

Development and Use of Peer Groups in IR



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POSSIBLE USES FOR A PEER LIST

- Clarify your institution's market position within higher education
- Allow comparison of activities and outcomes to similar schools to see if you're typical
- Set goals and benchmarks for management decisions (e.g., faculty salaries, division budgets, etc. could aim to be at the midpoint of a peer group)
- Make ourselves feel better about where we work or learn

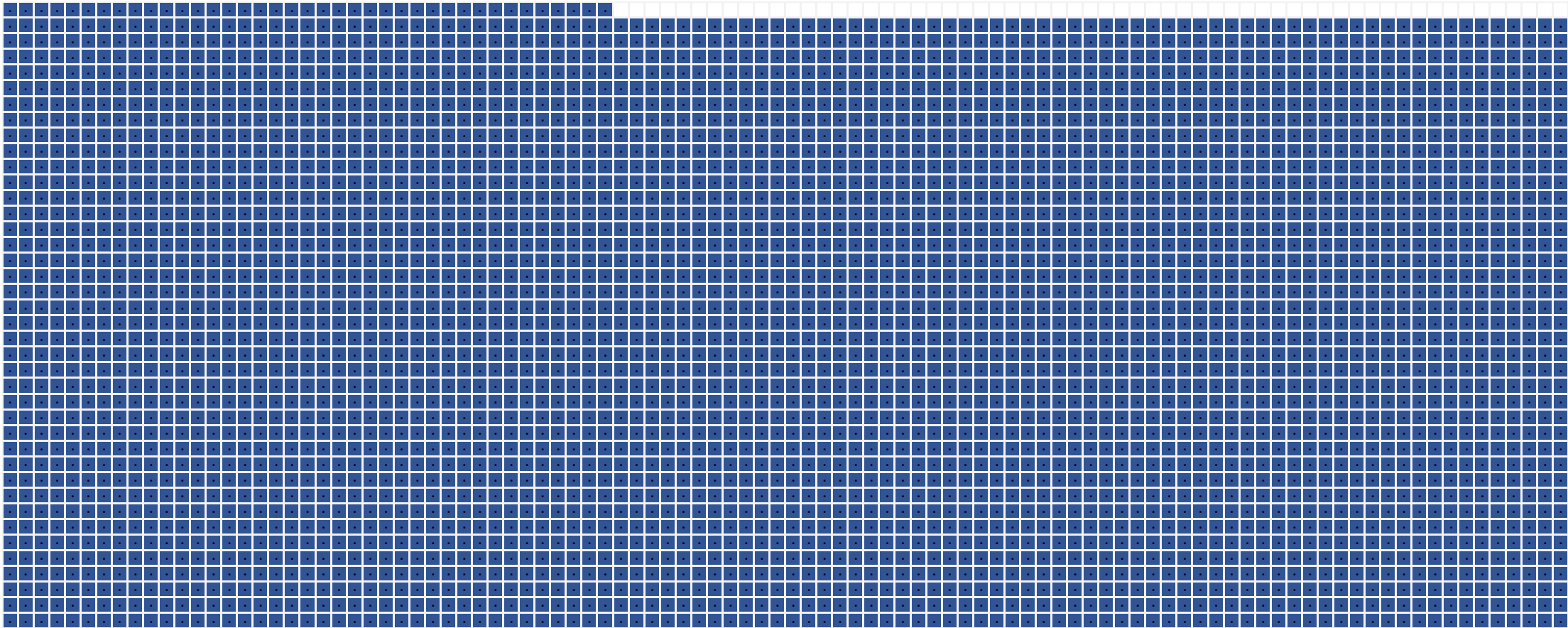
OVERVIEW OF PEER LISTS

- No single list works for every analytical purpose
- Part art, part science, part politics, part psychology
- Our office has taken the approach of keeping a list of different comparison-groups
- Cluster analysis is one approach to systematically identifying a list

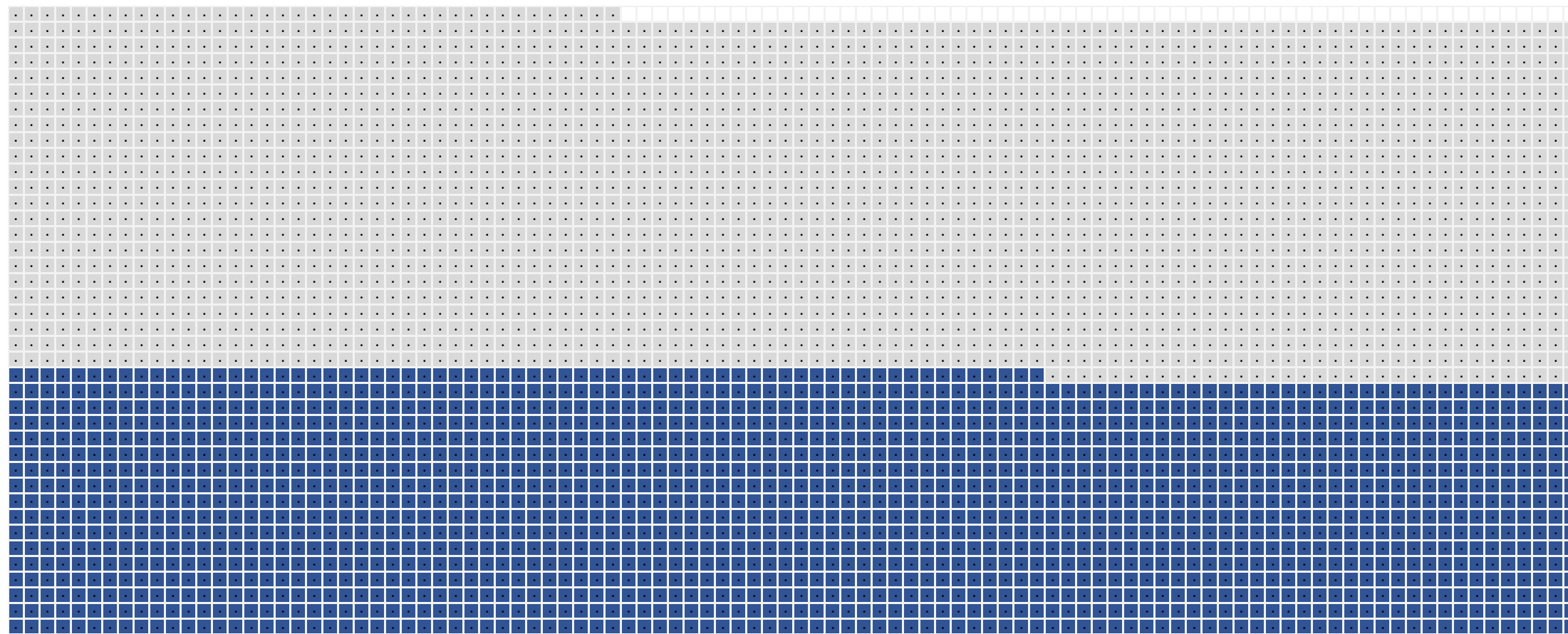
METHOD FOR THIS REVIEW

- **Not like solving a math problem & finding the correct answer**, but an exploratory process aimed at identifying a variety of groupings
- Judgment calls at every step
- We started with all 3,939 schools in [Carnegie Classification](#) system and winnowed down to 105 on five factors:
 - **Control** (public, private non-profit, private for-profit)
 - **Basic categorization** (associates, baccalaureate, masters, doctoral, special focus)
 - **Size and setting** (2 yr./4 yr.; small/medium/large; how residential is it)
 - **Undergraduate profile** (inclusive/selective; full-time vs. part-time)
 - **Enrollment profile** (exclusively/very high/high/majority undergrad)

