

You Can't Do That with Statistics!

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Title motivated by Sarah Zuckerman's post on "The Bugeater" from September 27, 2025

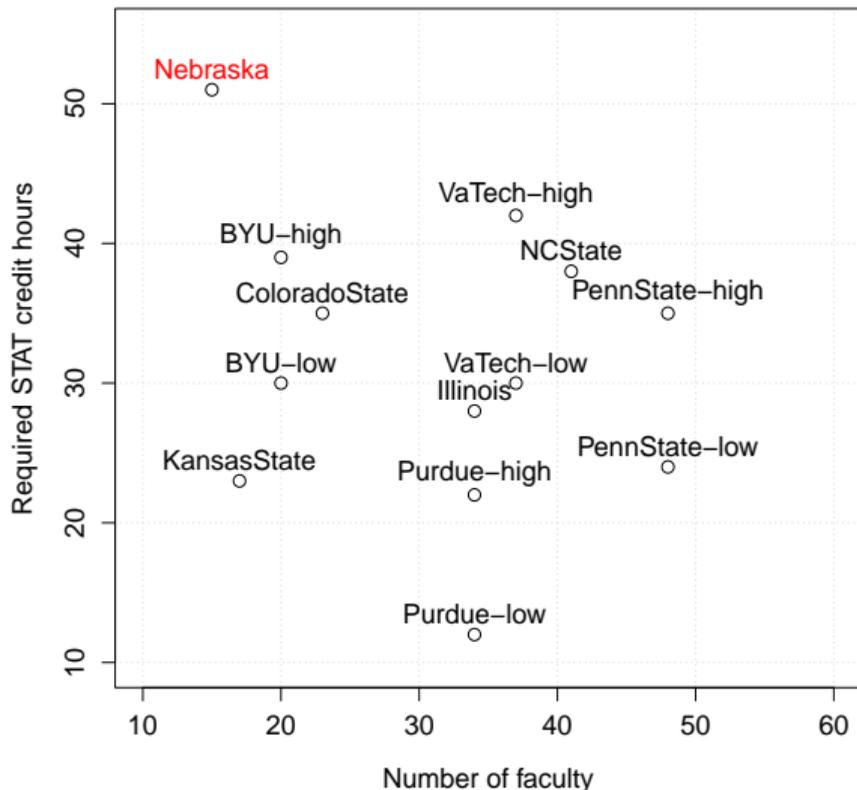
- Begin with the end: Nebraska Board of Regents meeting on December 5, 2025



- \$27.5M total budget cuts at **University of Nebraska-Lincoln (UNL)**
- \$6.74M from elimination of four departments
 - Statistics, \$1.75M (disputed)
 - Educational Administration, \$1.69M
 - Textiles, Merchandising, and Fashion Design, \$1.45M
 - Earth and Atmospheric Sciences, \$1.85M
- \$75M of budget cuts from 2020 to 2024
- How did this happen?
- [SaveOurStats.com](https://saveourstats.com) documents our struggle

- Department of Statistics formed in 2003
 - “Distributed model” for statistics not working
 - Merger
 - College of Arts and Sciences: Statistics Division in the Department of Mathematics and Statistics
 - Institute of Agriculture and Natural Resources (IANR): Department of Biometry
 - MS and PhD programs
 - First new hire: Me!
- 2018: ~~College of Arts and Sciences and IANR~~
- 2019: IANR wants an undergraduate program
 - Don't indicate in proposal the need for more faculty
 - We've got your back
 - Resources will come

- Innovative undergraduate program approved in fall 2020
 - Required STAT credit hours taught by department: 51
 - All new courses
 - Number of new faculty needed: 7 tenured/tenure-track
- 2022: First undergraduates
- 2024:
 - Number of faculty: 13.4
 - External hire of new department chair
 - Promised 4 new faculty positions
- 2025:
 - Number of faculty: 13.4



- Grandiose goals since joining Big 10 in 2011
 - Smallest public university at 24,593 students
 - 2017: Chancellor Ronnie Green
 - Realistic goal for us by 2025 is to enroll 29 to 31,000 students on our campus, and then an aspirational goal is 32,500 students*
 - IANR leadership: Hire new faculty now!
- 2020-2023: President Ted Carter
 - Nebraska Promise: Free tuition if family income less than \$65K
 - Faculty salary increases: 30% for me and many other statistics faculty!
 - Undergraduate resident tuition: \$252 to \$268 (2025-6: **Base \$291, \$353.37 for K-State**)
 - Ohio State president 2024-present
- 2025 enrollment: 23,954
- From earlier: \$75M of budget cuts from 2020 to 2024

