Status of Statistics Curricula in Canada

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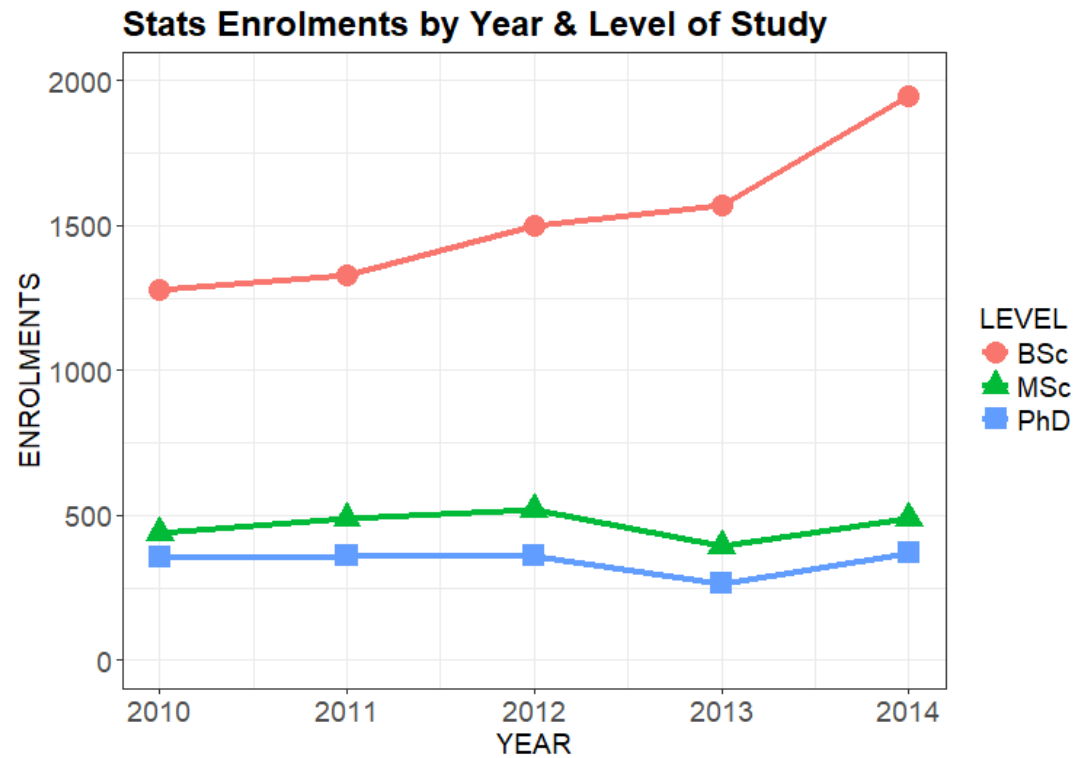
UNIVERSITY OF
TORONTO
SCARBOROUGH

Data Sources
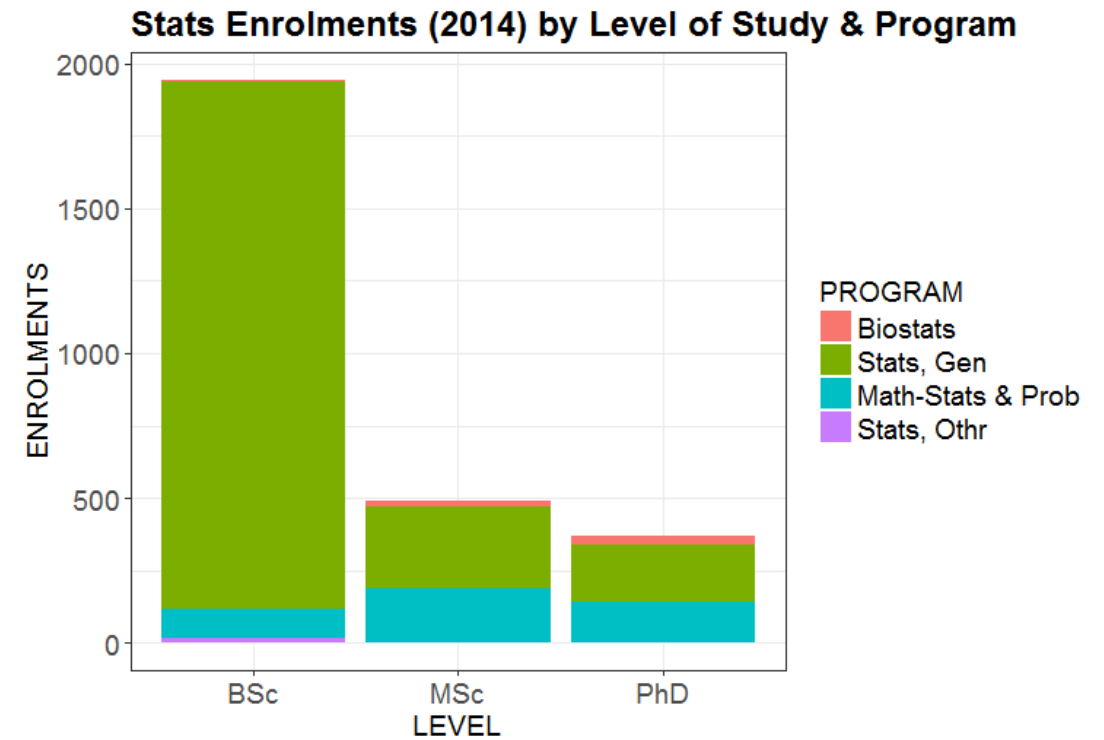
- **Stats program enrolments/graduates**: Postsecondary Student Information System (PSIS) survey, from Statistics Canada
  - Microdata available through StatCan's RTRA

