Instructional and Research Metrics Frequently Asked Questions:

Instructional Metrics

Q1: How will these metrics be used?

A: These metrics will be used as a source to understand unit performance relative to one another. The metrics are a quantitative approach and conversations with the college leadership provides a more qualitative approach. These conversations with the colleges have provided the context to ensure that a holistic understanding of each unit is achieved.

Q2: Is there a concern that some of the assessments incorporate related metrics based upon some shared inputs, resulting in unintentional overweighting (example: Instructional efficiency and realizable tuition)?

A: Given that we would expect those two things to be related, no. If these were supposed to be independent, we would likely go about them in a different manner.

Q3: What is the status of using after-graduation outcomes e.g., job placement metrics?

A: Currently, job placement data is not available at the "unit" level. We are exploring Nebraska Department of Labor (NDOL) employment data for all Nebraska graduates, National Student Clearinghouse data on advanced degree pursuit, and potentially NSWERS data that looks at employment beyond Nebraska. However, at this time this data is not incorporated into any metrics.

Q4: Why are instructional metrics and research metrics weighted equally? Should the weighting be based on "unit" apportionment?

A: The total Instructional metric z score and the total Research metric z score are weighted equally in alignment with the UNL role and mission as "the state's primary intellectual center providing leadership through quality education and the generation of new knowledge." However, an informational z-score has been calculated to provide a z-score for each unit that weighs the total instructional metric z score and total research metric z score according to that unit's faculty apportionment.

Q5: How are Extension, Engagement, Outreach, and Service factored into these assessments?

A: These important aspects of our mission are included in the holistic assessment of programs with college leadership. Extension and service apportionments are

controlled by focusing instructional metrics on instructional apportionment at the unit level.

Q6: How is SCH allocated?

A: SCH is allocated through logic that recognizes faculty appointment to best allocate SCH to the "unit" instructing the SCH to align it with budget and FTE. It also helps ensure that interdisciplinary and cross-listed course SCH is allocated accurately.

The logic for Instructional SCH is:

- If a course prefix maps to a "unit" that is instructed by a faculty member with an appointment in that "unit" then the SCH will be assigned to that "unit".
- If a course prefix maps to a "unit" that is instructed by a faculty member WITHOUT an appointment in that "unit" then the SCH will be assigned to the "unit" where the faculty member has their largest percentage of appointment (primary appointment home).
- If a course maps to a "unit" that is taught by an instructor (or instructors) without an appointment, e.g., no instructor of record recorded, then the SCH is assigned to the "unit" according to the course prefix.

Because this is very involved, the following example is provided. Suppose we are tracking the SCH/faculty/class meetings for the following two faculty members:

Fac Member	**Unit**	**FTE**
Albert Einstein	Physics	1.00
Marie Curie	Chemistry	0.51
Marie Curie	Physics	0.49

Albert Einstein has a 1.0 FTE appointment in Physics, whereas Marie Curie has a primary appointment in Chemistry (0.51 FTE) and secondary appointment in Physics (0.49 FTE).

Here are five courses from the course catalog:

No	Catalog Listing	Description	Owner	Faculty	Instr Pct	SCH
1	CHEM300 SEC01	Fun with Radium	Chemistry	Curie	1.0	100
2	PHYS201 SEC01	Light Speed I	Physics	Einstein	1.0	100
3	PHYS201 SEC02	Light Speed I	Physics	Curie	1.0	100
4	CHEM301 SEC01	Radium at Light Speed	Chemistry	Curie	0.5	100
4	CHEM301 SEC01	Radium at Light Speed	Physics	Einstein	0.5	100
5	CHEM400 SEC01	Chemical Makeup from Quite Far Away	Chemistry	Curie	1.0	125
5	PHYS400 SEC01	Chemical Makeup from Quite Far Away	Physics	Einstein	1.0	98

Course 1 is offered by Chemistry and instructed by Marie Curie, who has an appointment in Chemistry, so CHEM gets all 100 SCH (100 x 1.0). Similarly, SCH from courses 2 and 3 go to the course owner because the faculty have an appointment in that unit.

Course 4 is a Chemistry course team taught by Curie and Einstein. The 50 SCH (100 x 0.5) for Curie go to Chemistry based on the appointment logic. The 50 SCH for Einstein go to Physics (100 x 0.5) because he doesn't have an appointment in Chemistry.

