

Methodology of Identifying CMU's Peer Institutions

(August, 2007)

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:

- (1) Providing benchmarks for assessing institutional effectiveness,
- (2) Pinpointing areas deserving attention and improvement, and
- (3) Acting as guidance for policy development and budget allocation.

Procedures

A hybrid approach combining threshold criteria, statistical analysis, and contextual judgment.

Step 1: Threshold criteria

- | | |
|--------------------------|--|
| Control and sector - | Public four-year institutions |
| (1) Type (by Carnegie) - | Doc/research,
Master with large programs,
Research/high activities |
| (3) Location - | Not in large cities |
| (4) Size - | Enroll at least 15,000 undergraduates |

Step 2: Further eliminating criteria

- | | |
|-------------------------|---|
| (1) Academic Programs - | No medical or law schools |
| (2) Highest Degrees - | At least 10 doctoral degrees awarded per year |
| (3) Enrollment - | No more than 25,000 undergraduates |

Step 3: Statistical Analysis

Grouping Variables for Cluster Analysis:

- (1) Total financial assets
- (2) Total faculty and staff FTE
- (3) Total number of undergraduate enrollment
- (4) Total number of new entering students among undergraduates
- (5) Total number of degrees conferred
- (6) Graduate students as a percentage of total number of degrees conferred
- (7) Organizational affiliation - MAC membership
- (8) Status of past candidacy

Step 4: Contextual judgment in picking the final list of peer institutions

- (1) Demographic/geographic factor (not substantially different from CMU)
- (2) Consensus factor (having been previously accepted as CMU's peer institution).

Step 1: Using Threshold Criteria to Identify an Initial Candidate Pool

As an initial step of data exploration, we want to identify institutions that share common characteristics with CMU in terms of the following mission-related variables:

- | | |
|--------------------------|--|
| (1) Control and sector - | Public four-year institutions |
| (2) Type (by Carnegie) - | Doc/research, Large Master programs, High Research |
| (3) Location - | Not in large cities |
| (4) Size - | Enroll at least 15,000 undergraduates |

Based on these threshold criteria, the data query results from the IPEDS Peer Analysis tool have identified the following 55 institutions that can potentially serve as CMU's peers:

Initial Candidate Pool of Peer Institutions

The University of Alabama	Auburn University (main campus)
Troy University	Northern Arizona University
University of Arkansas (main campus)	California State University-Pomona
California State University – Fullerton	California State University – Chico
University of Central Florida	Florida Atlantic University
Florida International University	Georgia Southern University
Kennesaw State University	Boise State University
Illinois State University	Northern Illinois University
Southern Illinois University Carbondale	Ball State University
Eastern Kentucky University	Western Kentucky University
Southeastern Louisiana University	University of Louisiana at Lafayette
University of Maryland – University College	Towson University
Eastern Michigan University	Grand Valley State University
Oakland University	Western Michigan University
Saint Cloud State University	University of Southern Mississippi
University of Missouri – St Louis	Missouri State University
University of Nevada – Las Vegas	East Carolina University
University of Akron (main campus)	Ohio University (main campus)
Bowling Green State University (main campus)	Kent State University (main campus)
Miami University – Oxford	University of Central Oklahoma
Oklahoma State University (main campus)	University of Oklahoma – Norman
University of Oregon	Middle Tennessee State University
The University of Texas – Pan American	University of North Texas
Texas State University – San Marcos	Texas Tech University
Utah State University	George Mason University
James Madison University	Old Dominion University
Virginia Commonwealth University	West Virginia University
California Polytechnic State University-San Luis Obispo	

Step 2: Using Additional Criteria to Narrow Down the Candidate Pool

Given the large number of institutions identified through the initial data exploration, our next step is to narrow down the candidate pool by applying a set of additional criteria that are more indicative of CMU's current developmental status. These variables include:

- (1) Academic Programs - No medical or law schools
- (2) Highest Degrees - At least 10 doctoral degrees awarded per year
- (3) Enrollment - No more than 25,000 undergraduates

As a result of applying these additional criteria, we have narrowed the candidate list to nineteen institutions. It is to be noted that the majority of the following institutions have been cited, at one time or another, as CMU's peer institutions in our previous studies.

Refined Candidate Pool

Northern Arizona University
Georgia Southern University
Boise State University
Illinois State University
Ball State University
University of Louisiana at Lafayette
Towson University
Eastern Michigan University
Oakland University
Western Michigan University
University of Southern Mississippi
Bowling Green State University (main campus)
Kent State University (main campus)
Miami University – Oxford
Middle Tennessee State University
Texas State University – San Marcos
Utah State University
James Madison University
Old Dominion University

Step 3: Cluster Analysis

Our third step involves the use of cluster analysis as a convenient statistical technique to further differentiate among the 19 candidate institutions by the following variables.

Grouping Variables

- (1) Total financial assets
- (2) Total faculty and staff FTE
- (3) Total number of undergraduate enrollment
- (4) Total number of new entering students among undergraduates
- (5) Total number of degrees conferred
- (6) Graduate students as a percentage of total number of degrees conferred
- (7) Organizational affiliation - MAC membership
- (8) Status of past candidacy

Of the variables listed above, total assets indicate an institution's overall 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 and retaining 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, our cluster analysis has also included 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 are supposed to merit our particular attention. Because some of these grouping variables contain binary codes, the technique of two-step cluster analysis is used instead of the traditional hierarchical algorithm. In doing so, we have imposed a 3-cluster solution in the hope that the institutions can be divided into three groups according to their degree of similarity to CMU. Judging from the means of cluster centroids, the results can be interpreted as follows:

Group 1: the most similar

Bowling Green State University	Western Michigan University
Ball State University	Miami University – Oxford
Kent State University	Eastern Michigan University

Group 2: the next similar

Middle Tennessee State University	Oakland University
Illinois State University	University of Louisiana at Lafayette
James Madison University	Boise State University
Texas State University – San Marcos	

Group 3: the least similar

Northern Arizona University	Georgia Southern University
Towson University	University of Southern Mississippi
Utah State University	Old Dominion University

Step 4: Contextual Judgment in Picking the Final List

Since the cluster analysis has identified Group 3 as the least similar cohort to CMU, these institutions are excluded from further consideration. For this reason, our final list includes only Group 1 institutions, plus a few others from Group 2. The selection of peers from Group 2 is largely based on the contextual judgment of two factors: (1) the institution's demographic and geographic characteristics, and (2) whether it has been previously regarded as a peer institution for CMU. For example, among the three Group 2 institutions that have been dropped from the final list, University of Texas at San Marcos and Boise State University have never been considered as CMU's peers. The former features a large number of Hispanic enrollments, whereas the latter is located in the state capital of Idaho with an urban population of 200,000. Although Oakland University at one time was considered a CMU peer in a previous study, the institution's geo-economic environment is substantially different from that of CMU's. After taking into consideration all these factors, we recommend the following institutions as our benchmark peers:

Final List of 10 Peer Institutions

Central Michigan University
Bowling Green State University
Western Michigan University
Ball State University
Miami University – Oxford
Kent State University
Eastern Michigan University
Middle Tennessee State University
Illinois State University
University of Louisiana at Lafayette
James Madison University

For the purpose of benchmarking, we have derived a list of strategic indicators from the public data reported by these peer institutions. Organized under a set of conceptual categories, these strategic indicators are listed in the attached data sheet.