- **Stats program curricula**: collected from universities' calendars
  - Many thanks to Olivia Rennie (UTSC NeuroSci BSc)

- All data & code available through GitHub
  - https://github.com/damouras/SoSC

Stats Programs Vital Statistics

52% increase in Stats BSc enrolments (`10 to `14)

Majority of BSc's in General Statistics

Stats Enrolments by Year & Level of Study

LEVEL: BSc, MSc, PhD

Stats Enrolments (2014) by Level of Study & Program

PROGRAM: Biostats, Stats, Gen, Math-Stats & Prob, Stats, Othr
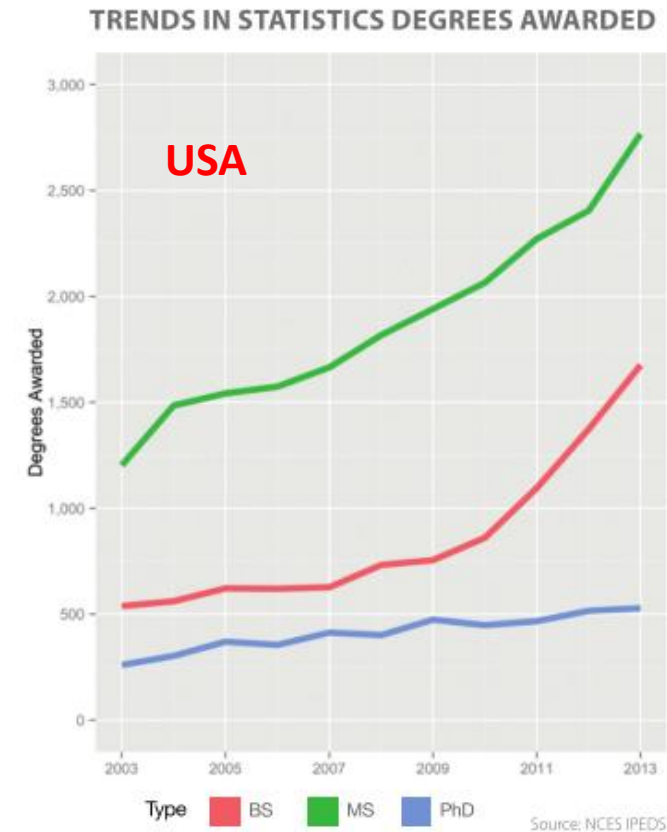
Stats Programs Vital Statistics