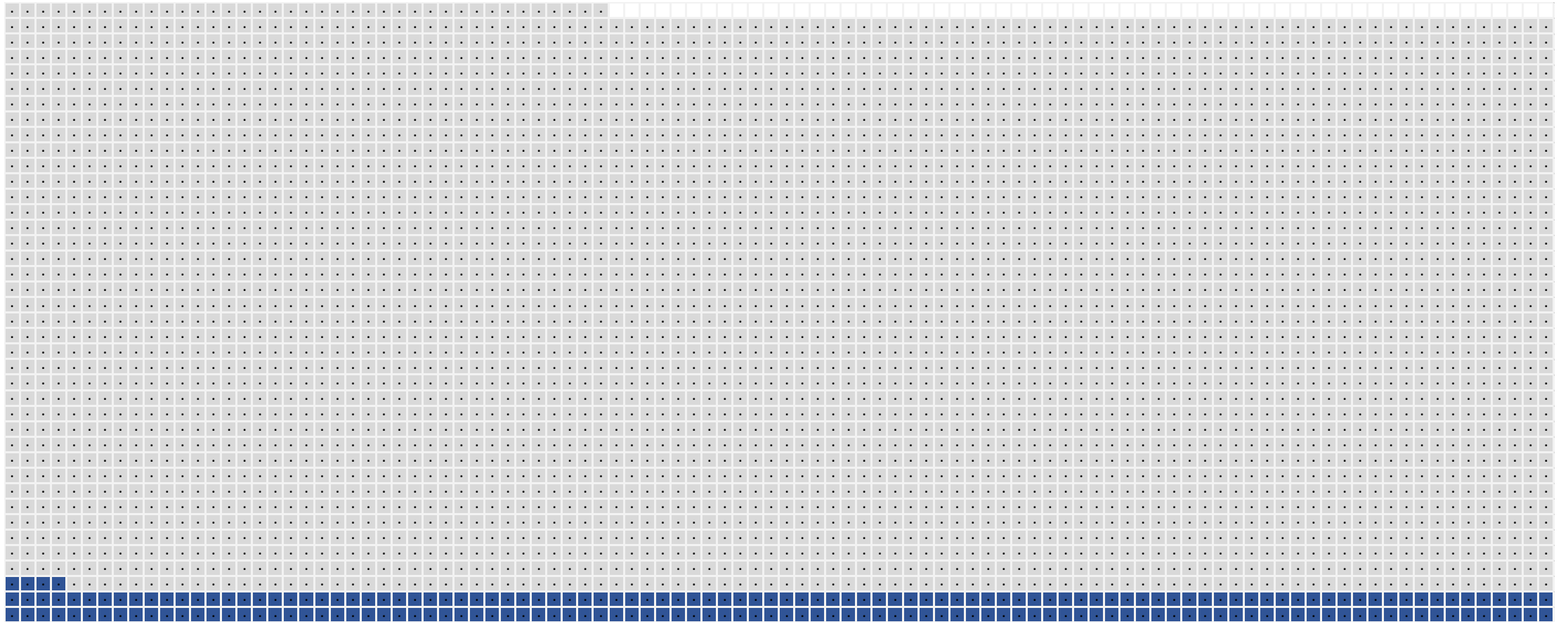
Starting with 3,939 U.S. institutions...



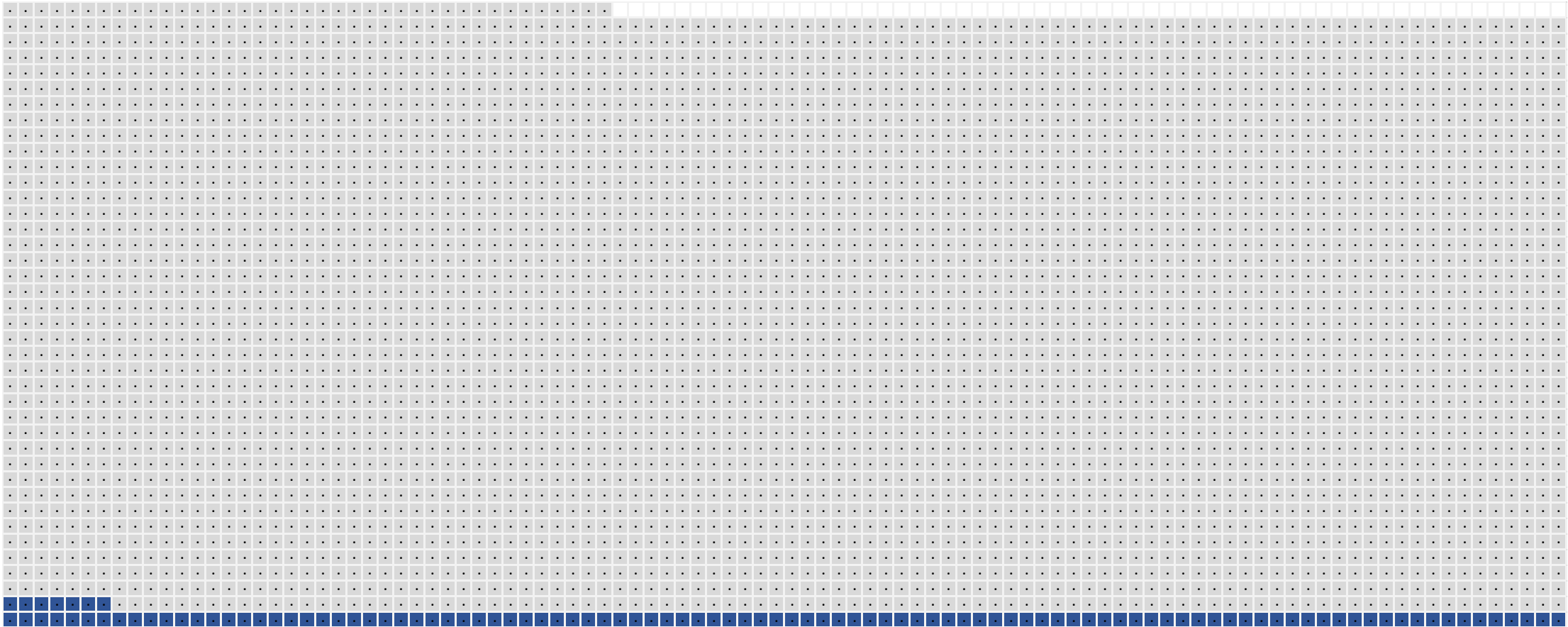
Eliminated all publics & private for-profits (-2,273)