Course 5 is cross-listed. 125 SCH (125 x 1.0) go to Chemistry since Curie has a CHEM appointment. 98 SCH (98 x 1.0) go to Physics based on the same logic.

Q7: Are the metrics punitive for "units" that require smaller class-size or one-on-instruction?

A: Units requiring smaller class-size or individualized instruction will have lower SCH per FTE, which will be reflected in the metrics. However, the reasons for these smaller class sizes, e.g., accreditation requirements and disciplinary requirements, are discussed in the college leadership discussion sessions.

Q8: Do student counts include all careers or only undergraduates?

A: Except for retention rates, data reflect all student careers. Note that because they are joined to other data using academic org rather than academic group (college owner), most graduate students belong to the departmental home rather than Graduate Studies.

Q9: Are there separate metrics by career of students e.g., undergraduate, graduate, and professional?

A: Student career data is consolidated for each metric to keep the total number of metrics manageable.

Q10: How is a "unit" defined and identified?

A: For this exercise, a "unit" was first defined by having a financial hierarchy, an HR hierarchy, and an academic org hierarchy. We then used Career, Program, Plan data from the University Registrar to crosswalk courses, students and degrees to the "unit".

Q11: How were the metrics for measuring a "unit" determined?

A: Discussions with academic and research leadership determined to use the following categories:

Instruction – growth; student demand; instructional efficiency; instructional effectiveness; and tuition generation.

Research – research stature; prominence and reputation; resource generation; growth.

Q12: What are the metrics used for measuring a "unit"?

A: The current metrics being used are:

Instruction

- 4-year instructional share percentage change
- 4-year all-majors share percentage change
- Instructional SCH as a percent of total
- All-majors percent of total
- Instructional SCH/Instructional FTE
- Instructional Original State Aided Budget/Instructional SCH
- Degrees Awarded/Majors
- Undergraduate First-year Retention (5-year average)
- Net Tuition less Instructional Original General State Aided Budget

Research

- Academic Analytics Scholarly Research Index (SRI) score when comparing units to Public AAU Institutions. If a unit has multiple SRI scores available, they were averaged.
- Average sponsored awards for FY20-24, including the NU Foundation, for purpose codes Research, Teaching and Public Service divided by total state appropriated budget.

- Growth of sponsored research awards from FY20 to FY24, including NU Foundation. Noting this was calculated by taking the dollar growth over that time period as a percentage of total growth for the institution.
- Normalized federal research expenditures as defined by the AAU membership policy – FY14-23.
- Normalized highly prestigious awards, fellowships and memberships as defined by the AAU membership policy – LTD to 2023.
- Normalized book publications as defined by the AAU membership policy – FY14-23.
- Normalized citations as defined by the AAU membership policy (using Academic Analytics as a proxy for InCites) – FY14-23.

Q13: How many metrics are there and how are they weighted?

A: There are 9 Instructional metrics that are equally weighted and used to calculate an Instructional score and there are 7 Research metrics that are equally weighted and used to calculate a Research score. The Instructional metric and Research metric are averaged (equally weighted).

Q14: How are the metrics made comparable to one another and/or aggregated?

A: Z-scores are used to provide a consistent scoring methodology across varying metrics and tell the user how many standard deviations away a given value lies from the mean. For example:

- The mean is $\mu = 80$
- The standard deviation is $\sigma = 4$
- The individual value we're interested in is $X = 87$
- Thus, $z = (X - \mu) / \sigma = (87 - 80) / 4 =$ **1.75**.

All of the variables deviate from a normal distribution in some manner. The z-score isn't being used in an inferential sense (i.e., to infer an unobservable parameter) but the re-scale disparate descriptive metrics for combination via means.

For purposes of scaling, budget to sch was scaled using reverse-ordering. I.e., since smaller budget to SCH is more desirable in a budget exercise, they would have larger z-scores, rather than smaller.

Q14a: What about using a more robust scale via medians and median absolute deviations (MAD)?

These have been added to the informational metrics and are estimated using the following methodology:

- For each metric, the median is taken
- Each unit's deviation from the median is calculated by x – median for each metric.
- The median of the absolute values is taken, adjusted by a scaling factor to give the MAD a standard-deviation like interpretation (i.e., to approximate the way σ behaves in a normal distribution). Since the distributions are non-normal, these scaling factors are estimated as sd(x) / mad(x, k = 1): the standard deviation divided by the unscaled MAD.