>2 times more BSc
than MSc+PhD grads

Different from US,
where MSc > BSc

Stats Degrees by Year & Level of Study

CANADA

TRENDS IN STATISTICS DEGREES AWARDED
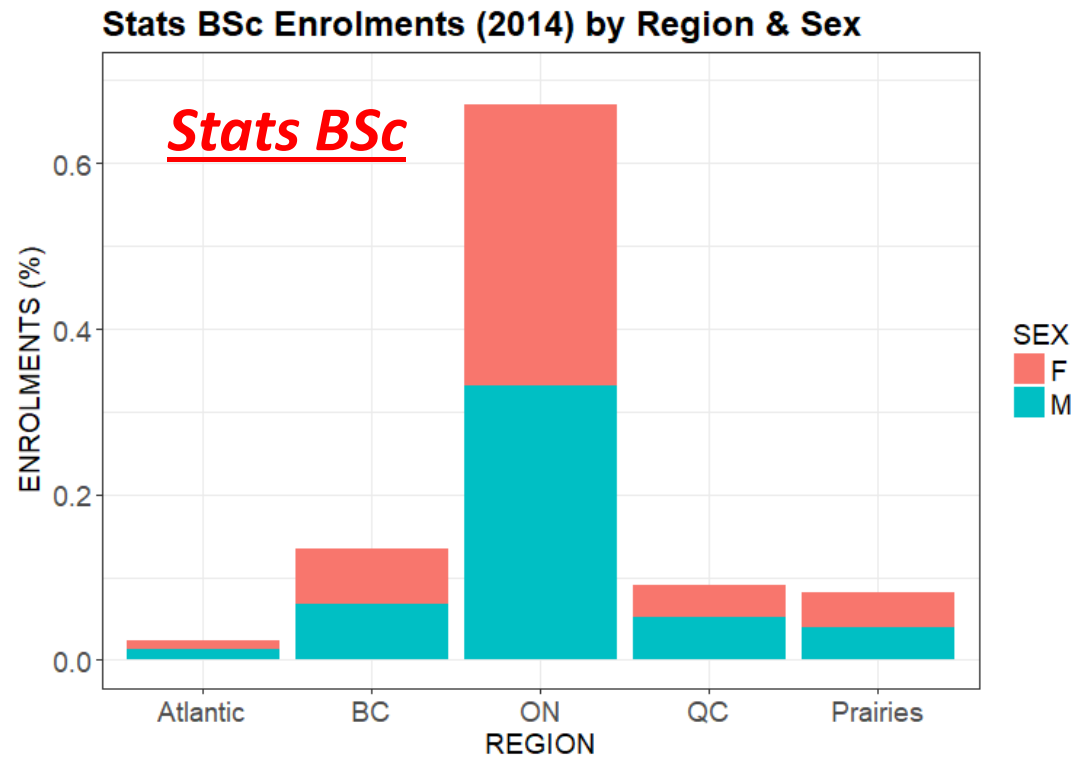