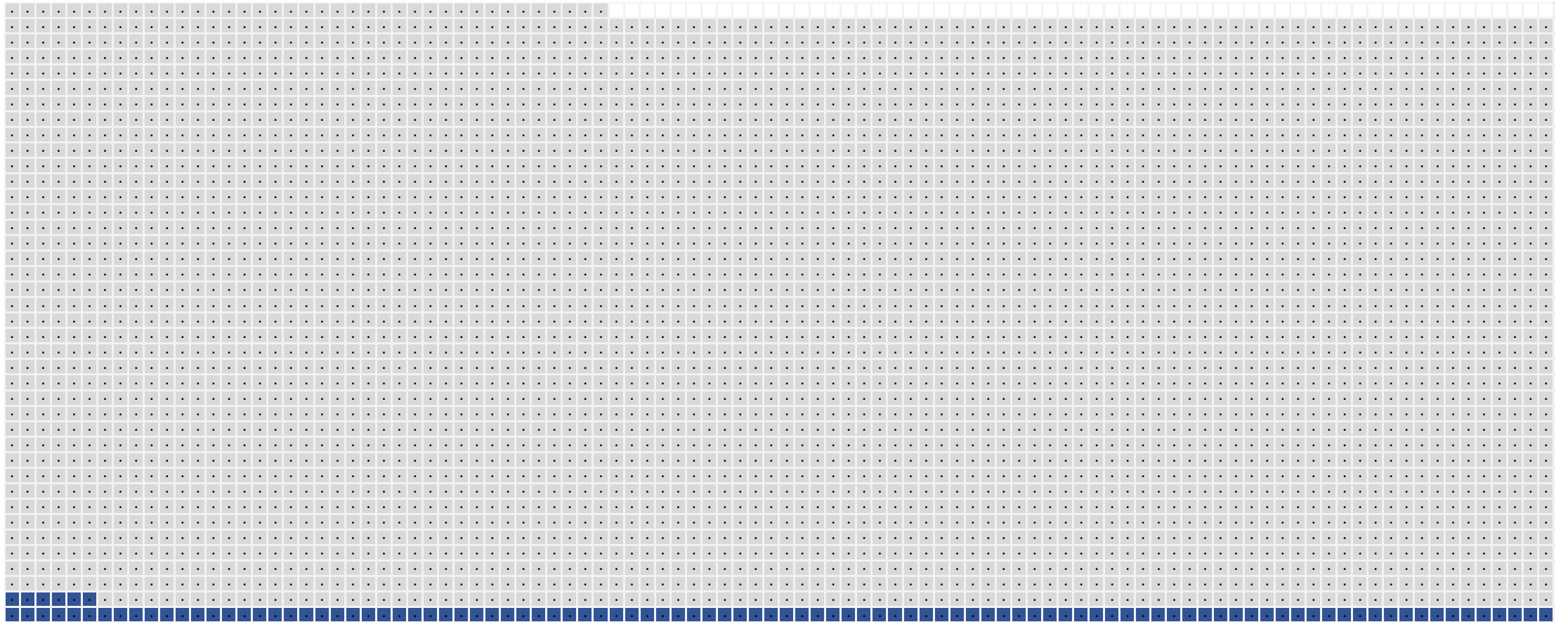
Eliminated all non-baccalaureate arts & sci. (-1,462)



Eliminated all but selective/more selective +
fewer transfer-ins (-26)



Eliminated all but exclusively + very high +
high undergrad ⁽⁻¹⁾



VARIABLES WE WERE ASKED TO LOOK AT

1. Financials
2. Financials + Size
3. Financials + Size + Quality
4. Financials + Size + Quality + Social mobility
5. Financials + Size + Quality + Social mobility + Student diversity

DATA WE USED

- Institutional characteristics: [Carnegie Classification of Institutions of Higher Education](#)
- Cost of living variation: [Regional Price Parity](#) by Metropolitan Statistical Area (or closest one to the campus)
- Endowment; endowment per student: FY2023 endowment data from [NACUBO](#)
- Student body size & composition: Average of most recent 3 years from National Center for Education Statistics ([IPEDS](#))
- Faculty and staff size (FT, PT, total): same
- Student-faculty ratio; student-staff ratio: 3- yr. average; calculated from IPEDS data
- Selectivity (admit rate) and yield rate: Average of most recent 3 years from IPEDS
- Social mobility: [Washington Monthly subrank](#)
- Operating budget; operating budget per student: Average of most recent 3 years from IPEDS
- First-to-second-year retention rate; 6-year graduation rate: Average of most recent 3 years from IPEDS
- AAUP faculty salary data

METHODOLOGY, PART I

I. Type of Cluster Analysis to Use

- Hierarchical vs. K-means
- Research findings

Armacost, Wilson, Pet-Armacost, and DeSousa of Univ. of Ctrl Florida (AIR Forum, 2003), University of Rhode Island Peer Group Executive Summary (2004)