It should be noted that z-scores and median-based approaches produce similar values with identical rank-ordering and proportional intervals between units.

Q15: Who determined the metrics that are being used for measuring?

A: Campus leadership, academic leadership, and research leadership worked collectively and collaboratively to determine the metrics used in this analysis.

Q16: Where did the instructional metric data come from?

A: The instructional data are sourced from the University's systems of record: SAP and Peoplesoft. Research data are drawn from NURamp, Academic Analytics, National Center for Science and Engineering Statistics (NCSES) HERD Survey, and the National Center for Education Statistics (NCES) IPEDS Data Center.

Below are some notes on source systems and processing steps:

1. **Student plans** (majors) come from Peoplesoft and are frozen by NU at the beginning of the fall and spring terms and end-of-term for summer. For each student, each attached plan of type "MAJ" was included, including non-primary majors. For academic year counting, a person's major(s) is/are identified as the major(s) they held in the last term enrolled in a given academic year ("last one in wins").
2. **Enrollment headcounts** also come from Peoplesoft beginning-of-term snapshots and are similarly assigned using the last enrolled term in a given academic year. These count only primary majors to provide unduplicated headcounts and are provided for informational purposes only.
3. **Degree counts** are also sourced to Peoplesoft, but from end-of-term snapshots. All major plan codes were counted. Unlike enrollments, all degrees earned

during an academic year were counted, not just the last degree earned. For this reason, there is duplication of people when multiple plans were present or multiple degrees were awarded. (This is identical to how degree counts are formulated for CCPE).

4. **Retention Rates** are sourced from Peoplesoft using fall beginning-of-term snapshots. It includes unduplicated entering cohorts of first-time, first-year, full-time degree-seeking undergraduates in UNL admin campus programs. Re-enrollments are determined as those enrolled in the following fall in any capacity as long as it is either a UNL admin campus or UNL delivery campus enrollment.
5. **Appointments** are sourced to SAP for HR org and Activity Insight (Watermark) for apportionment reporting. The apportionment data include all tenure line and specialized (promotable, but not tenure-eligible) faculty, and lecturers, temporary lecturers, post docs, senior research associates, and academic administrators (M1). There is a row for each appointment and corresponding FTE and apportionments that a faculty member held. These data were used to determine instructional FTE by departmental unit.
6. **Primary Appointments** are also sourced from SAP but are summed at the primary position level (i.e., FTE is totaled, and apportionments are weighted and summed by FTE). These data are used for assigning instructed SCH to departmental units.
7. **Instructional SCH** is sourced from primary appointment HR org units (SAP, above), Peoplesoft, and CourseLeaf. Each section carries the SCH and all instructors (and their proportions of overall instruction). The instructional SCH is the percentage of effort by section SCH and is tied to the primary appointment home (tenure home for tenure-track faculty for consistency with research metrics).
8. **Course SCH** (Department) comes from Peoplesoft and is tied to the academic org of the departmental unit that owns the course/subject. SCH for cross-listed courses are designated in Peoplesoft based on which course/subject/meeting the registration ties to.
9. **Funding** data comes from SAP in special budgetary views prepared by Business and Finance. State-aided budget for this exercise is limited to original budget. It is further broken out by General State Aided (GSA), Differential Tuition (DT), Programs of Excellence (POE) and Other fund subtypes.
10. **Sponsored Awards** data comes from NuRamp and was assigned to units based on the percent credit from the routing forms.
11. **SRI, Books, Citations and Highly Prestigious Awards** data comes from Academic Analytics benchmarking data using the AAD2023 data release.

12. **Research Expenditures** data comes from the National Center for Science and Engineering Statistics (NCSES) HERD Survey, which is calculated using expenditures from SAP and is mapped to units using the NuRamp routing forms and is reported annually by the UNL Research & Innovation team.
13. **USDA AFRI obligations** data comes from usaspending.gov.
14. **T/TT Headcount** data used for normalization of the AAU P1 indicators comes from the National Center for Education Statistics (NCES) IPEDS Data Center and is reported annually by the UNL Institutional Effectiveness and Analytics team.