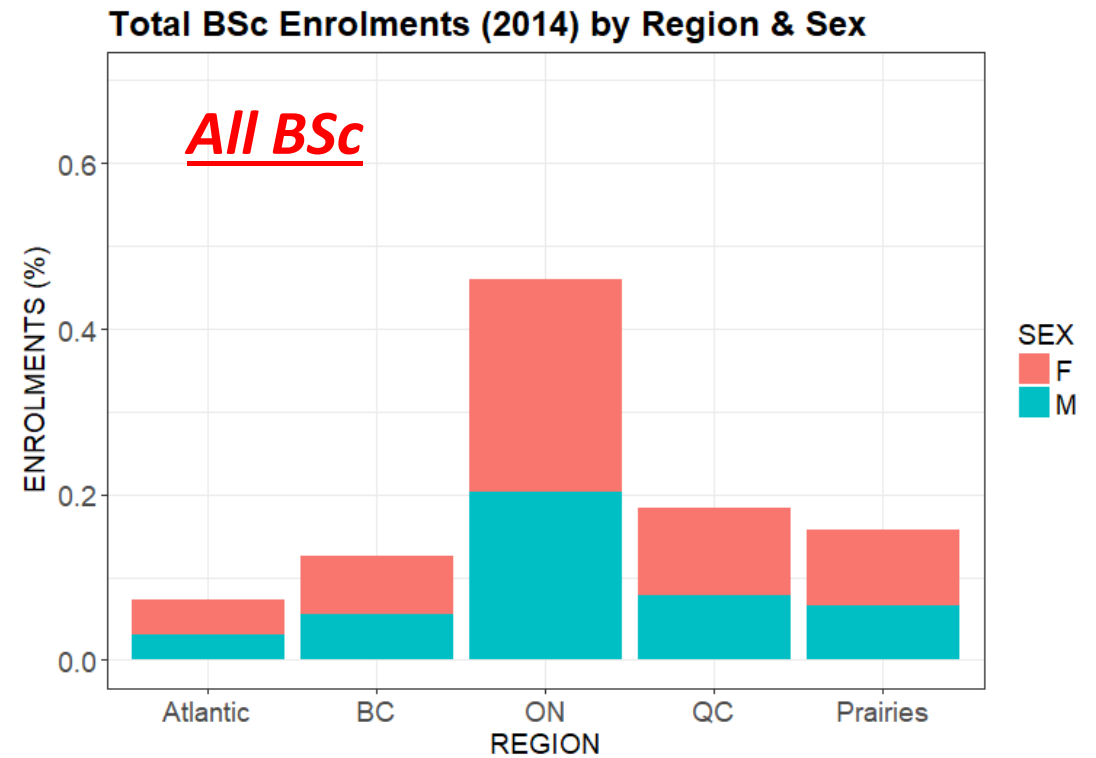
USA
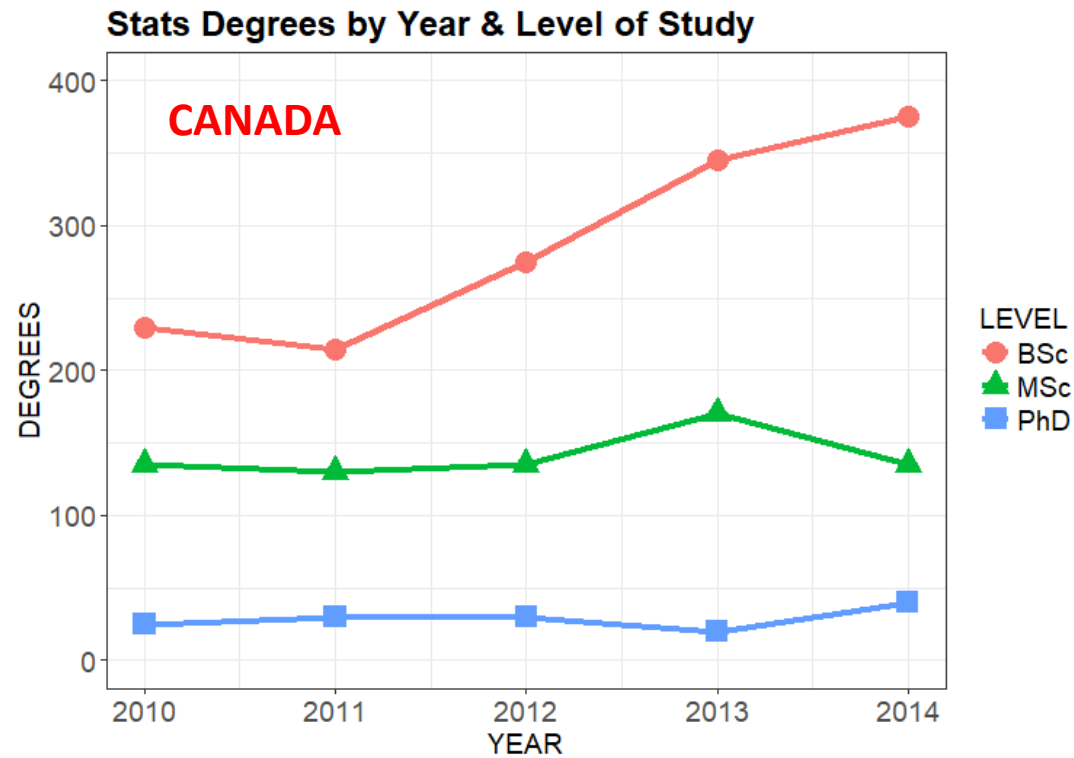
(reproduced from 2014 ASA *Curriculum Guidelines for Undergraduate Programs in Statistical Science*)

