Course wrap-up

Jeffrey Leek, Assistant Professor of Biostatistics
Johns Hopkins Bloomberg School of Public Health

Why we do applied statistics

"It is not the critic who counts: not the man who points out how the strong man stumbles or where the doer of deeds could have done better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood, who strives valiantly, who errs and comes up short again and again, because there is no effort without error or shortcoming, but who knows the great enthusiasms, the great devotions, who spends himself for a worthy cause; who, at the best, knows, in the end, the triumph of high achievement, and who, at the worst, if he fails, at least he fails while daring greatly, so that his place shall never be with those cold and timid souls who knew neither victory nor defeat."

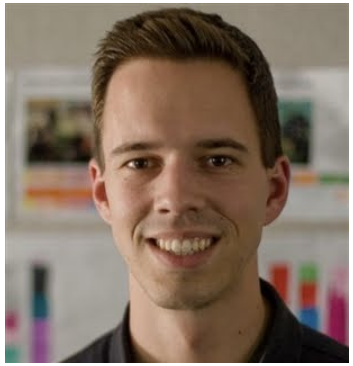
Theodore Roosevelt, 26th President of the United States

Statistics and the science game

2/16

The key challenge in applied statistics

Ask yourselves, what problem have you solved, ever, that was worth solving, where you knew knew all of the given information in advance? Where you didn't have a surplus of information and have to filter it out, or you didn't have insufficient information and have to go find some?



Dan Myer, Mathematics Educator

Why applied statistics?

Why applied statistics?

The New York Times

For Today's Graduate, Just One Word: Statistics

By STEVE LOHR
Published: August 5, 2009

MOUNTAIN VIEW, Calif. — At Harvard, Carrie Grimes majored in anthropology and archaeology and ventured to places like Honduras, where she studied Mayan settlement patterns by mapping where artifacts were found. But she was drawn to what she calls "all the computer and math stuff" that was part of the job.

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Why applied statistics?

McKinsey Global Institute

June 2011

Big data: The next frontier for innovation, competition, and productivity

Why are you lucky?