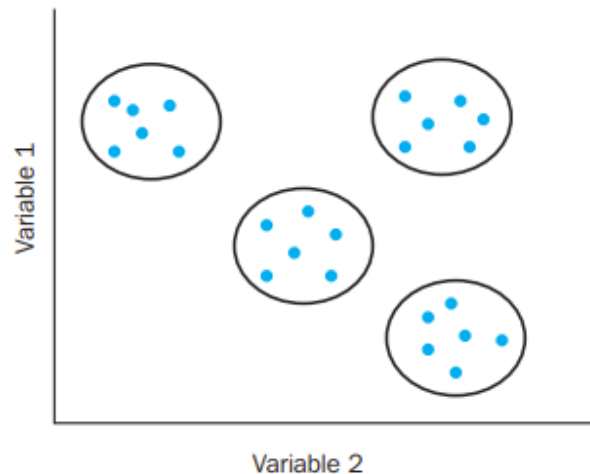


Figure 23.1
An ideal clustering solution

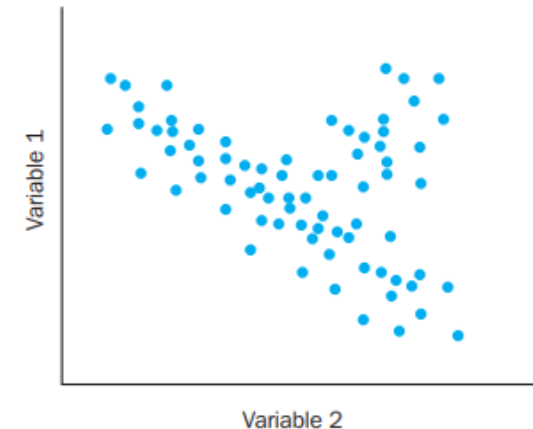


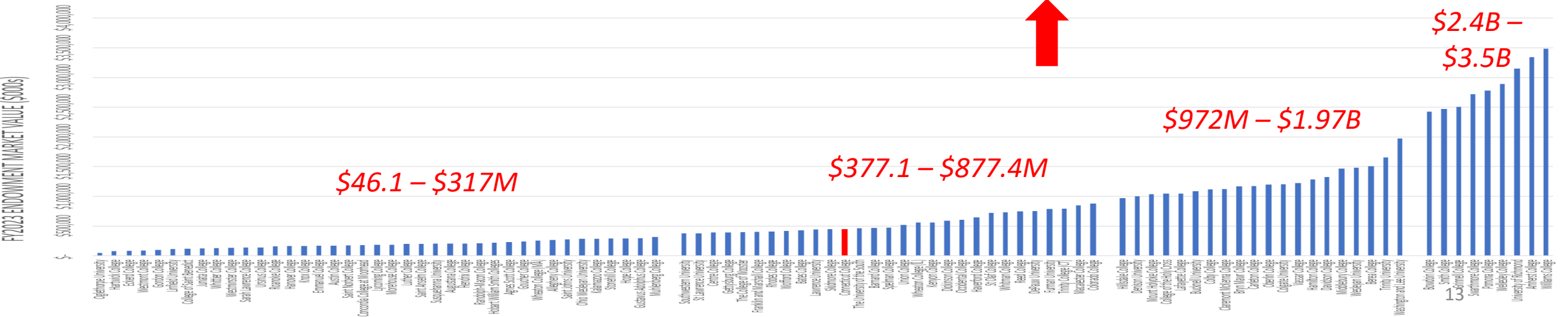
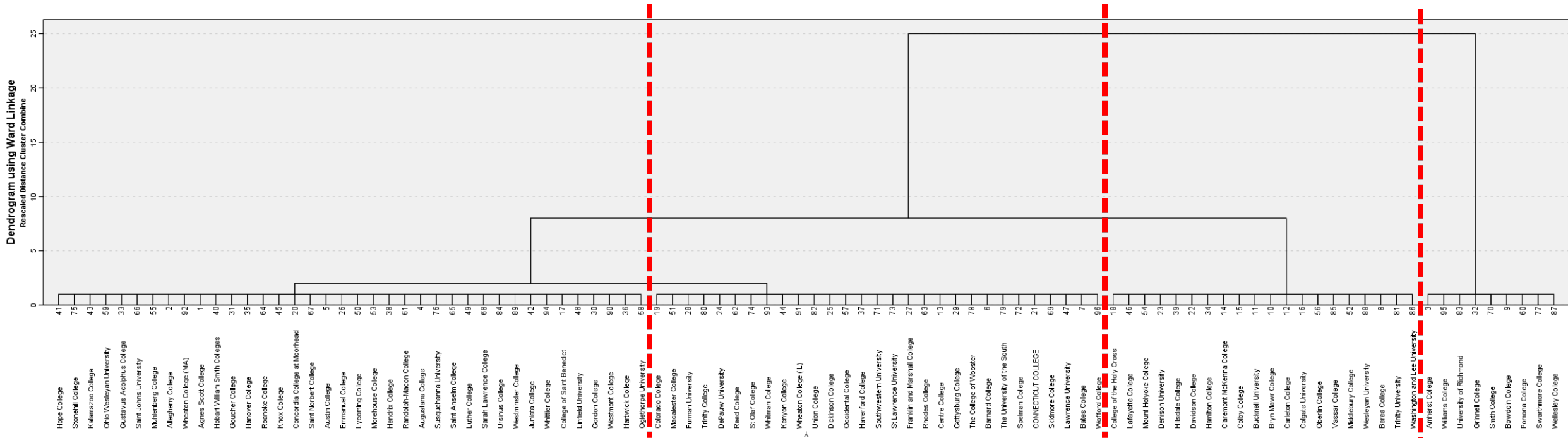
Figure 23.2
A practical clustering solution

and Hitchcock

<https://nscpolteksby.ac.id/ebook>

III. How does Hierarchical Clustering work?

Hierarchical Clustering Dendrogram using SPSS Explained: Endowment



RUNNING THE CLUSTER ANALYSIS METHODOLOGY, PART II

- Cases

- 3-year averages (to smooth out large variances)
- Z-scores (to streamline differences in scales)
- Missing values
- Outliers (boxplot and histogram)

Milligan (1980) found out that complete linkage and Ward's method reacted badly when outliers were present in the data.

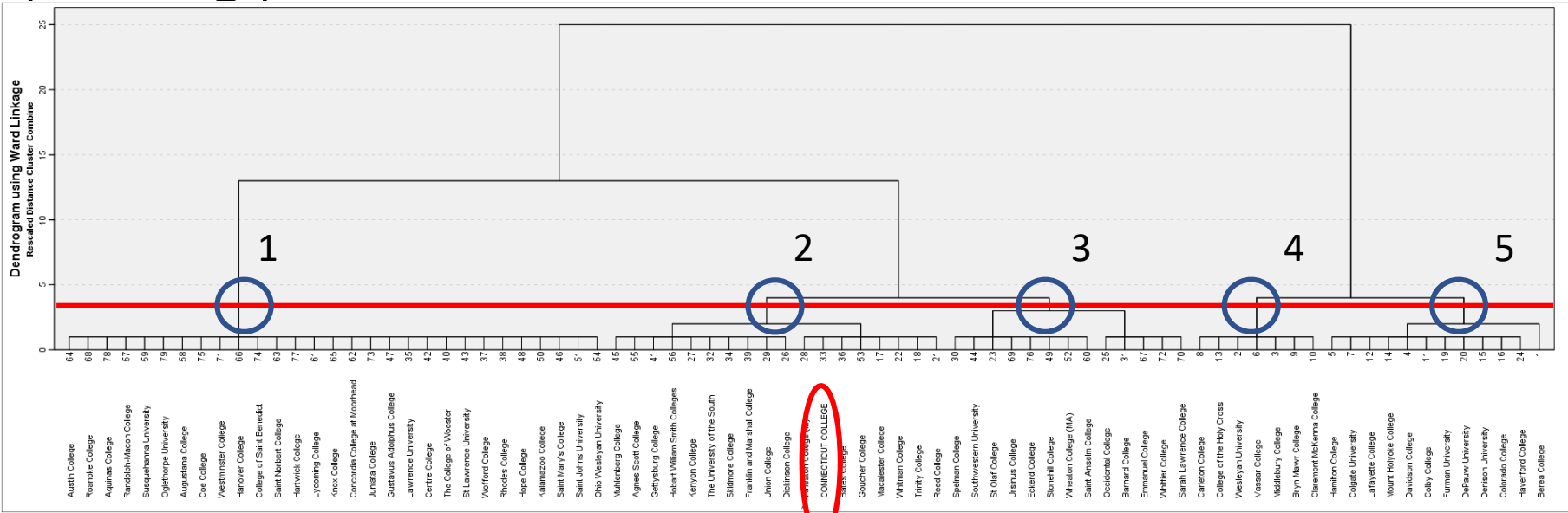
- 79 schools left in the analysis after clean up

