

First Year Graduate Student Seminar

September 23, 2021

Today:

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

Next meeting (postponed):

Panel discussion: adjusting to graduate school

Preparing for Job Search

- Taking advantage of outreach opportunities (Joshua 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 (2017)

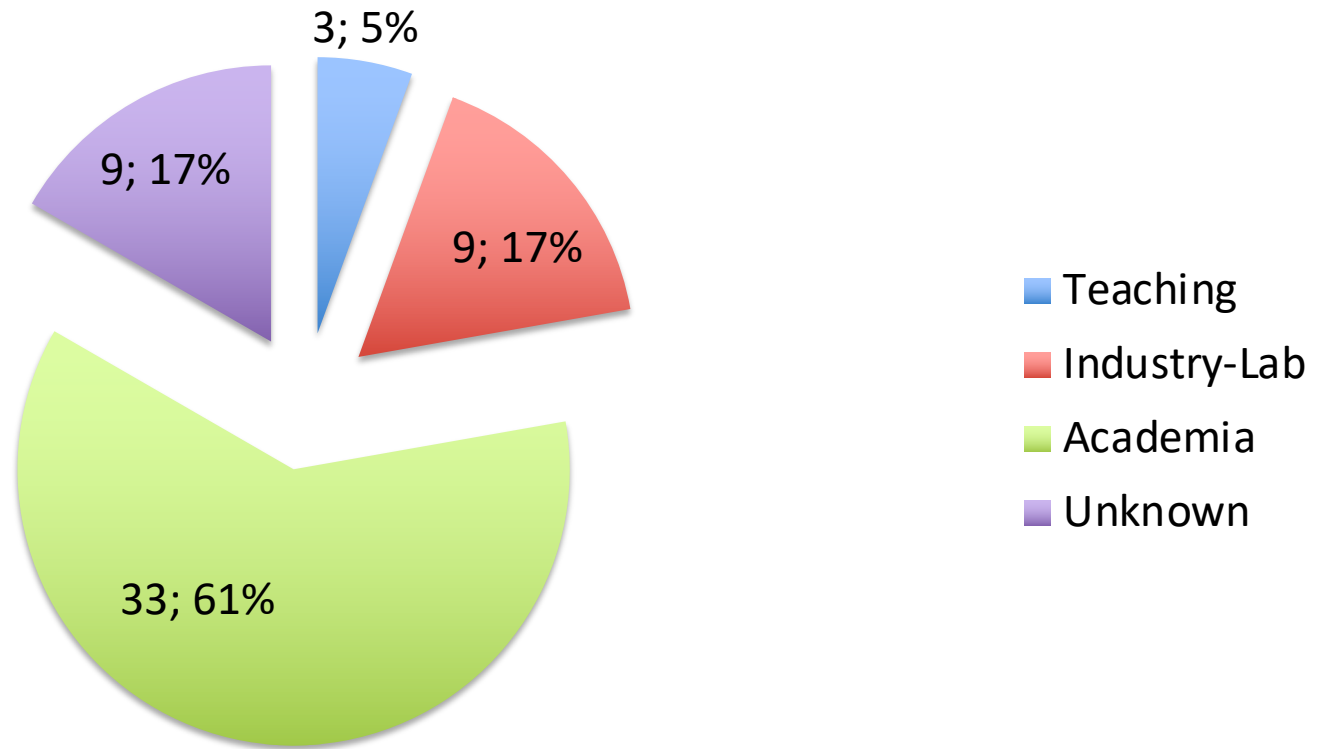
Rank	Job	Median Salary	Projected Jobs	Education
1(7)	Physician	\$112,260	39,300	MS
2(1)	Software Developer	\$107,510	316,000	BS
3	Nurse Practitioner	\$109,820	110,700	MS
6(6)	Statistician	\$91,160	14,800	MS
30(20)	Operation Research Analyst	\$84,810	26,100	BS
38(50)	Lawyer	\$122,960	32,300	Doctorate
49(14)	Mathematician	\$105,030	100	MS
59(23)	Web Developer	\$73,760	14,000	BS
92(74)	Plumber	\$55,160	20,900	HS
93(54)	Actuary	\$108,350	4,900	BS
100+(100+)	High School Teacher	\$61,660	40,200	BS