- 2025 state funding
 - University: +3.5%
 - Governor: -2.0%
 - Compromise: +1.25%
- March 4, 2025:
Chancellor Bennett
 - Start budget reduction process
 - Executive Leadership Team (ELT)
 - Performance metrics
- ELT: 6 members
 - 4 interim
 - 1 hired by Penn State during process

The chancellor's Executive Leadership Team includes senior leadership representing all of the university's divisions and departments.

**Dee Dee Anderson**

Vice Chancellor
Student Life

■ 402-472-3755 On-campus 2-3755
■ danderson75@unLedu

**Anne Barnes**

Interim Vice Chancellor
Business and Finance

■ 402-472-2191 On-campus 2-2191
■ annebarnes@nebraska.edu

**Mark Button**

Executive Vice Chancellor
Chief Academic Officer

■ 402-472-3751 On-campus 2-3751
■ mbutton2@unLedu
"Interim" removed on
September 10, 2025

**Josh Davis**

Vice Chancellor
Institutional Strategy and External Relations

■ 402-472-7211 On-campus 2-7211
■ jdavis@unLedu
Announced leaving for Penn
State on November 21, 2025

**Tiffany Heng-Moss**

Interim Vice Chancellor
Institute of Agriculture and Natural Resources

■ 402-472-2797 On-campus 2-2797
■ thengmoss2@unLedu

**Jennifer Nelson**

Interim Vice Chancellor
Research and Innovation

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■ jnelson18@unLedu

- September 11: ELT informed the department about proposed elimination

*And so, the Department of Statistics, based upon these **quantitative metrics and qualitative considerations**, has been proposed for elimination.*

Tiffany Heng-Moss (ELT), IANR Interim Vice Chancellor

I don't know how you are a comprehensive R1 land-grant institution without having a presence in statistics.

Tiffany Heng-Moss (ELT), IANR Interim Vice Chancellor

I struggle. As Tiffany said, [with respect to] teaching and learning how a land-grant R1 university can then be a comprehensive university and succeed in its mission without statistical expertise.

Derek McLean, Dean/Director of Agricultural Research Division

- September 12: Public announcement of **distributed model** replacement
 - Remaining courses: **K-State equivalents are STAT 225, 410, 703, 705, and 720**
 - Consulting: 1 FTE?

- You can't do that with Statistics!
- Tenured faculty cannot lose their jobs!
- University of Nebraska Board of Regents bylaws

4.12 **Termination of a Continuous Appointment: Grounds.** A Continuous Appointment may be terminated only for adequate cause, retirement for age or disability, bona fide discontinuance of a program or department, or extraordinary circumstances because of financial exigency. Before any termination for cause may occur, it shall be necessary to submit the matter to the Academic Freedom and Tenure Committee in the manner provided in Section 4.15.2.

- Bona fide discontinuance
- Kansas Board of Regents Policy Manual
 - See p. 59, item 6.b.i.
 - “Program discontinuance”
 - Does not even need to be bona fide!
- How make bona fide?

