Aspirational peer group:

A group of institutions with similar characteristics which outperform our institution based on key performance indicators.

Why create one?

- Identify potential services
- Learn about innovations/initiatives
- Guide operational planning

Present state

Penn State University Libraries (#8 in the ARL Investment Index) currently benchmarks against BTAA institutions.

At the University level, Penn State creates benchmarking groups from BTAA and AAU public institutions.

Goal

Reevaluate peer institutions based on **key metrics** rather than historical institutional groupings or output-based rankings. Identify a cluster of higher performing institutions in order to create an aspirant group that we can learn from.

k-means cluster analysis

This is an exploratory multivariate statistical technique that groups observations together for a predetermined (k) number of clusters based on like characteristics. For this project, **four clusters were specified.**

This analysis was conducted in SPSS Statistics 25. You can also use R packages: library(cluster) and library(factoextra).

Creating an Aspirational Peer Group for the Penn State University Libraries

using k-means cluster analysis

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5-STEP PROCESS

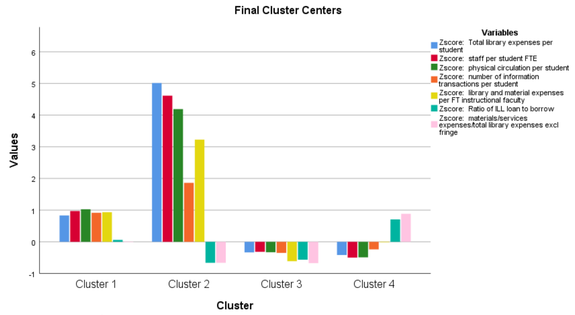
STEP 1: Apply threshold criteria to develop initial pool

STEP 2: Derive library KPIs from available data

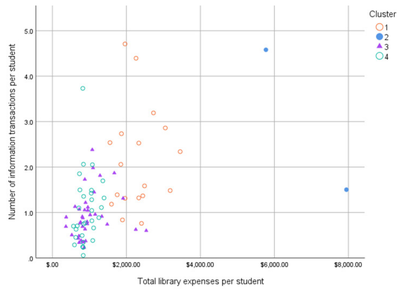
STEP 3: Conduct k-means cluster analysis

STEP 4: Refine group

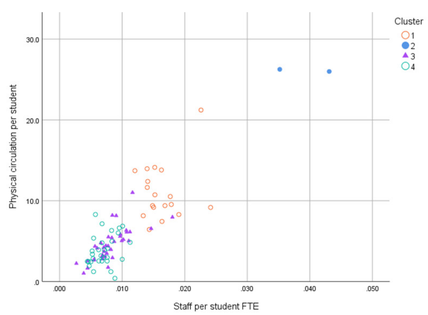
STEP 5: Stakeholders determine final group



Values of standardized variables (z scores) in each cluster



Observations grouped by cluster for information transactions per student and library expenses per student



Observations grouped by cluster for circulation per student, and staff per student

THRESHOLD CRITERIA

- ARL Carnegie R1 US institutions plus AAU institutions
- Enrollment > 10,000
- Exclude bottom quartile based on total library expenditures
- Final list: 87 institutions

KPIs

Based on selected **Standards for Libraries in Higher Education** where complete and accurate data points were available for all 87 institutions:

- Library expenditures as percentage of core institution expenditures
- Materials expenditures as percentage of total library expenditures
- Library expenditures per student
- Reference transactions per student
- Materials expenses per instructional faculty
- Ratio of ILL loaned to borrowed
- Professional staff per student

Standardize variables before running analysis.

DATA SOURCES: ARL Statistics Survey, IPEDS, ACRL Metrics

CLUSTER OUTPUT

Cluster 1: (18 institutions)
Higher spending per student; almost half of total expenses spent on materials; more info. transactions, higher circulation per student. This cluster formed the basis of our aspirational peer group.

Cluster 2: (2 institutions)
Farthest away from other clusters, highest KPIs

Clusters 3 & 4: (37 & 30 institutions)
Cluster centers close together. Cluster 4 can be characterized as institutions with lower total expenditures but comparatively higher proportion spent on materials. (Penn State fell in Cluster 3.)

Results

After further refinement of Cluster 1 and with the addition of the top institutions in Cluster 3, the following institutions were determined to form the basis for the aspirational peer group:

Michigan ***Berkeley*** ***Cornell***
Emory ***Virginia*** ***Miami*** ***NYU***
UCLA ***Texas (Austin)***
North Carolina at Chapel Hill

This group was presented to library administration for further refinement (based on contextual judgment and institutional knowledge).

Discussion

1. The majority of aspirational peer institutions ranked lower than Penn State in the ARL Investment Index despite higher KPIs.

2. Metrics can only be used where data are available (inaccuracies in reported electronic usage across numerous institutions limited circulation-related KPI to physical materials).

3. ACRL Academic Library Trends and Statistics Survey "trend questions" can be compiled for each peer institution to enable further comparison.

References

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