Stats BSc Enrolment Breakdown

Stats BSc Enrolments (2014) by Region & Sex

Stats BSc

Total BSc Enrolments (2014) by Region & Sex

All BSc

Stats Curricula - Target Population

- Consider only *pure Statistics Honours/Specialist programs*
  - Excludes Minors, 3-yr BSc, etc
  - Excludes programs not focused on Statistics (e.g. no Mathematics/ Probability, Data Science, or "Applied" Statistics programs)
- Analyzed programs from n=24 Universities

Stats Hons/Spec pograms by University Size & Region
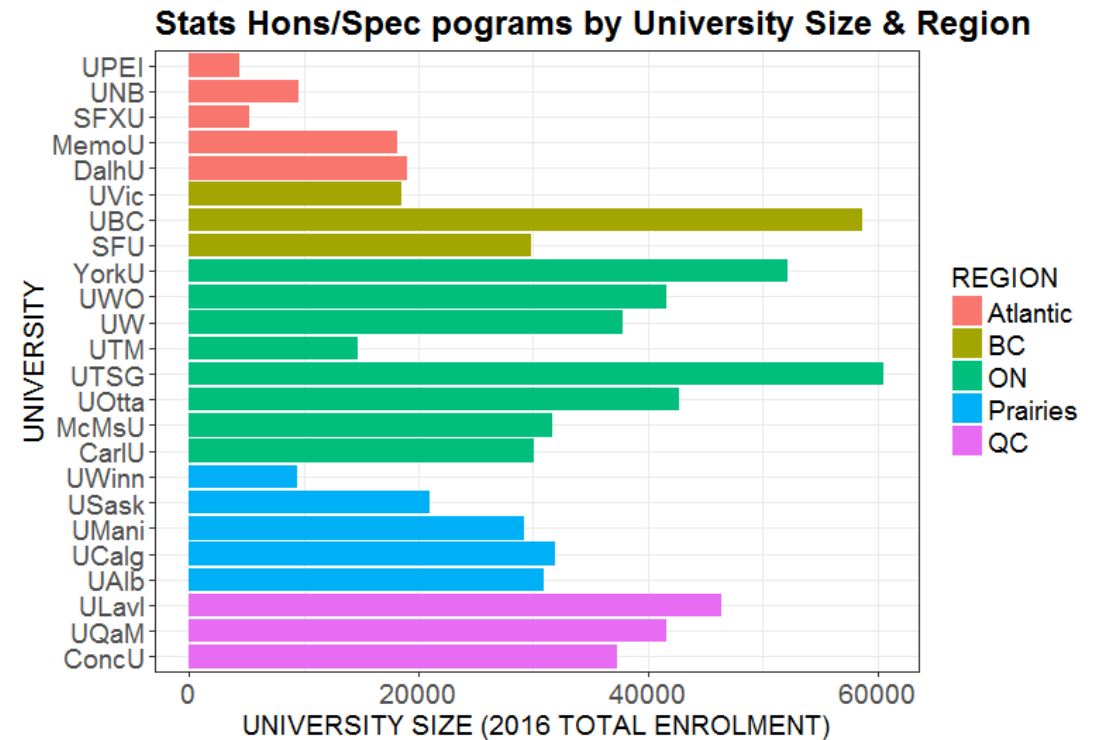
Stats Curricula - Variable Description

- For each course requirement, create variables:
  - **Code**, **Title** & **Description**: copied from calendar
  - **Credits:** 0.5 credits = one-semester course
  - **Discipline**: department/discipline offering course
    - One of: *COMP*, *MATH*, *STAT*, or *OTHR*
  - **Level**: "year" in which course is offered (capped at 4)
  - **Type**: *Core* or *Elective* requirement
  - **Topic Category**: multi-valued variable; *subjective* grouping of covered topics
   - *One or more* of:

Statistical Theory (ST)		*Statistical Methodology* (SM)		*Statistical Practice* (SP)
Mathematics (MT)	*Probability* (PT)	*Computing* (CS)		*Other* (OT)

# Topic Category Word Clouds
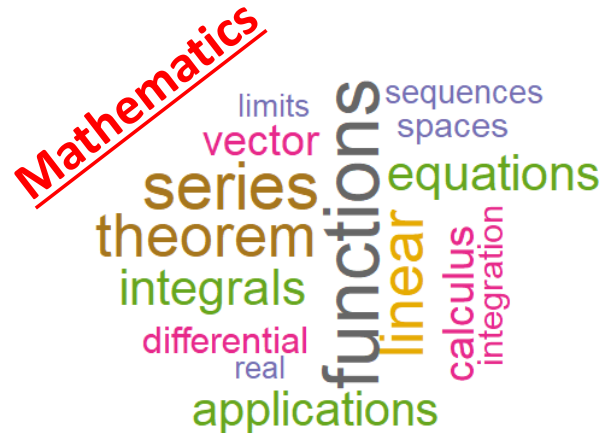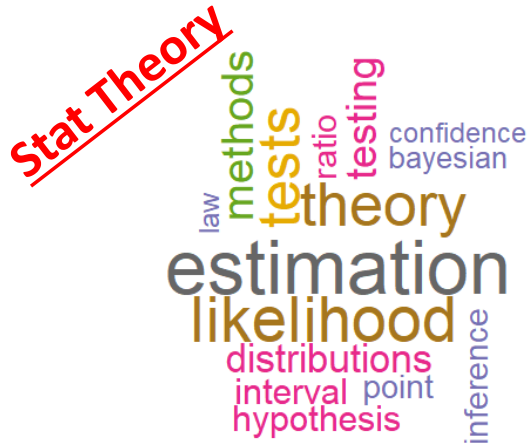
Number of Courses

- **25 semester courses** required on average; with most programs between 24-26
  - i.e. 12-13 year-course equivalents, or 72-78 credit hours