Quantitative metrics and qualitative considerations

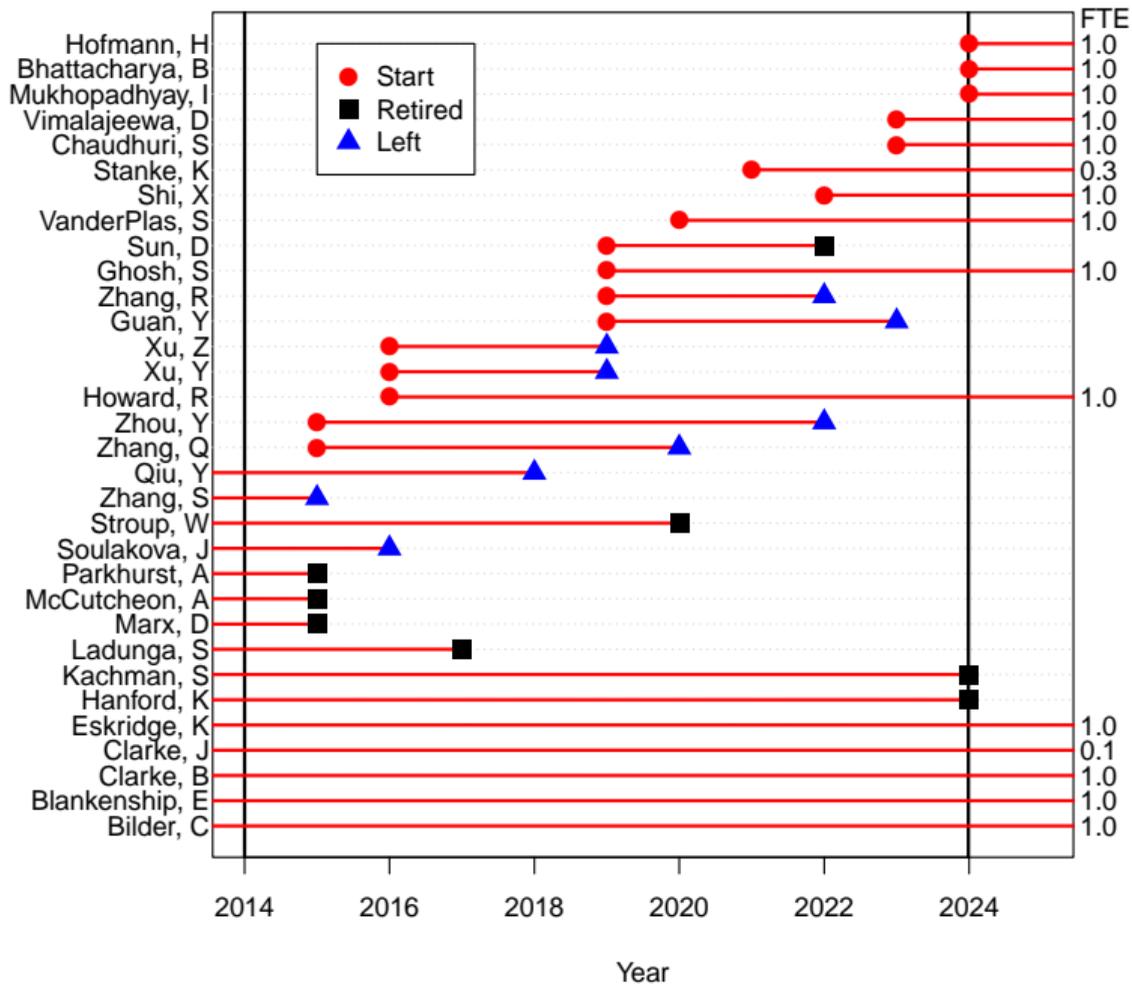
- Credit to the Statistical Detectives
 - Susan Vanderplas, Associate Professor, NSF CAREER grant in 2025
 - Heike Hofmann, Full Professor, Fellow of the American Statistical Association
- Common theme from departments proposed to be eliminated:

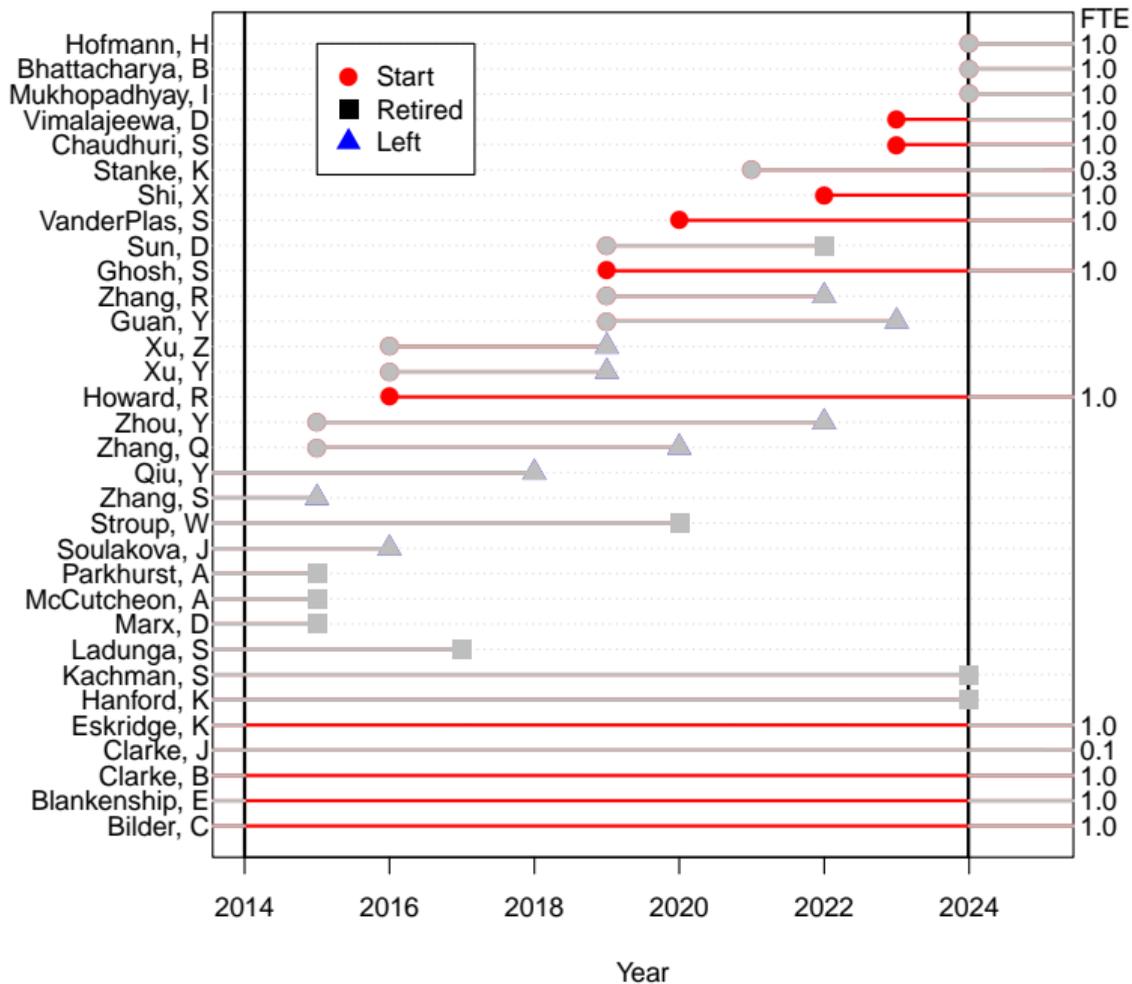
The data are not correct.

- Incomplete: My example

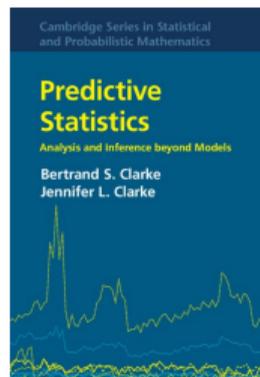
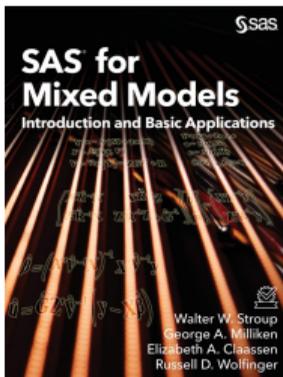
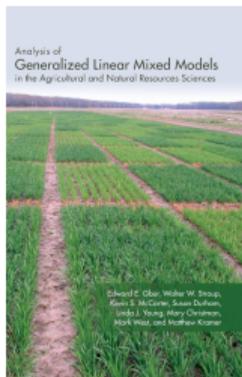
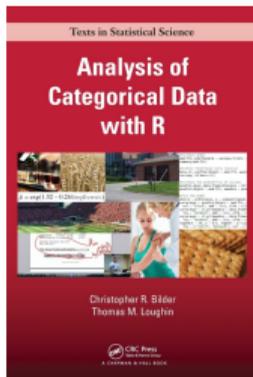
| | ELT | Correct |
|-----------------------------------|-----|---------|
| Publications, 2020-2023 | 10 | 14 |
| Awards, no time limit | 3 | 7 |
| Books, 2014-2023 | 0 | 1 |
| Chapters, 2020-2023 | 0 | 0 |
| Citations, 2019-2023 | 353 | 1264 |
| Conference proceedings, 2020-2023 | 0 | 1 |
| Grants awarded as PI, 2019-2023 | 1 | 1 |

- Other research/instruction contributions not included
 - University awards
 - Co-Investigator or consultants on grants
 - Software and apps
- Aggregate data across faculty for a department
 - Which faculty are included in the data?
 - 2014-2023 interval