All data were joined at the lowest unit level (lowest level key) in the NU Finance, HR, and academic org hierarchies. Limited merges are made where units are distributed across colleges or IANR/EVC (e.g., CEHS and IANR departments).

Q17: How is faculty apportionment used in the Instructional metrics?

A: Apportionment is used to calculate the FTE allocations within each unit, e.g., determining Instructional FTE. It is also used to calculate the "instructional budget" by multiplying the percentage of FTE that is allocated towards "instruction" by the original total state aided budget to create an estimated "Instructional Budget".

Q18: How is faculty appointment used in the Instructional metrics?

A: Appointment is used to calculate the FTE allocations within each unit. Appointment allocations are required to determine the FTE in a unit. It is also used to determine the assignment of course SCH. Appointment is also used to allocate instructional SCH. (See Q5 above.)

Q19: What budget data is included in the metrics?

A: Original General State-Aided budget (General State Aided, Differential Tuition, POE and all other types of State Aided) is multiplied by the apportionment allocated toward Instruction to calculate an approximated "Instructional Original General State-Aided Budget".

This "Instructional Budget" is used in the following metrics:

- Instructional Original General State-Aided Budget / Instructional SCH
- Total Tuition less Instructional Original General State-Aided Budget

Q20: Why was Original General State-Aided budget used?

A: Original General State-Aided budget (General State Aided, Differential Tuition, POE and all other types of State Aided) was used because it includes only permanent

budget and does not include any temporary transfers that happen throughout the year, and it does not include carryforward. Every unit might receive and/or send temporary budget throughout the year, which would create timing issues.

Q21: Is Differential Tuition included in the Total Realizable Base Tuition calculation in the model?

A: No. Total Realizable Base Tuition uses the only base tuition by residency by career level, which is then multiplied by the SCH for each course.

Q22: Are scholarships or tuition remissions in the model?

A: No. Total Realizable Base Tuition is used in the model and that calculation uses the base tuitions by residency by career level which is multiplied by the SCH by residency for each course.

Q23: Who should I contact with questions about the unit data?

A: Please work through your college administration team to coordinate questions pertaining to data.

Research Metrics

Q1: Do faculty get credit as Co-PIs?

A: Yes, awards and expenditures data are credited to departments/units using the NuRamp routing form.

Q2: Do the research metrics discourage campus collaboration for research initiatives?

A: Efforts have been made to recognize collaborations in the data, while at the same time ensuring data sum to the institutional totals so that percent of totals can be utilized in the metrics. Awards and expenditure data are credited to units based on the NuRamp routing form, ensuring each unit gets their appropriate share of the productivity. Academic Analytics data are credited to the individual's tenure org unit, which is how the benchmarking data are tracked and reported to AAU as well as how they are utilized to calculate the SRI score. Shared authorship for articles and books is credited equally across participating faculty given there is no equivalent of a routing form for these outputs.

Q3: Does a "unit" with newer faculty building their research portfolios get disadvantaged by these metrics?

A: Research productivity metric output values typically increase throughout a faculty member's career, resulting in most newer Assistant Professor level faculty contributing at lower value of measurable activities than that of Associate and Full Professor faculty. Units can view the portfolio of faculty at varying career levels for their unit as well as peers in Academic Analytics to assist with their narrative around the unit's research productivity.

Q4: What is the Academic Analytics SRI score and how is it calculated?

A: The Scholarly Research Index (SRI) is a methodology to provide comparative context for faculty or unit research activity compared to taxonomy peers. This comparison is based on the metrics Academic Analytics collects and maintains for the peer analysis/benchmarking tools.

Academic Analytics calculates the unit level SRI based on the mean SRI scores of individual faculty members within the unit. Thus, the SRI of each unit or other level of aggregation — program, department, broad field, institutions, etc. — is the average of the deduplicated faculty who comprise that unit.