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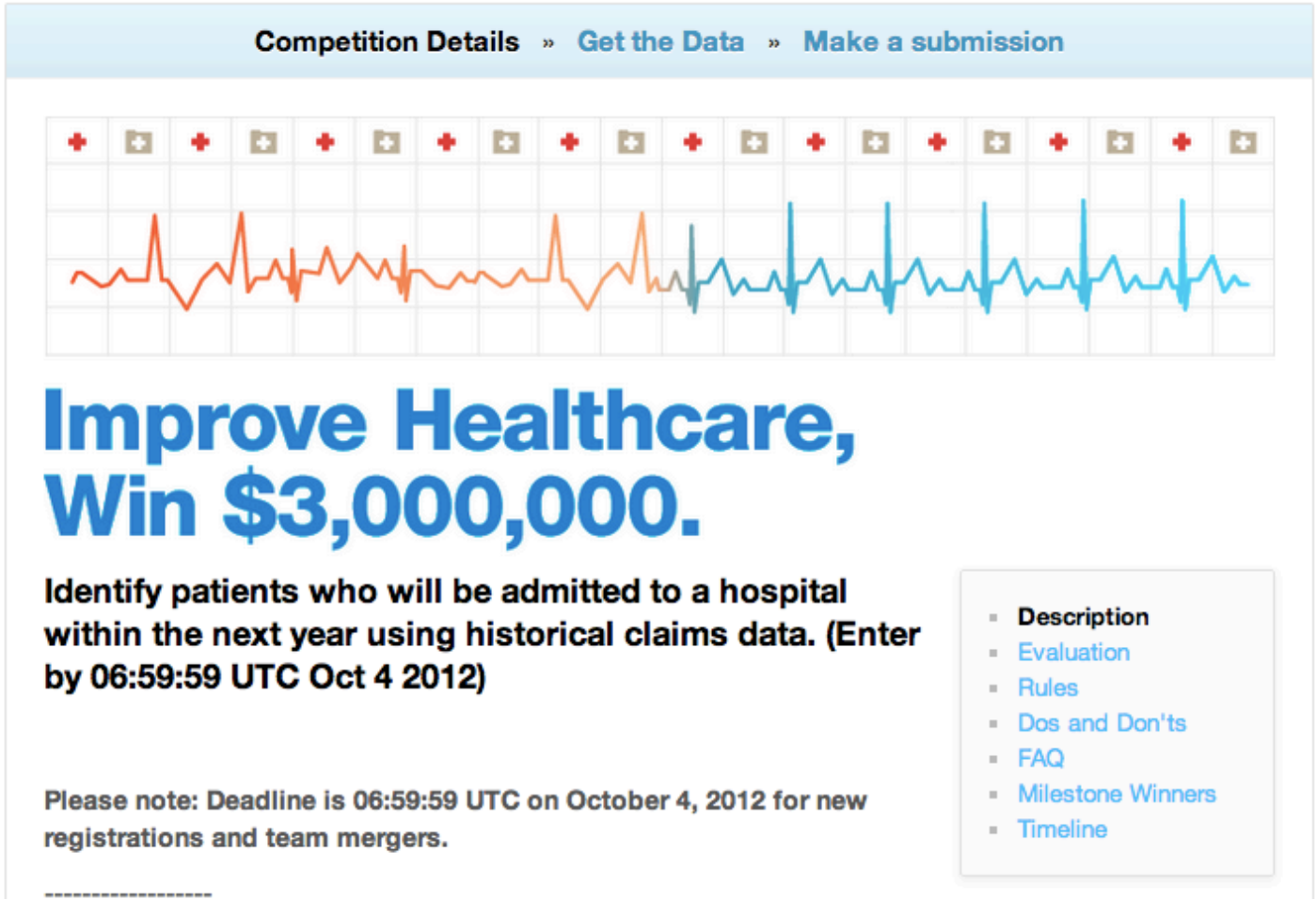
Why are you lucky



Heritage Health Prize

8/16

New data drives new statistical ideas

- How do we make better beer?
  - **Data**: Measures of beer quality
  - **Statistic**:The t-statistic
- What characteristics of field lead to better crops?
  - **Data**: Field characteristics, crop yields
  - **Statistic**: Analysis of variance (ANOVA)
- How long do people live?
  - **Data**: Survival times of people (censored)
  - **Statistic**: Kaplan-Meier Estimator
- What movies will you like?
  - **Data**: Lots of other peoples movie ratings
  - **Statistic(s)**: Recommender systems

Who is an applied statistican?