- ELT: Statistics has $(13 \text{ faculty}) \times (10 \text{ years}) = 130 \text{ faculty years}$
 - Proportion of years: $61/130 = 0.47$
 - Proportion of years for non-administrator faculty: $45/130 = 0.35$
 - End result: Much lower research contributions than actually occurred
- Number of books for 2014-2023



- Our count: 5
- ELT count: 1

- **ASSUME DATA ARE CORRECT**

- 16 metrics to compare departments

- All converted to a z-score

- Z-score definition from K-State STAT 225, STAT 240, STAT 250, or STAT 510:

If X is a random variable with mean μ and standard deviation σ , then

$$Z = \frac{X - \mu}{\sigma}$$

- Z-score interpretation: Number of standard deviations X is from the mean
 - Outliers
 - $|Z| > 2$ maybe, $|Z| > 3$ better
 - Based on normal distribution, Chebyshev's Theorem
- Z-score comparisons: Multiple variables on the same numerical scale

- August: Department of Statistics given its own metrics

| Research | z-score | Instructional | z-score |
|----------------------------------|---------|----------------------------------|---------|
| Federal research expenditures | 0.19 | Student credit hour (SCH) growth | -0.55 |
| Awards | -0.33 | Majors growth | 0.11 |
| Books | -0.56 | SCH | -0.26 |
| Citations | -0.09 | Majors | -0.89 |
| Scholarly Research Index | 0.55 | SCH relative to FTE | 0.74 |
| Grants relative to state funding | -0.40 | Budget relative to FTE | 0.14 |
| Growth in grants | -0.43 | Tuition relative to budget | 0.45 |
| | | Completion of majors | -1.38 |
| | | Freshman retention | NULL |
| Average | -0.15 | Average | -0.26 |

- Purpose: Compare to other departments
- Why average?
- 9 (8?) of 16 metrics negative, none outside of ± 2
 - Nothing to worry about
 - Full calculations not reproducible

- August: Department of Statistics given its own metrics (continued)
 - Scholarly Research Index (SRI) from Academic Analytics
 - $Z = 0.55$
 - Weighted measure of overall research contributions, where weights are discipline specific
 - Statistics:

| Contribution | Weight | Contribution | Weight | Contribution | Weight |
|--------------|--------|--------------|--------|---------------|--------|
| Books | 5 | Papers | 18 | Citations | 20 |
| Chapters | 5 | Awards | 19 | Grant dollars | 22 |
| Proceedings | 11 | | | | |

- Why include awards, books, ... as separate metrics when SRI already includes them?

- May 15: Mark Button (ELT) meeting with program leaders to discuss The Metrics
 - Leaders told not to discuss with faculty
 - Metrics document:

Neither positive nor negative z-scores carry any interpretation other than distance from the mean in standard deviations. A negative score does not imply that a unit does something poorly, nor does a positive imply the opposite interpretation.

Jason Casey, Director of Institutional Effectiveness and Analytics

- Early-mid October: Academic Planning Committee hearings
 - Educational Administration:

*Educational Administration is one of the **lower performing units** by UNL metric analysis for instruction and research. The unit was negative on seven of nine instruction metrics and six of eight research metrics.*

Josh Davis (ELT), Vice Chancellor for Institutional Strategy and External Relations

- You can't do that with Statistics!
- Davis changed wording for Statistics: Number of negative metrics not included

- October 16 and October 28: UNL Graduate Council and Executive Graduate Council
 - Vote on whether to eliminate graduate programs
 - Only justification for elimination provided by Mark Button (ELT)

Statistics

Instruction: Negative on 4 of 9 Instructional metrics with a null for Retention

Instruction Outliers: Completions Majors (-1.38)

Research: negative z-scores across 4 of the 7 research metrics but no outlier more than -1