- Variables

- Variable reduction
- Simplify with financials (RPP + Endowment + Spending per student)

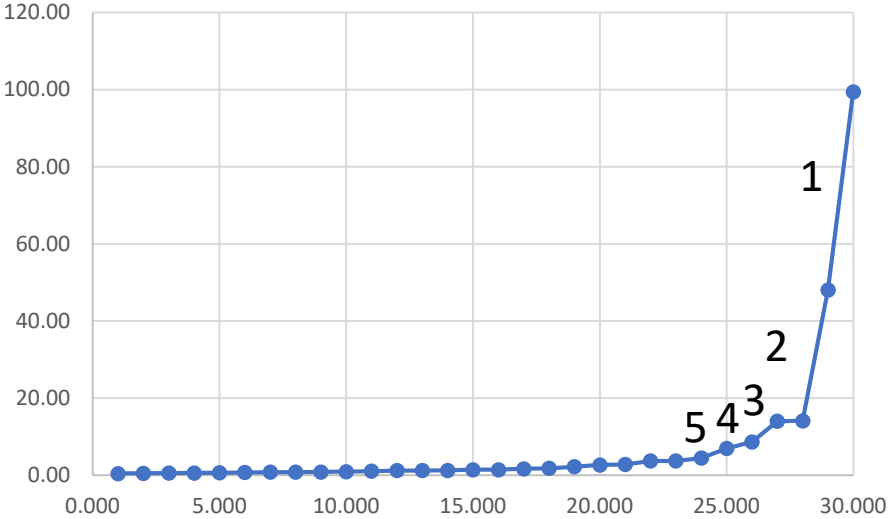
- How many clusters?

Hierarchical Clustering Dendrograms with Financials in SPSS: RPP + Endowment + Spending per student



