

Data Science at Amherst College

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Liberal Arts Data Science Panel, January 12, 2018

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AMHERST MAMMOTHS

Amherst College Statistics

SEEKING
TRUTH...



THROUGH
DATA...

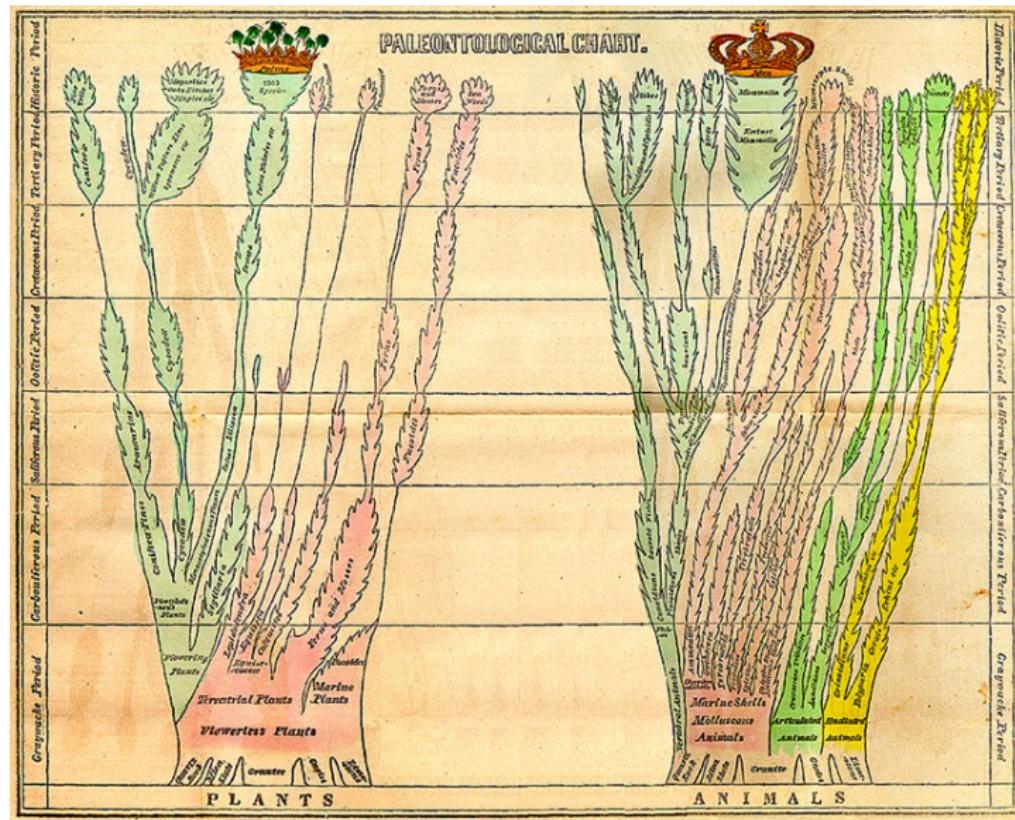
SINCE 1821

Amherst and the founders of the American Statistical Association (1837)

Hon. Stephen C. Phillips	Salem
Abel L. Pierson, M.D.	Salem
Benjamin Merrill, Esq.	Salem
Rev. Charles W. Upham	Salem
Asahel Huntington, Esq.	Salem
Elisha Bartlett, M.D.	Lowell
Luther V. Bell, M.D.	Charlestown
Hon. Caleb Cushing	Newburyport
Prof. Edward Hitchcock	Amherst
Prof. Joseph Alden, D.D.	Williamstown
Josiah Noyes, M.D.	Needham
Emory Washburn, Esq.	Worcester
Hon. William D. Williamson	Bangor, Me.



Edward Hitchcock, Statistics and Data Science at Amherst



- Core: five tenure track statistics faculty
- an affiliated group of approximately 12 faculty from Mathematics, Computer Science, Astronomy, Biology, and Political Science
- connections with burgeoning UMass/Amherst Center for Data Science, Mass Mutual, and other Five College consortium members

What is Amherst seeking to achieve?

- Our statistics program is flourishing (21 graduates expected out of a class of 450)
- New capstone course and comprehensive projects provide integrative practice and portfolio experience
- Work to facilitate our students' ability to “think with data” across the curriculum

Recent accomplishments and successes

- Continued engagement with National Academies undergraduate data science education roundtable and study (http://sites.nationalacademies.org/cstb/currentprojects/cstb_175246 and http://https://sites.nationalacademies.org/DEPS/BMSA/DEPS_180066)
- Maturation of “Statistics and Data Science Fellows” program: undergrads embedded in research projects and college offices
- Modified statistics major to deepen computational skills (and allow students to take advanced CS elective courses)

Curricular shifts to make this happen

STAT135 (Intro to Stats Via Modeling) incorporates multiple regression and multivariate thinking, extensive use of R/RStudio

STAT230 (Intermediate Statistics) added data wrangling and ethics modules

STAT231 (Data Science) sophomore level course to build data foundations (intro CS and intro stat prereq)

STAT360 (Probability) new learning outcomes: how to write a function and how to design and run simulations

STAT370 (Theoretical Statistics) empirical problem solving to complement analytic plus group work facilitated using github

STAT495 (Advanced Data Analysis) capstone course to integrate prior stats, CS, math, electives, domain application area

- Programmatic engagement with the Emily Dickinson Museum (class visits and text mining)
- Create opportunities for “data science for social good” through the Statistics Fellows program (with funding for summer internships)
- Develop additional pro-bono collaborations with local institutions with data needs

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