How to get to Graduate School

Statistics, Biostatistics, Data Science

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Terminology

For most of this presentation, I use the word "statistics"
to refer to

- Statistics
- Biostatistics
- Data Science

I'll talk about the differences between these later.

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The United States needs
well-qualified statisticians

"Statistician" was ranked the best job

in 2017 by CareerCast

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With an MS or PhD in statistics,
you will find a great job

Some examples:

- Predicting crowds at Walt Disney World
- Teaching & research as a professor
- Integrating energy sources (wind, coal, solar) on massive power grids
- Modeling sea lion populations in Alaska
- *********** (she can't tell me because her work is highly classified)

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How to get to graduate school

1. Deciding whether to apply
2. Where to apply
3. How to apply
4. When to apply
5. How to pay for graduate school

Deciding whether to apply

With a MS or PhD in statistics you get

- Higher paying job
- More responsibility
- More interesting job
- More independence in your job

and more….

Deciding whether to apply

Graduate school isn't for everyone

You need:

- Excellent grades

   A's and only a few B's in math and stats classes

- A desire to work hard
- Focus & intensity

Deciding whether to apply

"Graduate school is MUCH harder than being an undergraduate. The classes are a lot of work and the material is much more technical."

"Graduate school is so cool. In undergraduate classes professors tell you how to do things. In graduate school, professors they tell you why they do things."

Deciding whether to apply

- Do a summer program to explore graduate opportunities in statistics and biostatistics
- Do research with a professor in statistics or mathematics
- Get an internship
- Ask your favorite statistics professor

Where to apply

First, make these choices:

- Applied versus Theoretical focus in graduate school
- Program type: Statistics, Biostatistics, or Data Science
- Masters versus PhD

The choice depends on your career goals.

Where to apply
Applied versus Theoretical Graduate Programs

Theory
- Do you excel in your theoretical classes?
- Even if you find theory challenging, please don't shy away from theory! Often, you just need more practice at theory to get better at it.

Applications
- Do you love data analysis?
- Do you enjoy programming in R, SAS, or Python?
- Do you get excited about learning about different topics?

Where to apply
Types of graduate programs

Statistics
- Hired by everyone (business, university, government, ….)
- Theoretical and applied focus

Biostatistics
- Primarily hired by drug companies and public health fields
- Usually more applied focus than statistics

Data Science
- Hired by everyone but businesses are especially interested
- Applied focus

Where to apply
Master versus PhD degree

Masters
- Many types of programs
  Master of Science, Data Science, or Applied Statistics
- On campus versus online
- If you eventually want a PhD: choose carefully

PhD
- Not for professors only!
- It is usually better to get your Masters and PhD at the same university

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Where to apply
Top ranked universities

- Are your grades outstanding?
- Did you get a perfect (or nearly perfect) score on the quantitative section of the GRE?
- Then you may want to consider one of the top schools in the nation.

See ranking at PhDs.org

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How to apply
What classes to take as an undergraduate?

Requirements vary. One example (minimum requirements):
- Calculus (through multivariable calculus)
- Linear algebra
- For PhD applicants: a proofs-based course (like real analysis)
- Useful additional courses:
  - ✓ Statistics
  - ✓ Computer science (programming)
  - ✓ Additional mathematics

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How to apply
Graduate applications usually require

1. University application form
2. GPA
   Schools are especially interested in mathematics and statistics courses
3. GRE scores
4. Letters of Recommendation (usually 3)
5. Personal statement
6. Resume
7. International students: TOEFL or similar

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How to pay for graduate school

Masters-only programs: many require you to pay for the program.

PHD programs:
- Best bet: get good grades as an undergraduate.
- Standard set-up: school pays your tuition, a monthly stipend for your living expenses, health insurance.

Other options:
  – Get a scholarship or fellowship.
  – Get a job and have the company pay for it
  – Online masters program (usually not useful if you want a PhD)

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When to apply

- Deadlines vary (November – March).
- Almost always easier to start graduate school fall semester.
- If you want support (the school pays for your tuition), be sure to apply for it.

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Statistics
Biostatistics
Data Science

lead to fun, fulfilling, and well paying jobs

Graduate school will get YOU there

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Questions?

- Talk to your advisor

- Visit the American Statistical Association's webpage

- This talk available:

  www.stat.colostate.edu/~jah