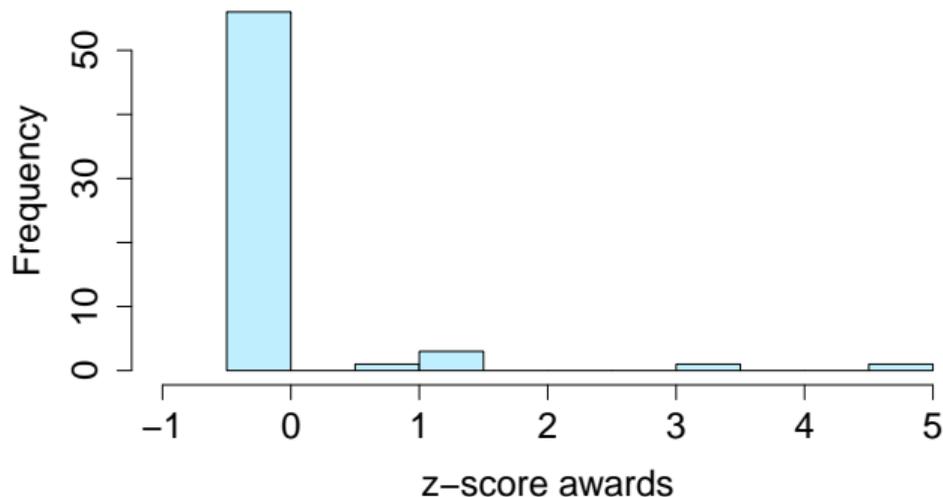
Research Outliers: N/A

Note: Outlier for this purpose defined as +/- 1 z-score – may not align with a statistical definition.

- December 5: Board of Regents meeting

*Statistics is one of the **lower performing units** by UNL metrics analyses for instruction and research. The department had negative scores on 4 out of 9 instructional metrics, and negative scores on 4 out of 7 research metrics.*

- The Metrics for every department were leaked
- Awards metric
 - Only included “NRC highly prestigious awards,” which is different from SRI award part



- 8 unique values for Z among the departments
- 87% less than 0

- Instructional Outliers: Completion Majors (-1.38)

Note: Outlier for this purpose defined as +/- 1 z-score – may not align with a statistical definition.

- You can't do that with Statistics!
- Normal distribution: Probability $|Z| > 1$ is 0.3173
Chebyshev's Theorem: Probability $|Z| > 1$ is less than or equal to 1
- Expression

$$\frac{\text{Number of graduations}}{\text{Number of majors}}$$

for 2023-4 academic year; converted to a z-score

- New undergraduate statistics major began in 2022!
 - Contribute to the denominator
 - Did not contribute to the numerator
- No context given to those who voted on whether to eliminate the department

- Z-score definition: If X is a random variable with mean μ and standard deviation σ , then

$$Z = \frac{X - \mu}{\sigma}$$

- X_i is a random variable with mean μ_i and standard deviation σ_i for $i = 1, \dots, n$
 - Goal is to compare X_1 to X_2 to ... to X_n
 - Calculate

$$Z_i = \frac{X_i - \mu_i}{\sigma_i}$$

and compare Z_1 to Z_2 to ... to Z_n

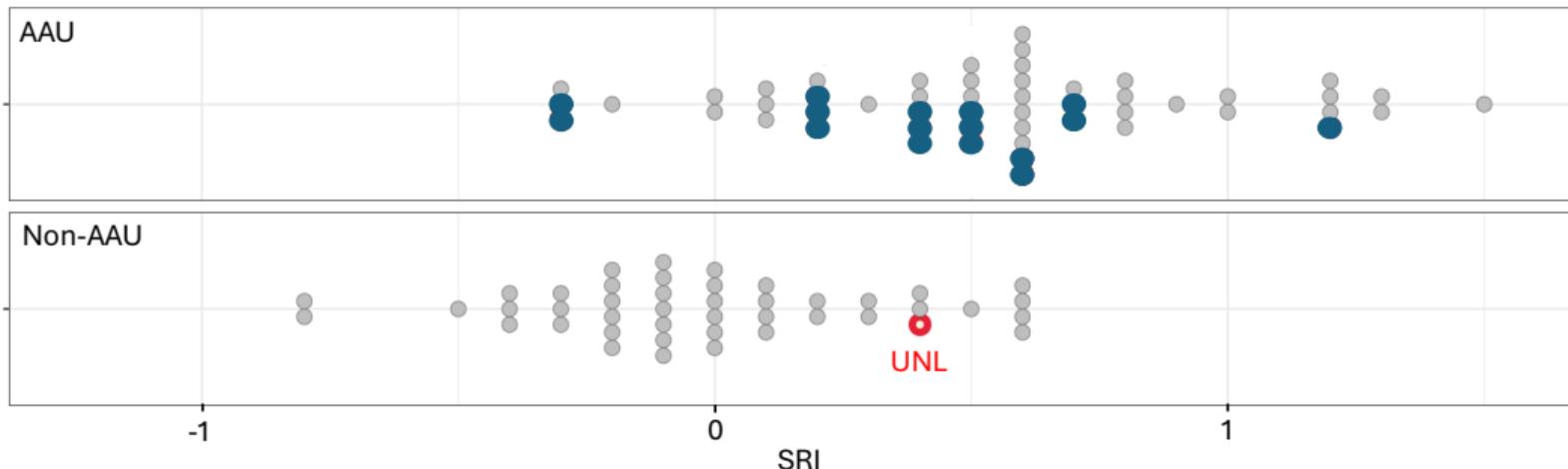
- What are μ_i and σ_i ?
- Estimate
 - μ_i with mean of observed values for X_1, \dots, X_n ?
 - σ_i with standard deviation of observed values for X_1, \dots, X_n ?
- X_i is a metric for department i
 - ELT: Yes for the questions above
 - You can't do that with Statistics!