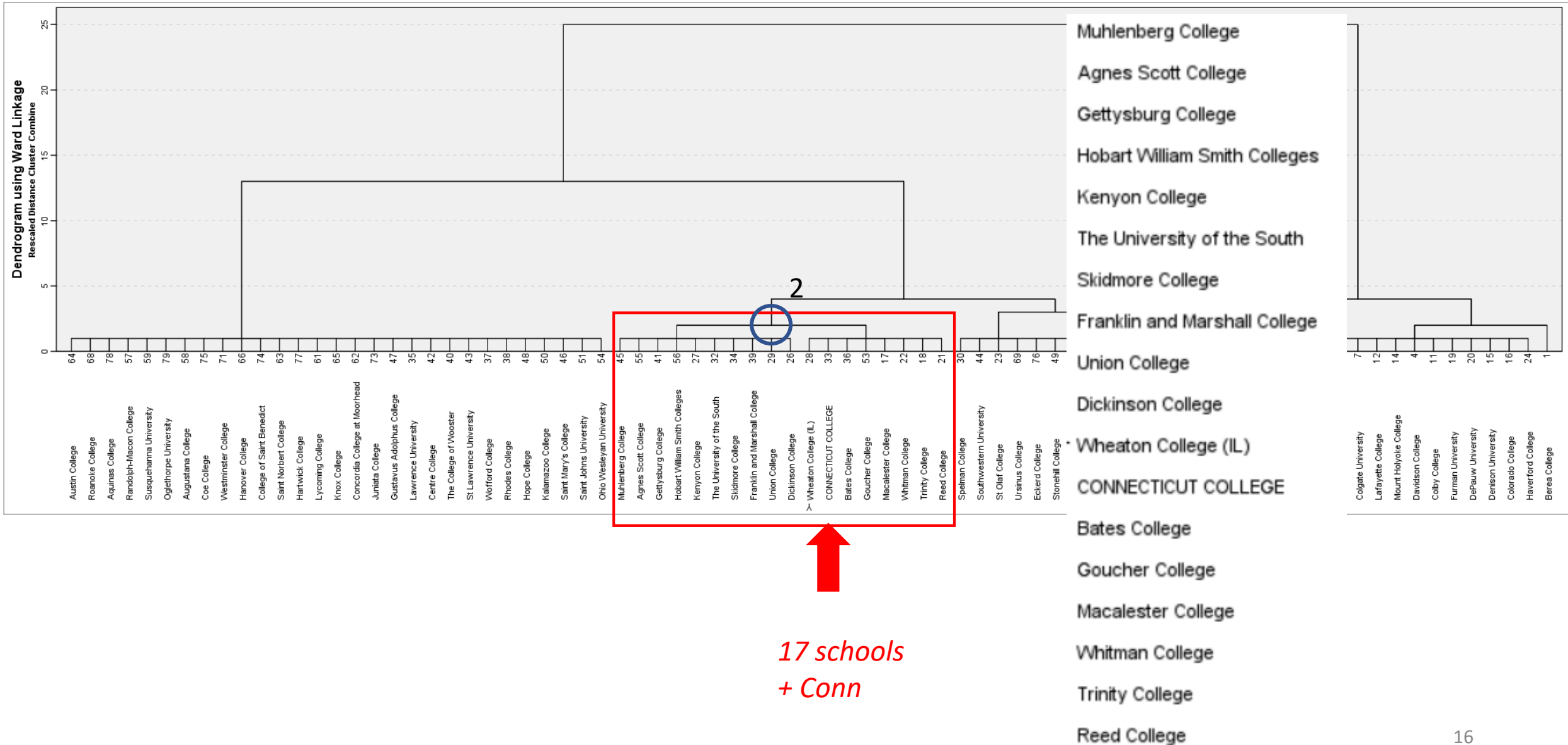
Agglomeration Schedule

Coefficient Change by Clustering Stage

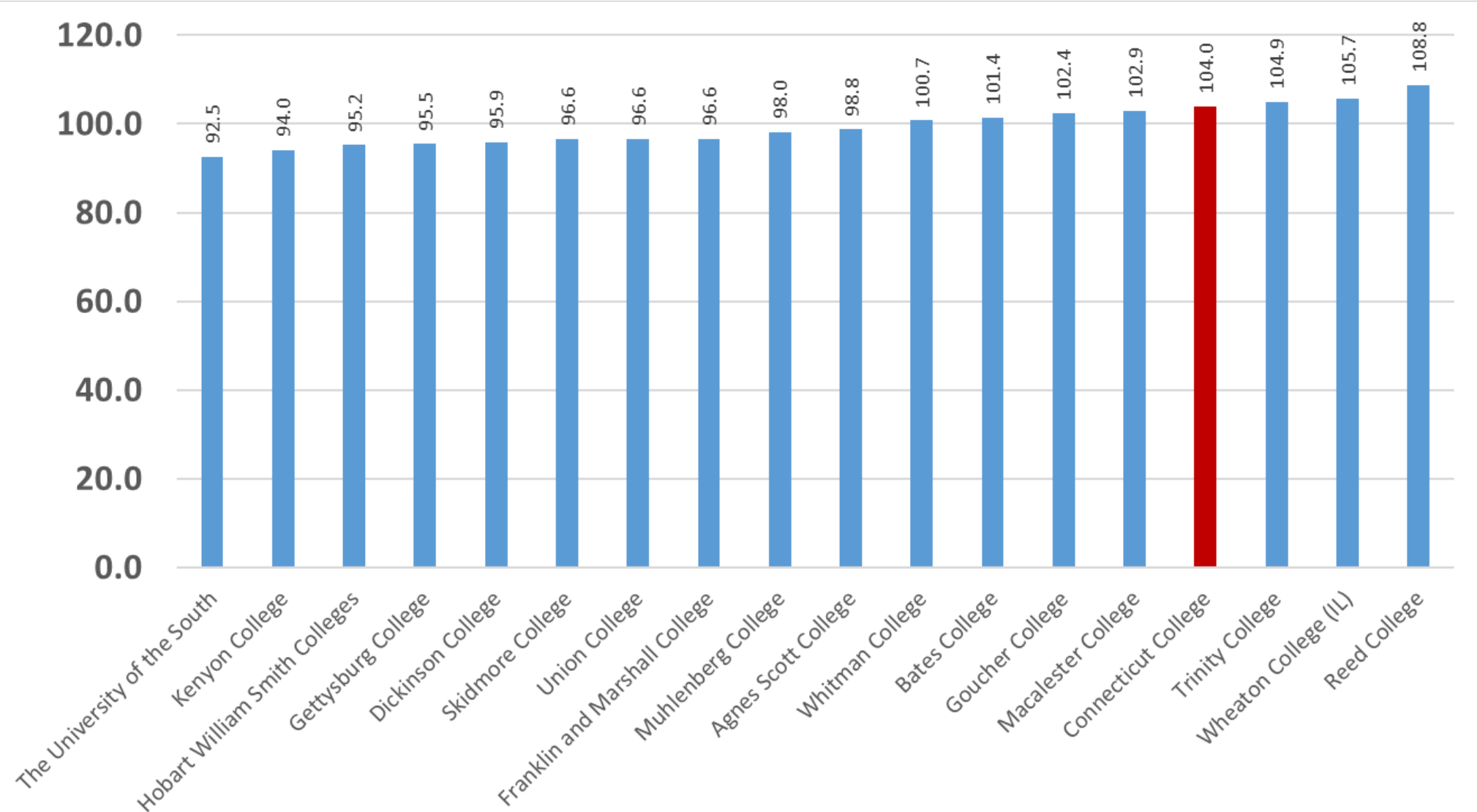


Stage	Cluster Combined		Coefficients	Stage Cluster First Appears		Next Stage	Diff
	Cluster 1	Cluster 2		Cluster 1	Cluster 2		
70	2	3	34.728	56	69	77	4
71	8	9	38.427	63	58	75	4
72	7	13	42.856	0	67	75	4
73	1	6	49.780	62	66	76	7
74	5	24	58.396	68	65	76	9
75	7	8	72.399	72	71	78	14
76	1	5	86.498	73	74	77	14
77	1	2	134.517	76	70	78	48
78	1	7	234.000	77	75	0	99

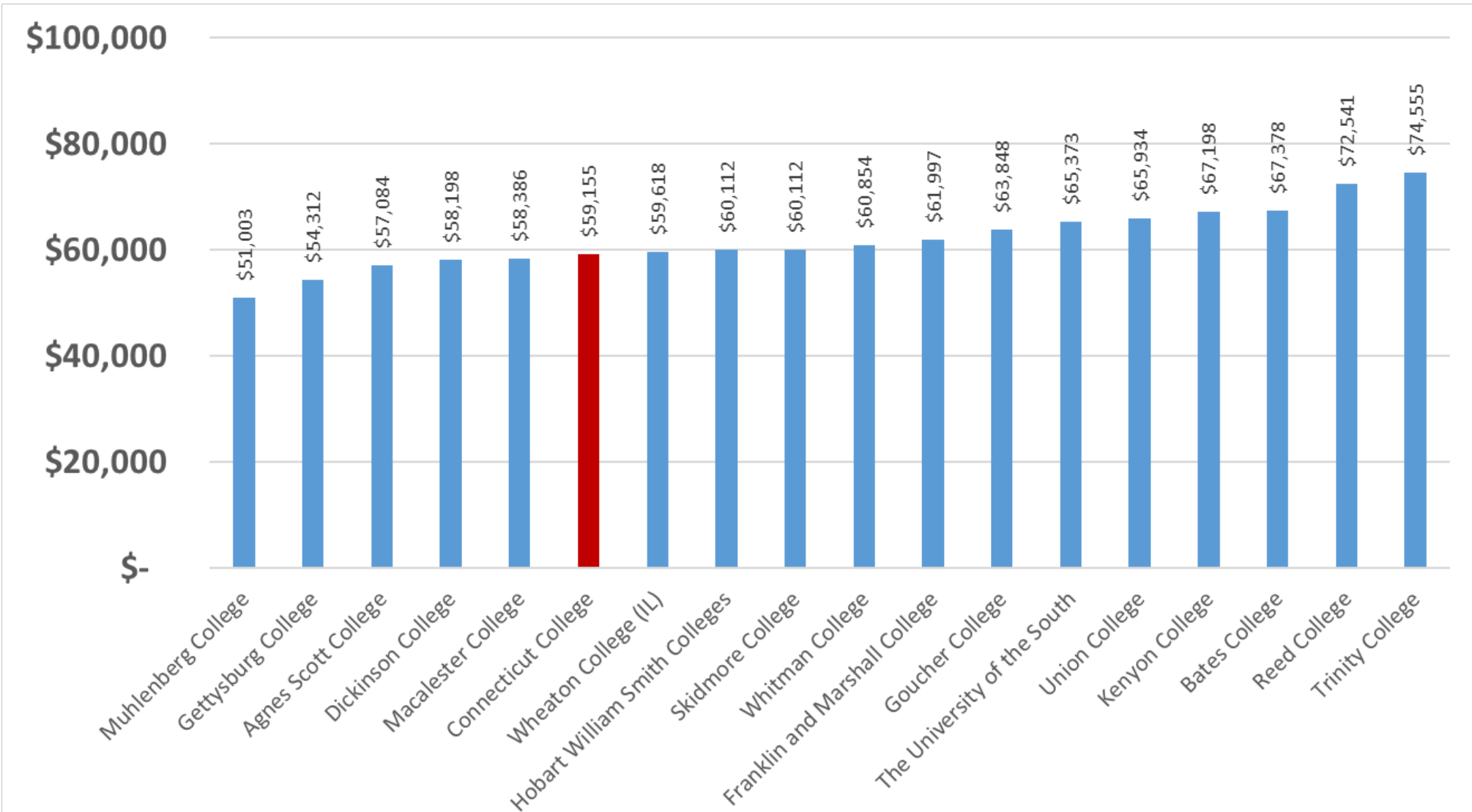
Extracting Cluster # 2: RPP + Endowment + Spending per student