- **70% of courses specified** (core)
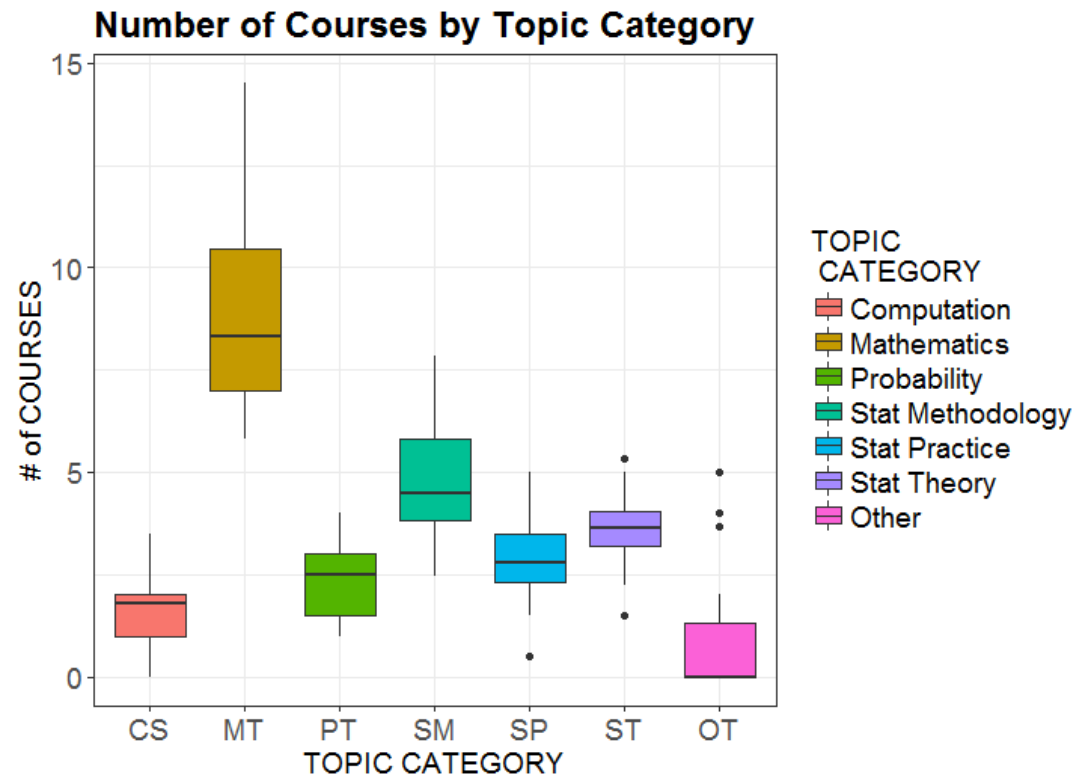 - Most programs ranging between 60% - 80%

Program Requirements by University
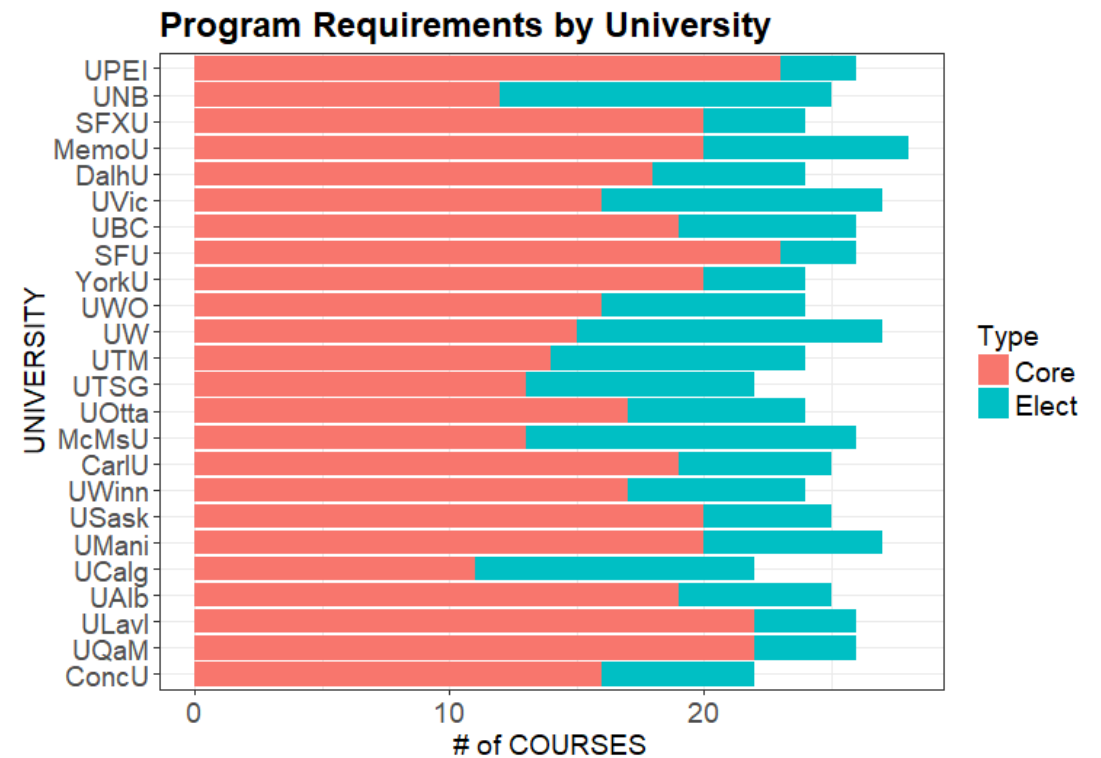
Breakdown of Courses by Discipline