- The National Dog Show in 2024: Best in Show



- Left to right: Giant Schnauzer, Berger Picard, Ibizan Hound, Clumber Spaniel, Welsh Terrier, Lhasa Apso, Pug
- Judge each dog relative to standards of their own breed
- Suppose size was the only characteristic of interest
- ELT judging method: Monty the Giant Schnauzer wins
- Actual Best in Show: Vito the Pug wins!

- Proper approach using z-scores (skip)
- Proper approach using percentiles
 - Use the percentile of department within the SAME discipline across all other universities
 - Example: SRI value for the UNL Department of Statistics = 75th percentile (39 out of 158)
 - Compare these percentiles for each UNL department
- SRI for R1 Departments of Statistics



Plot from Heike Hofmann (edited to abide by UNL's licensing agreement with Academic Analytics)

- UNL goal is to get back into the AAU
- Blue dots: Comparative group of universities with one dot added

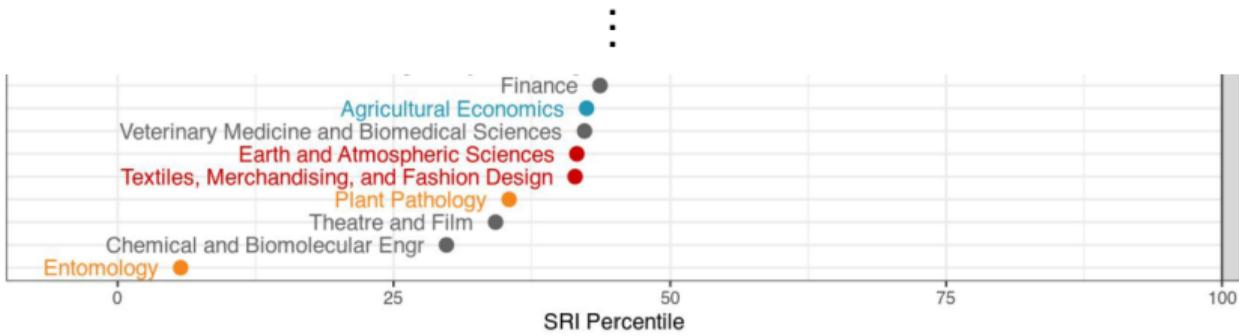
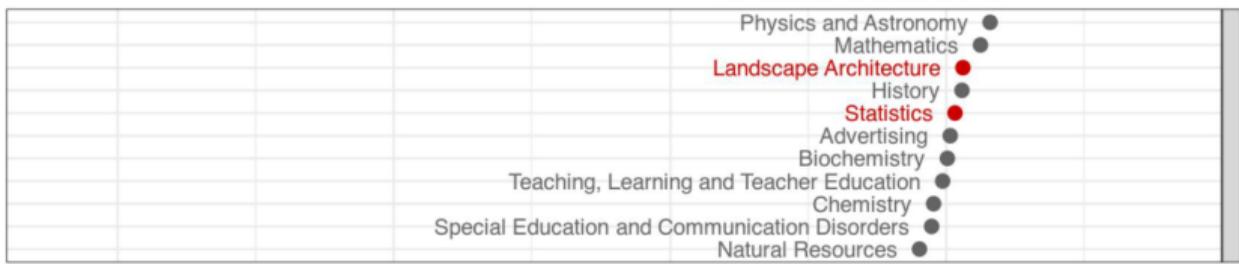
Units at UNL
ranked by their standing compared to peers



Statistics is a top 20 unit at UNL!