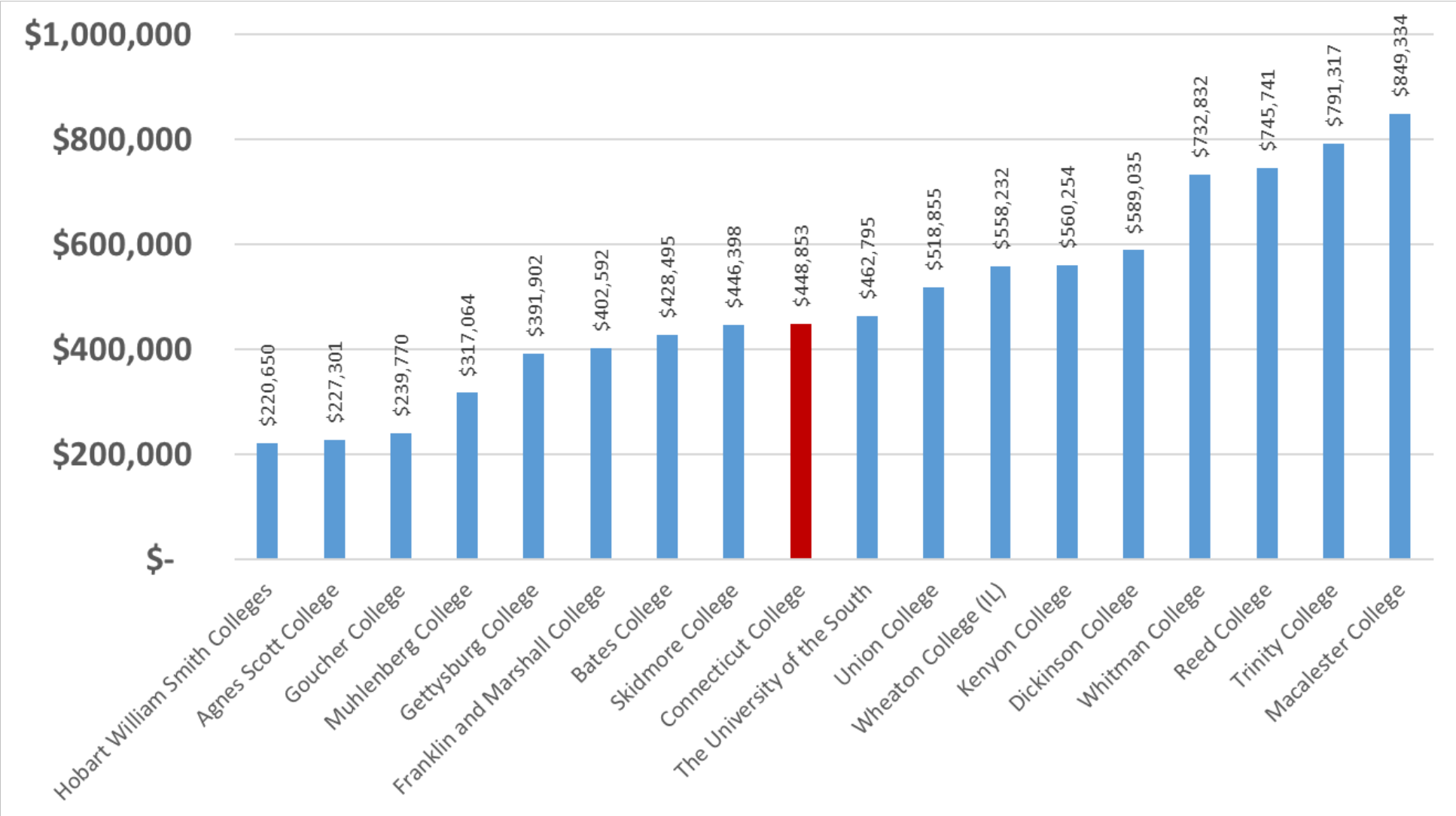
DETAILS OF EACH METRIC: Cost of living (RPP)



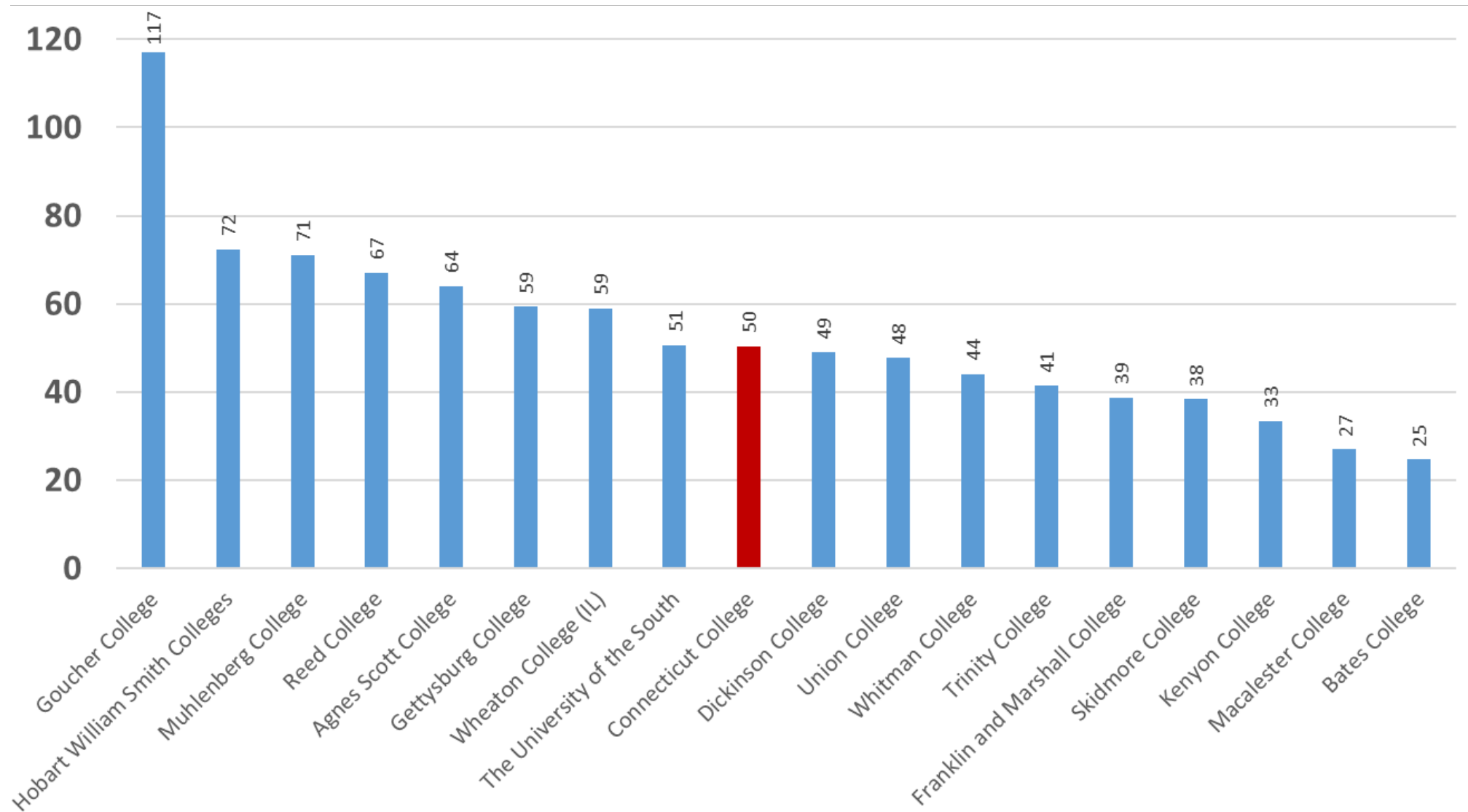
DETAILS: Per-student spending (3-yr. avg.)



