

# Methodology for Identifying CMU's Peer Institutions

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## Purpose

To identify institutions similar to CMU in role, scope, and mission for the purpose of strategic planning and decision-making through the following functions:

- Provide benchmarks for assessing institutional effectiveness
- Pinpoint areas deserving attention and improvement
- Act as guidance for policy development and resource allocation

## Procedure Overview

There are 784 institutions categorized as public 4 year or above. To select a set of 10 to 12 schools for comparison, the following 3 steps were employed:

Step 1: Threshold Criteria - Choose initial candidate pool from the 784 public 4 year or above schools with data from the Integrated Postsecondary Education Data System (IPEDS) using following threshold criteria:

- Control and Sector - Public four-year institutions
- Carnegie type (measure of research activity)
  - R1
  - R2
  - R3
- Location - Not in large cities
- Size - Between 8,000 and 19,000 undergraduates
- Total Expenses - Less than \$700 million
- Academic Programs - Exclude law schools

Based on the threshold criteria described above, the data query results from the IPEDS Peer Analysis tool identified the following 54 institutions that can potentially serve as CMU's peers:

### Candidate Pool of Peer Institutions

Arkansas State University	Prairie View A & M University
Ball State University	Sam Houston State University
Binghamton University	South Dakota State University
Bowling Green State University	Southern Illinois University-Edwardsville
California State University-East Bay	Stockton University
California State University-San Bernardino	SUNY at Albany
East Tennessee State University	Tarleton State University
Eastern Kentucky University	Tennessee Technological University

Eastern Michigan University	Texas Woman's University
Ferris State University	The University of Tennessee-Chattanooga
Florida Gulf Coast University	University of California-Merced
Grand Valley State University	University of Louisiana at Lafayette
Idaho State University	University of Maine
Illinois State University	University of Maryland-Baltimore County
Kean University	University of Massachusetts-Lowell
Lamar University	University of Missouri-St Louis
Louisiana Tech University	University of New Hampshire
Miami University-Oxford	University of North Carolina Wilmington
Middle Tennessee State University	University of Rhode Island
Missouri State University-Springfield	University of Southern Mississippi
Montana State University	University of West Georgia
Montclair State University	University of Wisconsin-La Crosse
New Mexico State University	University of Wisconsin-Oshkosh
North Dakota State University	West Chester University of Pennsylvania
Oakland University	Western Carolina University
Ohio University-Main Campus	Western Kentucky University
Old Dominion University	Western Michigan University

Step 2: Determine clusters of the 54 institutions remaining from step 1 through Two Step Cluster Analysis – Below are the grouping variables used in the cluster analysis:

- Total annual expenses
- Total UG and GR degrees awarded
- Proportion of GR degrees awarded to total awarded
- Total Employee FTE
- Total Faculty FTE
- Total Fall UG Enrollment
- Total new FTIAC
- Collective Bargaining (Y/N)
- MAC School (Y/N)
- Previous Peer (Y/N)
- Have Medical School (Y/N)

A two-step cluster analysis using the grouping variables described above were used to differentiate the 54 institutions listed above into appropriate clusters. Of the variables listed above, total expenses indicate an institution's overall budget and long-term financial capacity, whereas faculty/staff FTE, size of enrollment, and degrees conferred focus on different aspects of educational capacity. For example, faculty/staff FTE can be largely viewed as an indicator of an institution's instructional and service capacity, while the number of new entering students and size of undergraduate enrollment highlight the institutional capacity of recruiting students. To a similar extent, the number of graduates and proportion of degrees by level signify the scope and

level of academic offerings. In addition to these capacity indicators, the cluster analysis includes two historical measures: MAC affiliation conveys a sense of CMU's traditional perception of a peer group, and other things being equal, institutions that have served as candidates for CMU's peers in the past. Other relevant factors are medical school status and faculty collective bargaining. Because some of these grouping variables contain binary codes, the technique of two-step cluster analysis is used instead of the traditional hierarchical algorithm. The best clustering groups resulted in a 2-cluster solution with clusters of 27 each.

Judging from the means of cluster centroids, CMU fits in the following cluster of schools.

Ball State University	Missouri State University-Springfield
Bowling Green State University	Montana State University
East Tennessee State University	Montclair State University
Eastern Michigan University	New Mexico State University
Illinois State University	Old Dominion University
Miami University-Oxford	Sam Houston State University
Oakland University	Southern Illinois University-Edwardsville
Ohio University-Main Campus	SUNY at Albany
Western Michigan University	University of Maryland-Baltimore County
Middle Tennessee State University	University of New Hampshire
Grand Valley State University	University of North Carolina Wilmington
University of Massachusetts-Lowell	University of Rhode Island
Binghamton University	West Chester University of Pennsylvania
California State University-San Bernardino	

Step 3: Contextual judgment to determine final list of peer institutions

- Demographic/geographic factors (not substantially different from CMU)
- Similar institutions with medical schools
- Consensus factor (having been previously accepted as CMU's peer institution, MAC institutions).