Plot from Heike Hofmann

- Proposed
- Eliminate
 - Merger1
 - Merger2
 - Not Mentioned

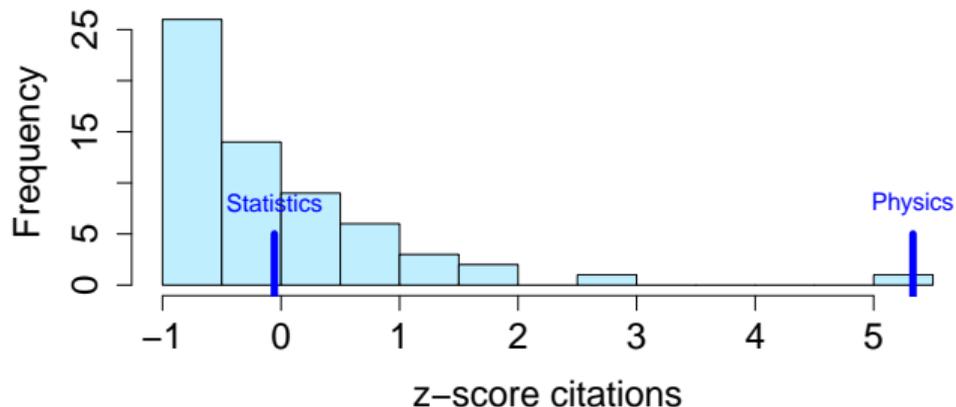


Statistics is
a top 20
unit at UNL!

Plot from Heike Hofmann

- Statistics vs. Physics

- ELT: Z-score for citations



- Compare to all departments within discipline
 - Statistics: 79th percentile
 - Physics: 40th percentile
- Physics has a lot of citations because of their discipline's culture!

- Did the Department of Statistics inform the ELT about the data and analysis problems?
- YES!!!
 - September 16 and October 10: 15 of these days through e-mails, meetings, and a presentation
 - October 3, 10, 16, 20: Request external, independent review by PhD-level statisticians
 - October 30: Invite ELT to participate in a campuswide seminar
 - November 6: The Metrics seminar, recording on SaveOurStats.com

- October 16: UNL Graduate Council votes 10-0 to retain
- October 28: Executive Graduate Council votes 8-0 to retain
- October 31 (released): Academic Planning Committee votes 13 to 8 to retain
 - Members: 11 faculty, 2 staff, 2 students, 6 administrators with 4 from ELT
 - ELT members refused to recuse themselves from voting
- Comments from councils and committee: No comments supporting elimination

We found no evidence that any of the affected graduate programs meet the standards for deletion established by the Graduate College Bylaws.

In terms of metric validity, significant concerns have been raised that have not yet been addressed.

Before proceeding, an independent verification of data and methodology is essential to ensure the Regents' decision rests on accurate and defensible information.

- November 10: Chancellor Bennett finalized budget reduction proposal
 - Eliminate Department of Statistics
 - Board of Regents vote on December 5
- November 18: Faculty senate vote “no confidence” in the Chancellor 60-14 with 3 abstentions

- Nebraska Board of Regents meeting on December 5, 2025



- Vote: 7 to 1 for elimination (9-1-2 including student Regents)
- 5+ hours of testimony from 109 individuals (each 3 minutes)
- Video of all 24 Statistics supporters

- Speaker #2: Alex Vanderplas
 - 9-year old son of Susan Vanderplas, Associate Professor in Statistics
 - Testify for Earth and Atmospheric Sciences (EAS) and Statistics
- January 5, 2026: Chancellor Bennett announces *I will conclude my service as Chancellor on January 12.*
 - Paid \$340K for remaining 5.5 months of salary on contract
 - Paid \$1.1M more for leaving
 - Non-disclosure agreement



- Could this happen here?
- Get to know Office of Data, Assessment, and Institutional Research
- Size and money
 - Much easier to eliminate small programs than large ones
 - Increase number of majors and revenue
 - Be more efficient
- Encourage department faculty to be
 - Involved in shared governance
 - Administrators
- Insist on
 - Faculty experts in statistics, economics, educational administration, ... involvement in any budget reduction discussions
 - Data correctness
 - Calculations reproducible

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