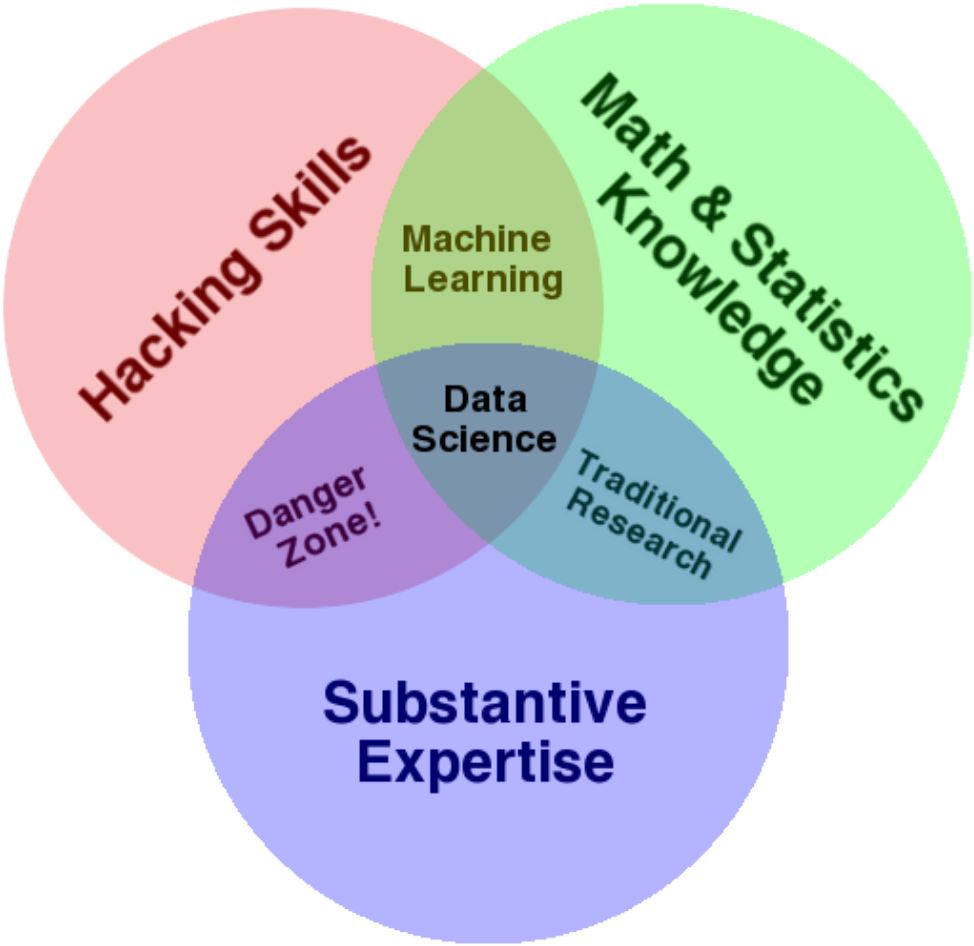
Daryl Morey

Hilary Mason

Daphne Koller

Nate Silver

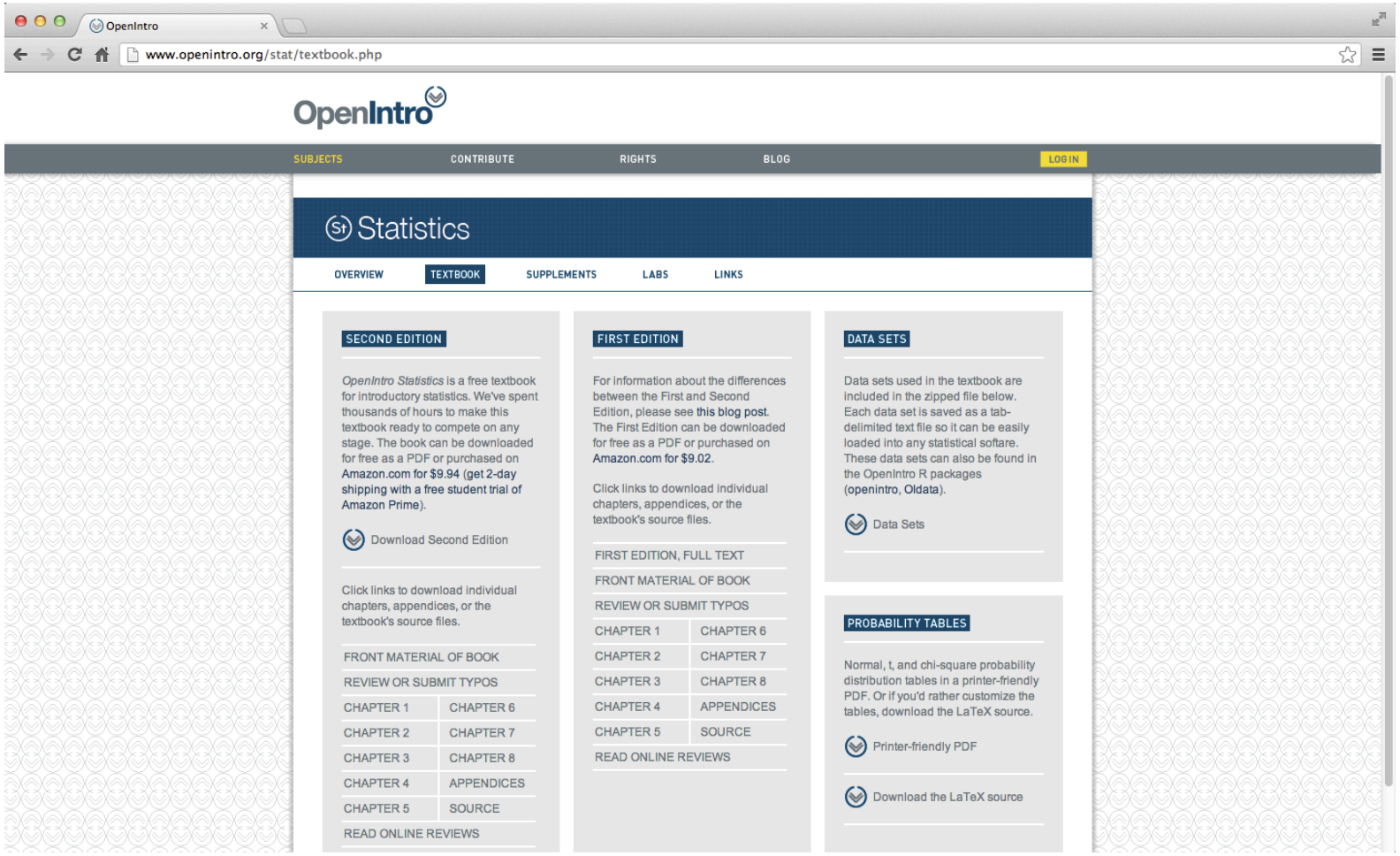
An important goal



Drew Conway

11/16

These might be useful



http://www.openintro.org/

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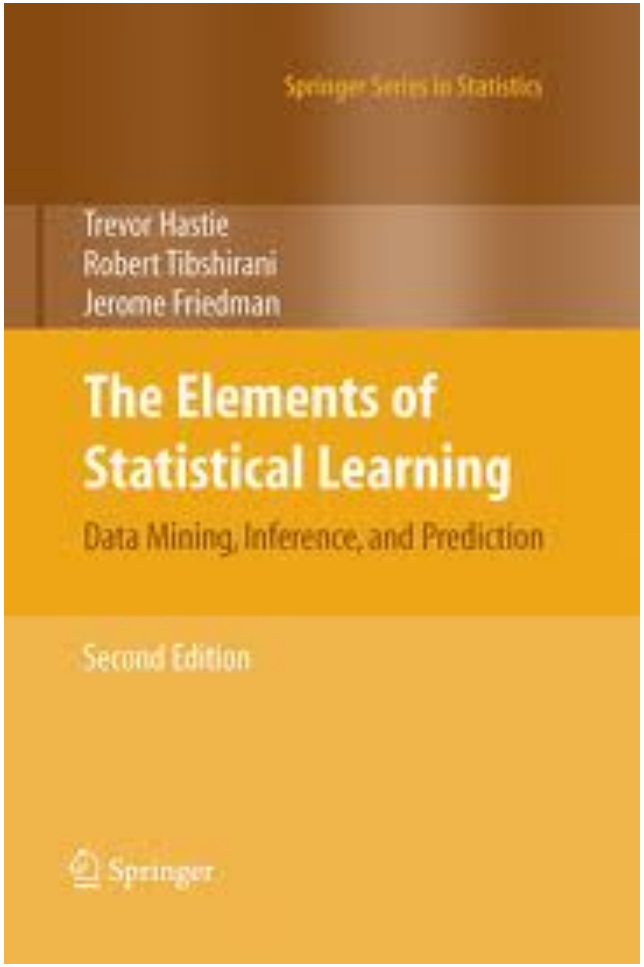