Type of Jobs in Mathematics

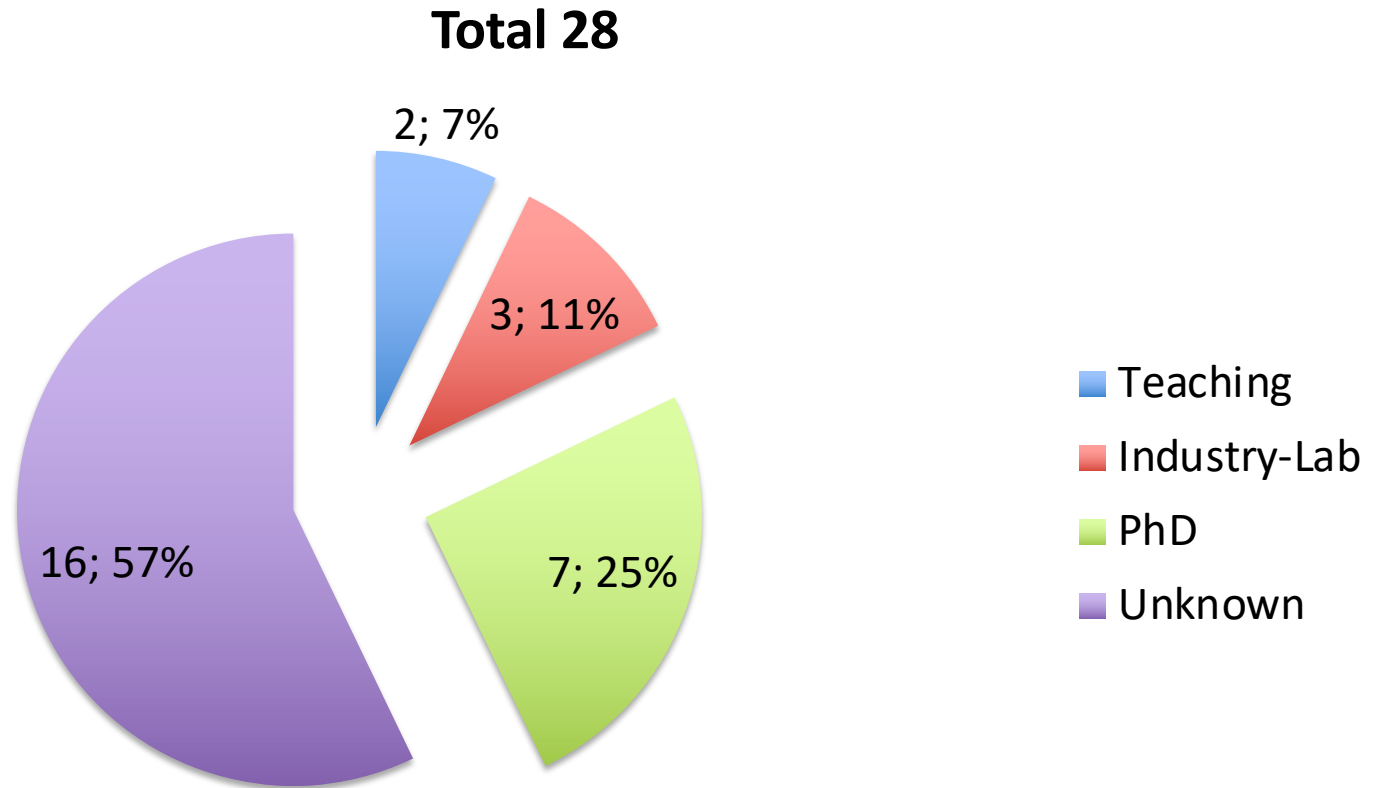
- Research Professor
 - Post-doc
 - University
 - Research Institute
 - Teaching Professor
 - Liberal arts colleges
 - Academic professional track faculty
 - Branch campuses of state universities or colleges
 - Community colleges
 - Government
 - Business/Industry
- 
- Teaching Load
increases

Last 3 years PhD

Total 54



Last 3 years MS



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

Select Topic / Chair

- What field are you interested in? **Take different classes.**
- Is the faculty a good fit for you? **Take directed studies. Rank.**
- What are the job opportunities in this field? **Check the faculty record.**
- Are you going to be supported in the summer? **Check the faculty funding record.**

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!**
- Take advantage of social media (e.g. linkedin)

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.

Math 679: Mathematical Algorithms and their implementation

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
- 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.