Methodology of Identifying CMU’s Peer Institutions

(December, 2014)

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:

- Providing benchmarks for assessing institutional effectiveness
- Pinpointing areas deserving attention and improvement
- Acting as guidance for policy development and resource allocation

Procedure Overview

The process involves three steps; initial selection through threshold criteria, grouping with two step cluster analysis, and final choice using contextual judgment on the groupings.

Step 1: Threshold Criteria - Choose initial candidate pool from the Integrated Postsecondary Education Data System (IPEDS) using following threshold criteria:

- Control and Sector - Public four year institutions
- Carnegie type - Doctoral/Research
- Master with large programs
- Research/high activities
- Location - Not in large cities
- Size - more than 14,000 and less than 25,000 undergraduates
- Academic Programs - Exclude law schools
- Highest Degrees - At least 10 doctoral degrees awarded per year

Step 2: Grouping through Two Step Cluster Analysis – Below are the grouping variables used in analysis:

Grouping Variables

- Total expenses
- Total faculty and staff FTE
- Total undergraduate enrollment
- Total new entering FTIAC
- Total number of degrees conferred
- Graduate degrees as a percentage of total number of degrees conferred
- Organizational affiliation - MAC membership
- Faculty collective bargaining status
- Medical School Status
- Status of past candidacy as peer
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).

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

Based on the threshold criteria described above, the data query results from the IPEDS Peer Analysis tool identified the following 35 institutions that can potentially serve as CMU’s peers:

**Candidate Pool of Peer Institutions**

<table>
<thead>
<tr>
<th>Appalachian State University</th>
<th>Montclair State University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn University</td>
<td>New Mexico State University-Main Campus</td>
</tr>
<tr>
<td>Ball State University</td>
<td>Northern Arizona University</td>
</tr>
<tr>
<td>Boise State University</td>
<td>Northern Illinois University</td>
</tr>
<tr>
<td>Bowling Green State University-Main Campus</td>
<td>Oakland University</td>
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<tr>
<td>Clemson University</td>
<td>Ohio University-Main Campus</td>
</tr>
<tr>
<td>East Carolina University</td>
<td>Oklahoma State University-Main Campus</td>
</tr>
<tr>
<td>Eastern Michigan University</td>
<td>Old Dominion University</td>
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<tr>
<td>Georgia Southern University</td>
<td>Saint Cloud State University</td>
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<tr>
<td>Grand Valley State University</td>
<td>Sam Houston State University</td>
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<tr>
<td>Illinois State University</td>
<td>Southeastern Louisiana University</td>
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<tr>
<td>James Madison University</td>
<td>The University of Texas-Pan American</td>
</tr>
<tr>
<td>Kansas State University</td>
<td>Towson University</td>
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<tr>
<td>Kennesaw State University</td>
<td>University of Louisiana at Lafayette</td>
</tr>
<tr>
<td>Kent State University at Kent</td>
<td>University of Nevada-Reno</td>
</tr>
<tr>
<td>Miami University-Oxford</td>
<td>Western Kentucky University</td>
</tr>
<tr>
<td>Middle Tennessee State University</td>
<td>Western Michigan University</td>
</tr>
<tr>
<td>Missouri State University-Springfield</td>
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</tbody>
</table>

Step 2: Cluster Analysis

A two-step cluster analysis using the following grouping variables was used to differentiate the 35 institutions listed above into three groups.

**Grouping Variables**

- Total expenses
- Total faculty and staff FTE
- Total undergraduate enrollment
- Total new entering FTIAC
- Total number of degrees conferred
• Graduate degrees as a percentage of total number of degrees conferred
• Organizational affiliation - MAC membership
• Faculty collective bargaining status
• Medical school status
• Status of past candidacy

Of the variables listed above, Carnegie type used in step one is an indicator of research activity. 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 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, the cluster analysis should include 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. Two new variables have been added since the last peer analysis: 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. In doing so, a 3-cluster solution was imposed 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, CMU is similar to two of the groups and dissimilar to a third. The Group 1 similarity to CMU coheres around MAC affiliation, previous peer status, total FTE staff, and undergraduate enrollment. The Group 2 similarity to CMU coheres around medical school status, graduate degrees as a percentage of total number of degrees conferred, number of FITAC students, and total graduates. The results can be interpreted as follows:

**Group 1: similar**

Ball State University  
Bowling Green State University-Main Campus  
Eastern Michigan University  
Illinois State University  
James Madison University  

Kent State University at Kent  
Miami University-Oxford  
Northern Arizona University  
Ohio University-Main Campus  
Western Michigan University

**Group 2: similar**

Auburn University  
Clemson University  
East Carolina University  
Kansas State University  

New Mexico State University-Main Campus  
Northern Illinois University  
Oklahoma State University-Main Campus  
University of Nevada-Reno
Group 3: dissimilar

Appalachian State University  Old Dominion University
Boise State University  Saint Cloud State University
Georgia Southern University  Sam Houston State University
Grand Valley State University  Southeastern Louisiana University
Kennesaw State University  The University of Texas-Pan American
Middle Tennessee State University  Towson University
Missouri State University-Springfield  University of Louisiana at Lafayette
Montclair State University  Western Kentucky University
Oakland University

Step 3: Contextual Judgment in Picking the Final List

The cluster analysis identified Group 3 as the least similar cohort to CMU. Therefore these institutions are excluded from further consideration. The final list was chosen from Groups 1 and 2 relative to the criteria identified earlier. The following is the final list.

Final List of 12 Peer Institutions

Ball State University  Kent State University at Kent
Bowling Green State University-Main Campus  Miami University-Oxford
East Carolina University  Northern Illinois University
Eastern Michigan University  Ohio University-Main Campus
Illinois State University  University of Nevada-Reno
James Madison University  Western Michigan University