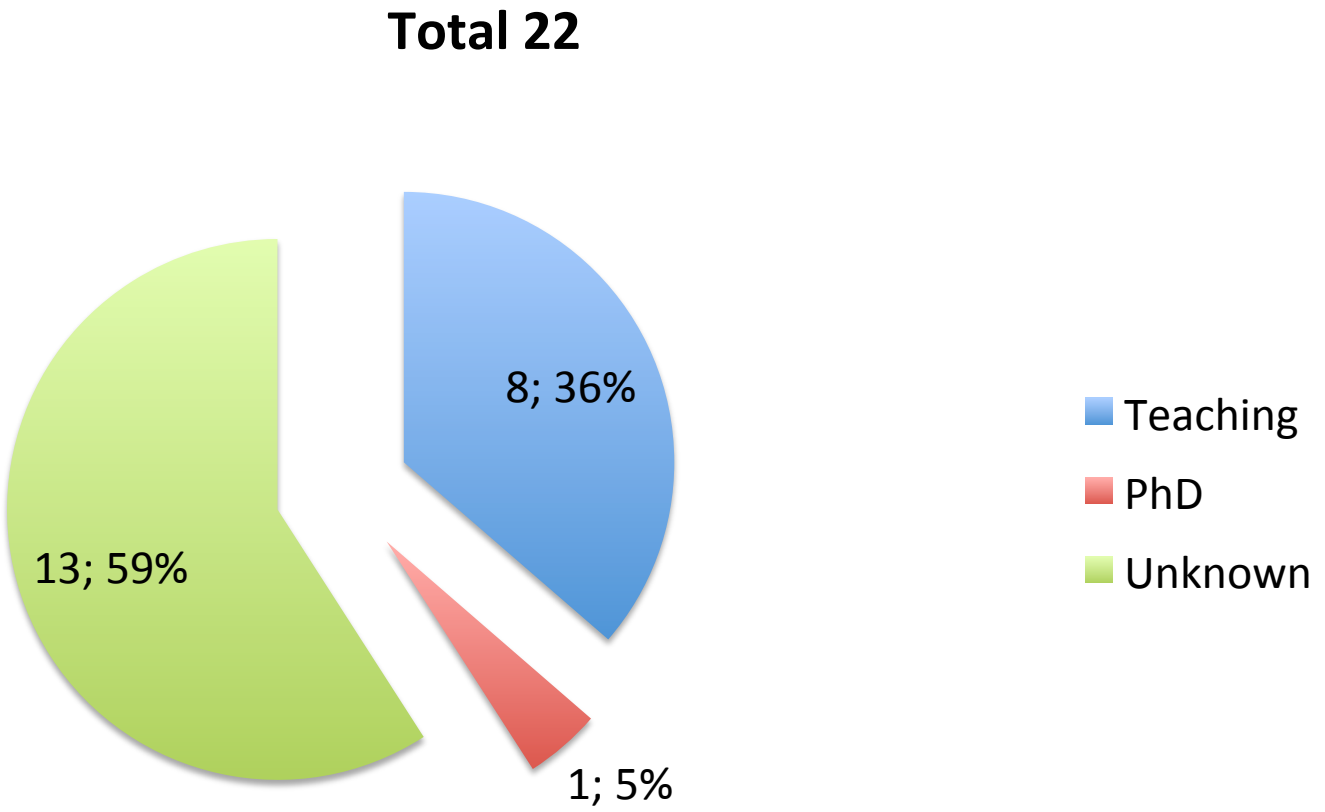
# Last 3 years PhD



# Last 3 years MS



# Last 3 years MS (online)



# Business / Industry

- Aon Hewitt (actuarial science)
- Bloomberg (math finance, stochastic processes)
- Boeing (computation, fluid dynamics, geometry)
- Chevron, Shell, Exxon-Mobile etc. (computation, modeling, multiphase flow)
- Corning, Inc. (materials science)
- Deloitte (financial math, management science)
- General Motors (computation, optimal control)
- Microsoft Station Q (quantum computing)
- QT Ultrasound (inverse problems, imaging)
- Schlumberger (data processing, design)
- TomoWave Inc. (inverse problems, imaging)
- Intel (software development)
- Google / Amazon / Yahoo (algorithms design)

# Business / Industry

*"In a recent study sponsored by the Business Roundtable and the nonprofit group Change the Equation, 97 percent of the CEOs of major American companies identified a lack of STEM skills among the national workforce as a problem for their businesses. Over the next five years these firms will need to hire approximately one million new employees with these skills."*

—Russell Shilling, executive director of STEM at the US Department of Education, in the April 2015 Scientific American.