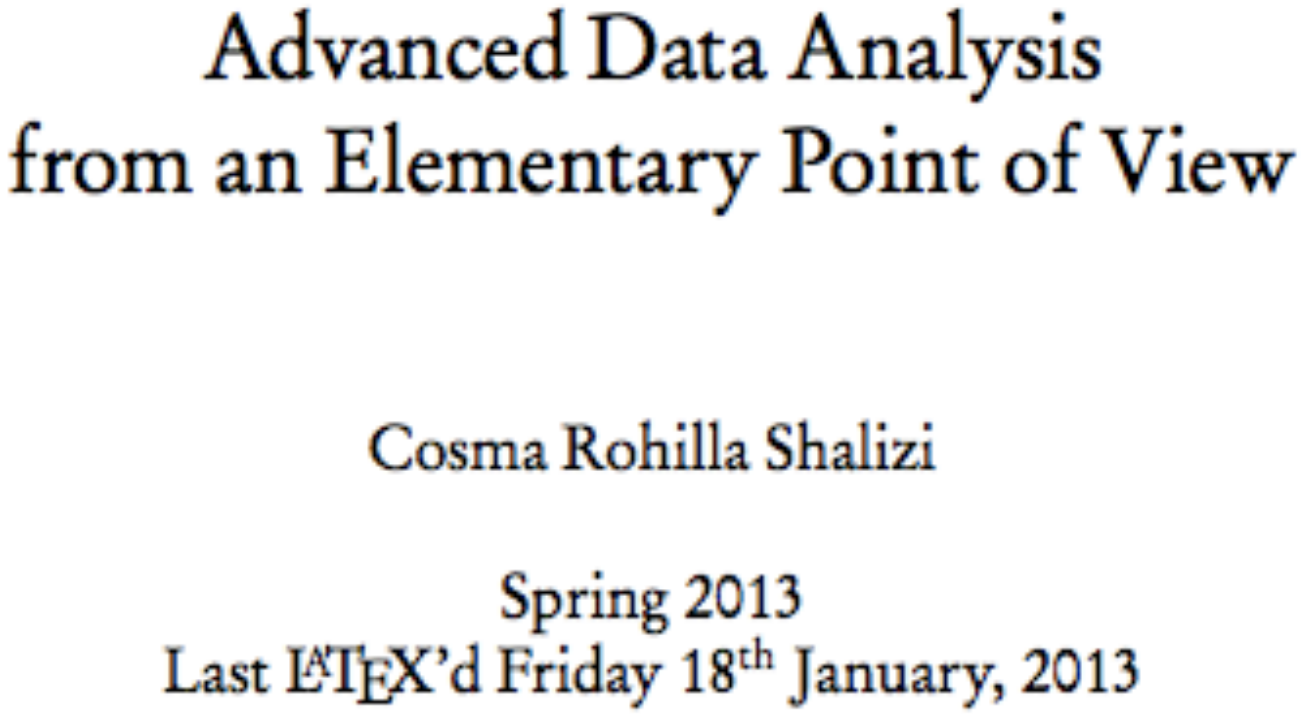
These might be useful



http://www-stat.stanford.edu/~tibs/ElemStatLearn/

These might be useful



Advanced Data Analysis from An Elementary Point of View

Also check out

- Andrew Gelman's blog
- Larry Wasserman's blog
- Statsblogs
- Flowing Data
- junkcharts
- Hilary Mason's Blog and @hmason
- Cosma Shalizi's Blog
- Some other guys' blog

The top Biostatistics Department in the World - No bias here :-)

It has been my exteme pleasure

Thank you so much for all of your dedication, time, and enthusiasm. This has been a wonderful experience for me and I hope it has been for you too.

16/16