Number of Courses by Discipline

Average Number of Courses by Discipline & Level
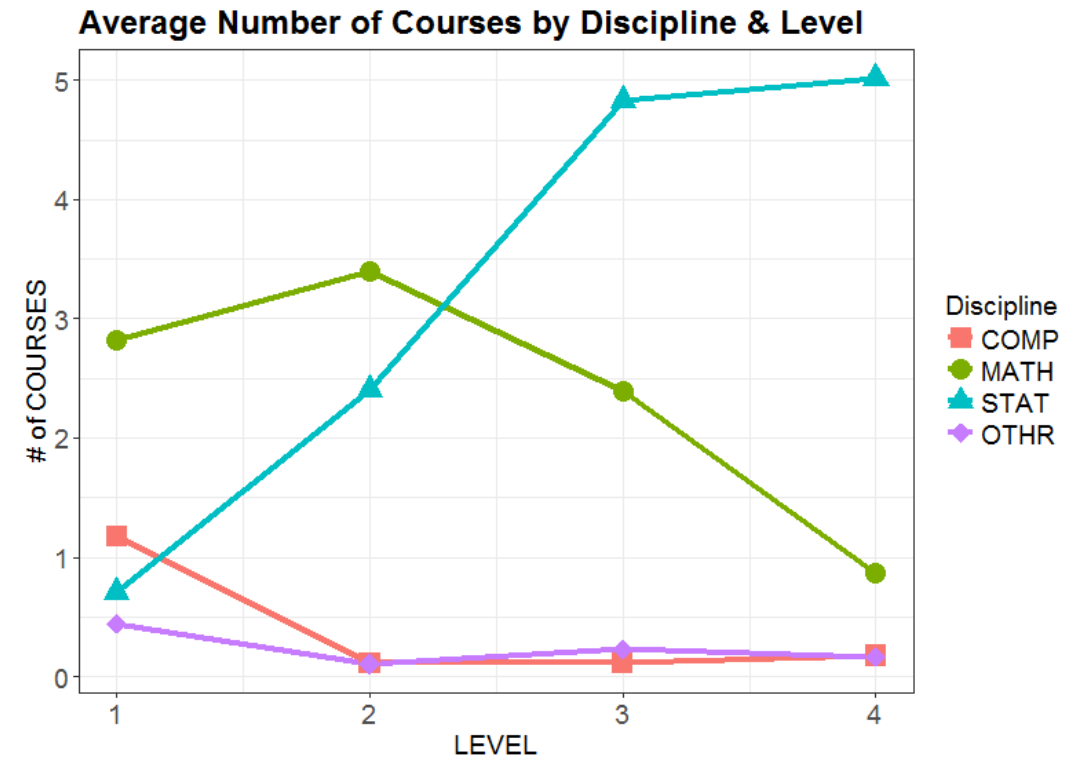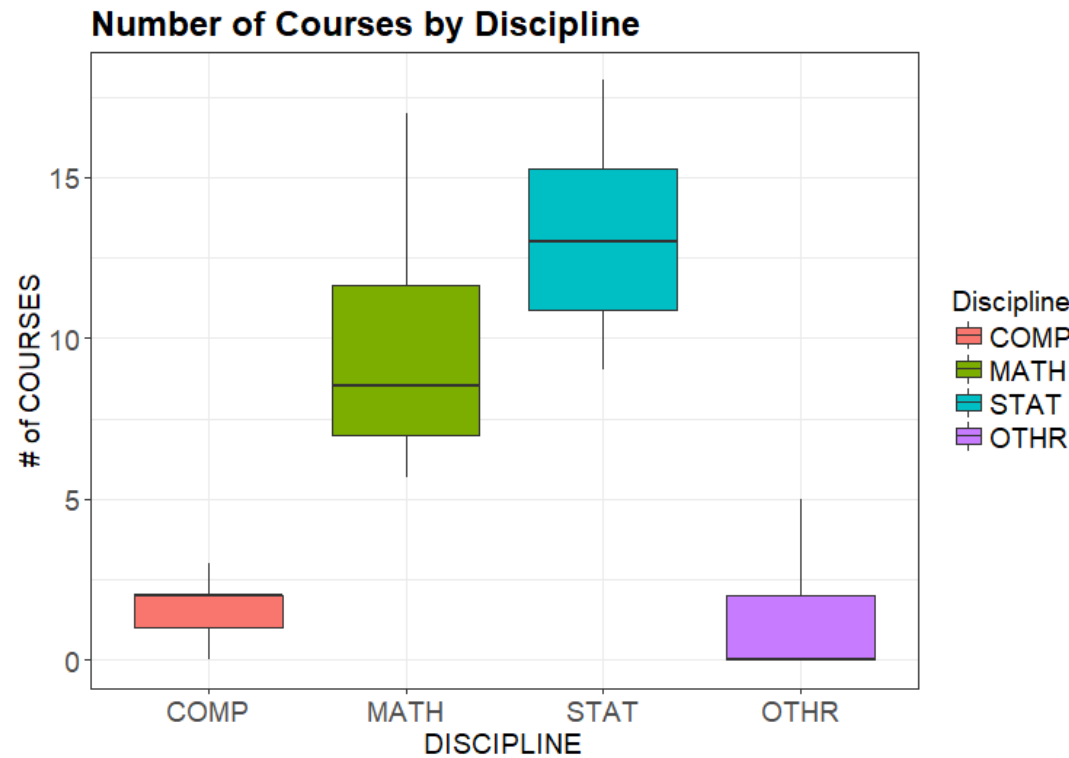
Breakdown of Courses by Topic Category
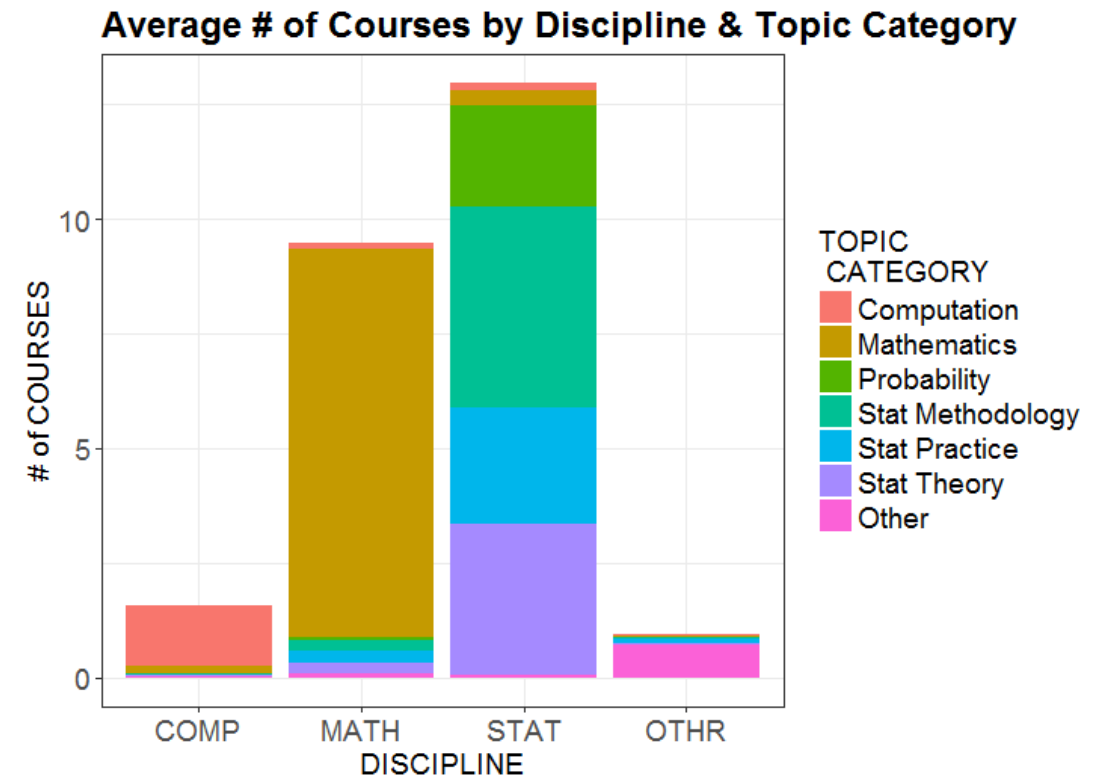
Conclusions/Recommendations

- Train Stats BSc's primarily for the workplace (rather than grad school)

- Offer more Stats-specific courses (at expense of Math courses)

- Offer more Stats courses early on (1st year)

- Place more focus on Statistical Practice / Computing