# Government

- National Security Agency (NSA)
- National Research Laboratories
- Department of Defense
- Social Security Agency
- Internal Revenue Service
- Census Bureau

FYGSS

# PREPARING FOR THE JOB SEARCH

# Self-Assessment and Re-assessment

- You need to decide as early as possible what your goal is. Research professor? Teaching professor? Government or Industrial employee? Talk to your advisor!

- When you start your job search you need to re-assess your goal, and this time you must base your decision on your record. Talk to your advisor!

# General Preparation for the Job Search (i.e., all Job Types)

- Start a folder keeping a record, including documentation when applicable, of all your activities that *might* later contribute to your application file.

  For example: awards, named scholarships or fellowships, invitations to give talks, summer programs you participated in, participation in outreach activities, unsolicited (positive) comments from your students, etc.
- Have a CV ready and possibly available from your webpage.
- Have a webpage!

# General Preparation for the Job Search (i.e., all Job Types)

- Impress your professors with both your abilities *and your professionalism*. Some of your professors may write letters of recommendation for you, and most will have connections with at least some of the places you apply.
- Think about it this way: imagine the place you would most like to work (as a post-doc etc.), and imagine that every professor you have is going to get a call from someone at that place asking, "What can you tell me about this student?"
- Discuss with your advisor the choice of your committee.

# General Preparation for the Job Search (i.e., all Job Types)

- Introduce yourself to seminar and colloquium speakers visiting our department (in your area).
- Have a poster about your research.
- Attend conferences. The more people you know (and impress!), the better your chances are.
- The department will reimburse you up to $400 for two conference trips while you're at A&M. You must be giving a talk or poster presentation for at least one of them. See

http://www.math.tamu.edu/graduate

- (Sottile-ism) Any talk you give between now and the time you achieve your professional goal is a job talk.
- (Rundell-ism) Be ready to talk about your research / goals

(30 sec / 2 min / 45 min)

# Preparation for the Academic Job Search

- Get excellent reviews on your TA duties. Especially for academic jobs in the US, emphasis on this is increasing.
- Give talks in department seminars such as the GSO seminar and AMUSE (Applied Math Undergraduate SEminar).

# Post-docs

Decisions about post-docs are based primarily on research. You need:

- A very solid dissertation, which leads to one, two or three good papers
- Preferably a paper with someone other than your advisor
- A *ridiculously strong* recommendation from your advisor(s)
- *Outside* letters of recommendation (i.e., letters from professors outside the department)
- Teaching letter (instructor of record)
- To fit in well with the department you're applying to

# Academic Teaching

- Clearly, you need to be especially attentive to your TA duties.
- Serve as Instructor of Record two or more times, and get two teaching letters.
- Outreach is especially important here.
- Computer skills are increasingly important (not necessarily through coursework but …)

# Academic Teaching

- Especially for liberal arts colleges, experience with undergraduate mentoring is important. Possibilities include:
  - Working with our summer REU program
  - Working with our Directed Reading Program (DRP)
  - Working with your advisor or another professor as a mentor for an undergraduate research project (M491)
  - Assisting with an undergraduate research course (M442, M469, M482)

# Non Academic Jobs

- Develop computational skills (not necessarily through coursework but …)
- Develop soft skills (interpersonal skills, leadership, etc.)
- Attend the Industrial and Applied Math Seminar

# Non Academic Jobs

- Look for summer internships with relevant national labs and companies.
  - Students can earn academic credit for internships if appropriate. Register for M684: Professional Internship.
  - Students on an F-1 visa need to apply for Curricular Practical Training (CPT) through ISS.
  - The best source of information on internships is SIAM:

    https://www.siam.org/careers/internships.php
- Texas A&M is co-managing Los-Alamos National Lab… lots of opportunities.