The cluster analysis identified 27 schools listed above as most similar to CMU. Appendix A lists these schools with the values on the variables used in the cluster. The final list of 12 schools were chosen by comparing CMU's values on variables to other schools in the cluster. Of the 12 listed peers, 6 have faculty collective bargaining, 5 have medical schools, 8 were former peers, and 7 were MAC Schools. One school is R1, 9 are R2, and 2 are R3. Four are in MI.

## **Final List of 12 Peer Institutions**

Below is the final list of Peers:

Ball State University	Miami University-Oxford
Bowling Green State University	Middle Tennessee State University
East Tennessee State University	Oakland University
Eastern Michigan University	Ohio University-Main Campus
Grand Valley State University	Southern Illinois University-Edwardsville
Illinois State University	Western Michigan University

Appendix

Values of Factors Used in Clustering Analysis												
Shaded Schools Represent Peer Schools												
	FTACS	Total Expenses (in Millions)	Faculty Staff FTE	Employee FTE	Total Undergrad	Total Degrees	% Graduate Degrees	Collective Bargain	Medical School	Former Peer	MAC	Carnegie
<b>Primary Cluster Mean</b>	<b>2,900</b>	<b>\$ 489.33</b>	<b>951</b>	<b>2,413</b>	<b>14,498</b>	<b>4,562</b>	<b>26.0%</b>					
Central Michigan University	2,019	\$ 425.69	807	2,054	10,401	4,465	36.0%	Yes	Yes	Yes	Yes	R2
Ball State University	3,477	\$ 492.40	1,116	3,019	14,416	5,353	42.0%	No	No	Yes	Yes	R2
Bowling Green State University	2,937	\$ 384.19	872	1,996	13,853	4,067	29.0%	No	No	Yes	Yes	R2
East Tennessee State University	2,056	\$ 414.21	974	2,405	10,554	3,442	28.0%	No	Yes	No	No	R2
Eastern Michigan University	2,177	\$ 352.85	656	1,577	11,617	3,943	25.0%	Yes	No	Yes	Yes	R2
Illinois State University	3,983	\$ 648.51	1,069	3,194	18,055	5,154	18.0%	Yes	No	Yes	No	R2
Miami University-Oxford	4,035	\$ 569.61	915	2,931	16,864	4,773	19.0%	No	No	Yes	Yes	R2
Oakland University	2,117	\$ 386.30	867	1,957	12,841	4,557	23.0%	Yes	Yes	No	No	R2
Ohio University	4,506	\$ 602.83	1,047	3,405	18,113	8,064	32.0%	No	Yes	Yes	Yes	R1
Western Michigan University	2,621	\$ 496.26	940	2,316	13,589	4,788	25.0%	Yes	No	Yes	Yes	R2
Middle Tennessee State University	2,805	\$ 413.41	1,086	2,282	17,438	4,587	19.0%	No	No	No	No	R2
Grand Valley State University	3,875	\$ 505.97	1,346	2,693	18,665	5,690	19.0%	No	No	No	No	R3
Southern Illinois University-Edwardsville	1,866	\$ 418.58	796	2,070	9,321	3,399	31.0%	Yes	Yes	No	No	R3
University of Massachusetts-Lowell	1,937	\$ 535.15	807	1,881	12,389	4,369	35.0%	No	No	No	No	R2
Binghamton University	3,107	\$ 608.88	916	2,541	14,402	4,908	26.0%	No	No	No	No	R1
California State University-San Bernardino	2,324	\$ 413.70	723	1,709	17,034	4,557	18.0%	No	No	No	No	R2
Missouri State University-Springfield	2,332	\$ 367.09	884	2,280	18,419	4,638	29.0%	No	No	No	No	R3
Montana State University	3,752	\$ 567.42	944	2,785	14,625	3,193	20.0%	Yes	No	No	No	R1
Montclair State University	3,946	\$ 515.08	1,110	2,411	17,290	5,230	29.0%	No	No	No	No	R2
New Mexico State University	2,325	\$ 511.55	864	2,797	11,591	3,305	26.0%	No	No	No	No	R2
Old Dominion University	3,084	\$ 535.26	1,462	2,731	18,375	4,898	25.0%	No	No	No	No	R1
Sam Houston State University	3,394	\$ 530.43	975	2,301	18,235	5,143	19.0%	No	Yes	No	No	R2
SUNY at Albany	2,651	\$ 573.80	768	2,318	12,264	4,416	32.0%	No	No	No	No	R1
University of Maryland-Baltimore County	2,144	\$ 497.16	919	2,131	10,625	3,464	23.0%	No	No	No	No	R1
University of New Hampshire	2,942	\$ 623.48	940	3,085	11,512	3,601	24.0%	No	No	No	No	R1
University of North Carolina Wilmington	2,370	\$ 379.24	1,031	2,331	14,294	5,034	27.0%	No	No	No	No	R2
University of Rhode Island	3,420	\$ 627.71	955	2,728	14,768	4,248	22.0%	Yes	No	No	No	R2
West Chester University of Pennsylvania	3,006	\$ 304.49	826	1,644	14,392	4,461	26.0%	No	No	No	No	R2