DETAILS: FY 2023 endowment (\$000s)



U.S. News ranking (3-yr. avg.)



“MANUALLY ADJUSTING” THE LIST

- Committee discussed whether any of schools warranted removal due to having substantially different missions, characteristics, etc.
- Consensus was to remove Agnes Scott College (due to its status as a small non-coed institution) and Reed College (due to its lack of an athletics program, which gives it a quite different programmatic, financial, admissions picture)
- This produced a revised list of 15 institutions

NEW PEER LIST WITH CURRENT PEER LIST

ON CURRENT LIST

- **Bates College**
- **Dickinson College**
- **Franklin & Marshall College**
- **Gettysburg College**
- **Kenyon College**
- **Macalester College**
- **Skidmore College**
- **Trinity College**
- **Union College**
- **Whitman College**

NEW / NOT ON CURRENT LIST

- Goucher College
- Hobart & William Smith Colleges
- Muhlenberg College
- Univ. of the South
- Wheaton College (IL)

NOT ON NEW LIST

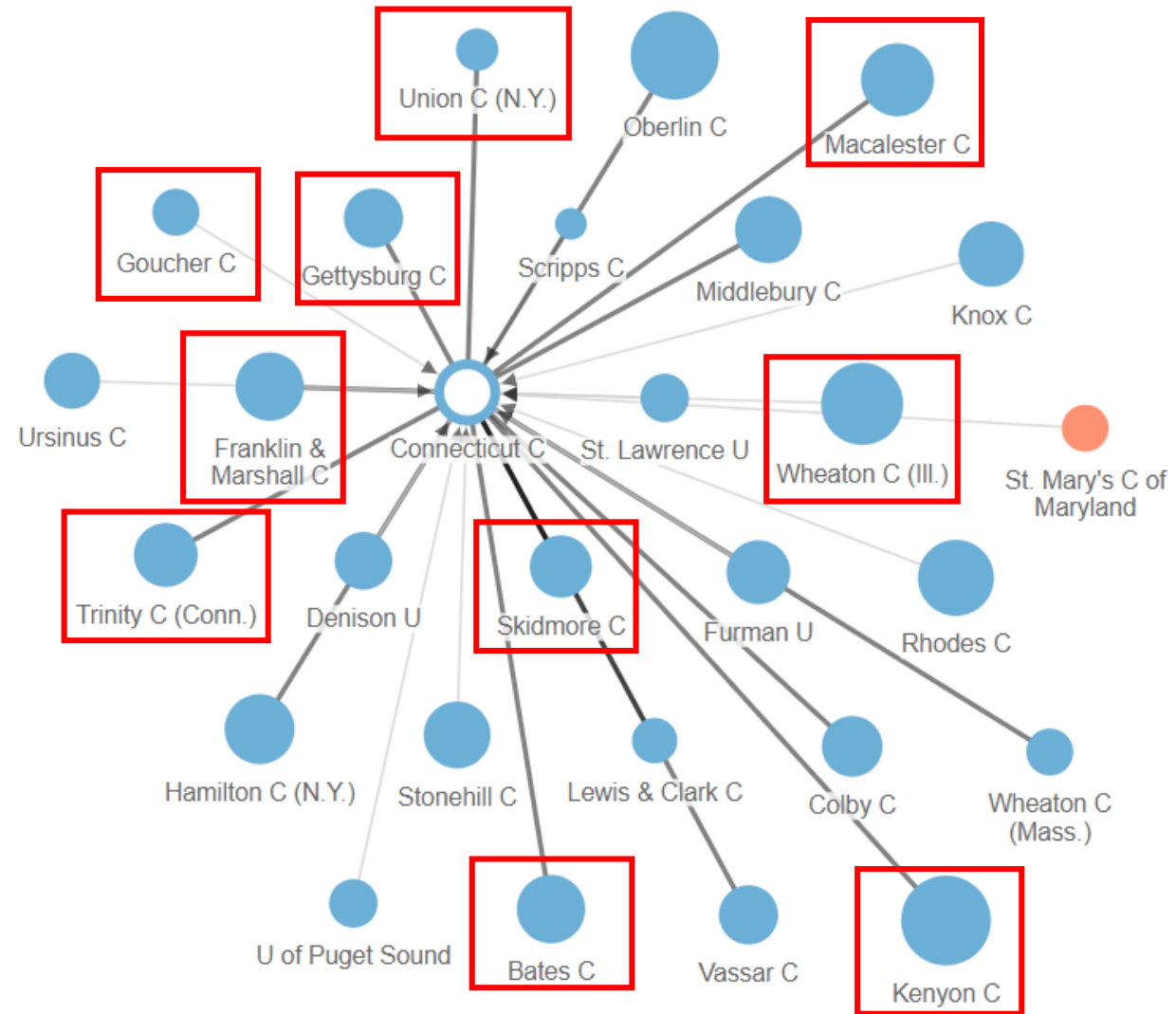
- **Bowdoin College**
- Carleton College
- Centre College
- **Colby College**
- Colgate University
- Colorado College
- **Hamilton College**
- Kalamazoo College
- Lafayette College
- **Middlebury College**
- Mount Holyoke College
- Oberlin College
- Smith College
- Vassar College
- **Wesleyan University**
- Wheaton College (MA)



Independent check: Schools that have *us* as a peer

<https://www.chronicle.com/article/who-does-your-college-think-its-peers-are>

10 of these 27 are on our new list



So...takeaways

- Our faculty salary peer group had not been revised since 2006; should do it more regularly
- Cluster analysis is an exploratory statistical technique that can be deployed with widely available software and readily available data
- It's a technical process but also a political process
- A peer list has to be viewed as plausible and defensible
- Once you have a list everyone's o.k. with, then you can do other sorts of comparative analyses of variables you didn't use for selecting the peer group



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Questions, comments, suggestions?

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