Metrics for the person-based Scholarly Research Index are:

- Total Journal Articles
- Total Awards
- Total Books
- Total Book Chapters
- Total Citations
- Total Conference Proceedings
- Total PI Grant Dollars
- Total US Patents
- Total Clinical Trials

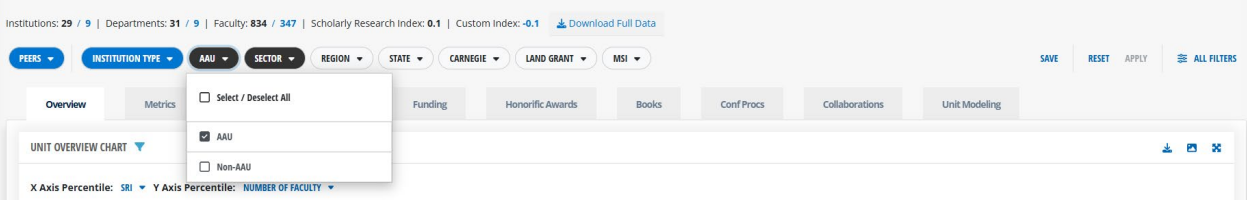
Academic Analytics utilizes a weighting scheme for these metrics, which varies across taxonomic classifications. For some departments at UNL, there is not a 1:1 match of disciplines resulting in more than one SRI score being available for that department. Currently, for units with multiple SRI scores, those have been averaged across the disciplines. If there are departments where it does not make sense to average the SRI scores, for example if one of the disciplines most closely matches the department at UNL, contact the R&I team to have those adjustments made.

Q5: How do I find the SRI score in Academic Analytics for the AAU Public peer comparison group?

A: In the AAU Benchmarking module, select the department that you want the SRI score for from the dropdown.

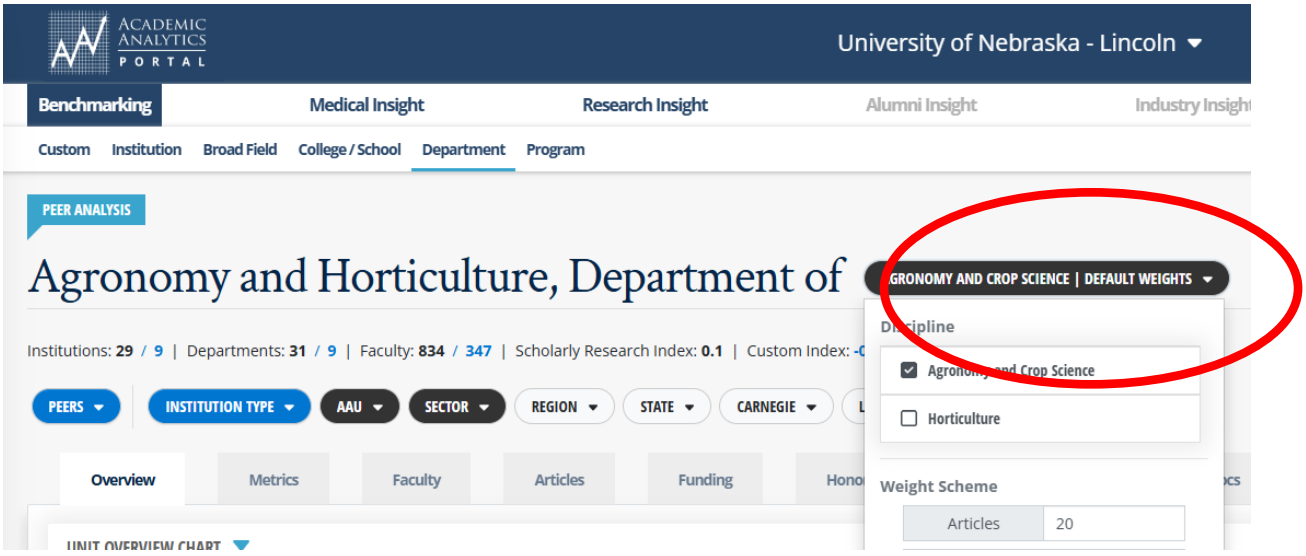
Academic Analytics defaults to a nationwide peer group. Use the AAU and Sector filters to select AAU peers in the Public Sector and select APPLY.

The blue text for institutions, departments, faculty and custom index will provide you with the data for that AAU Public peer group. The black text continues to report the nationwide data. The custom index value is the SRI for AAU public institutions.



Q6: How do I know if there are multiple options for SRI scores for my department due to not having a 1:1 match with Academic Analytics taxonomic classifications?

A: See screenshot below.



Q7: In Academic Analytics, you can manually change the weight scheme for the SRI score. Were any adjustments made to weighting for purposes of this data?

A: No changes were made to the default weighting scheme for the discipline. For units with multiple disciplines mapped to a single department, the SRI scores were averaged.