Peer Institution Revision Update
UHWO Faculty Senate (12/1/2017)

Dr. Kristina Guo, Professor of Public Administration
John Stanley, Director of Institutional Research
What are peer institutions?

• Peer – similar role, scope, mission

• Other types of comparison groups
  – Competitor – students, faculty, finances
  – Aspirational – At UH, we call these “benchmark” institutions; those to emulate
  – Predetermined
    • Natural – athletic conference, region (WAC)
    • Traditional – historical (Ivy)
    • Jurisdictional – political or legal jurisdiction (state lines)
    • Classification – national reporting (Carnegie)
Why have peer institutions?

- **Strategic Planning**
  - Inform policy
  - Accreditation

- **Performance Benchmarking**
  - Faculty compensation
  - Teaching loads
  - Tuition schedules
  - Budget alignment
  - Used by other institutions for performance comparison
  - Surveys supply peer lists to prospective students and parents to compare cost and graduation rates
Who are our peers now?

• Reminder: Peer = similar role, scope, & mission.

UH West Oahu current peers:

- California State University – Monterey Bay
- Eastern Oregon University
- Great Basin College
- Texas A&M University – Texarkana
- The Evergreen State College
- University of Hawaii - Hilo
- University of Washington – Bothell Campus
- University of Washington – Tacoma
>15 years old. UHWO still upper two-year at that time

<table>
<thead>
<tr>
<th></th>
<th>Total Undergrad. Enrollment (Fall 2015)</th>
<th>Total Undergrad. Enrollment (Fall 2015)</th>
<th>12-month SSH: Undergraduate Instruction (AY 2015-16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHWO</td>
<td>2,692</td>
<td>2,692</td>
<td>57,018</td>
</tr>
<tr>
<td>Current Peer Avg* (Min; Max)</td>
<td>4,019 (1,848; 7,102)</td>
<td>3,639 (1,422; 6,648)</td>
<td>120,049 (34,191; 210,697)</td>
</tr>
<tr>
<td>Manoa; Hilo</td>
<td>18,865; 3,829</td>
<td>13,689; 3,260</td>
<td>386,650; 83,929</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th># Students Receiving a Bachelor's Degree (FY 2015-16)</th>
<th>Retention Rate (2014 cohort)</th>
<th>4-Yr Graduation Rate (2010 cohort)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHWO</td>
<td>474</td>
<td>67</td>
<td>0</td>
</tr>
<tr>
<td>Current Peer Avg* (Min; Max)</td>
<td>841 (71; 1,498)</td>
<td>68 (52; 84)</td>
<td>22 (0; 50)</td>
</tr>
<tr>
<td>Manoa; Hilo</td>
<td>3,294; 687</td>
<td>78; 63</td>
<td>25; 11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>6-Yr Graduation Rate (2010 cohort)</th>
<th>% Full-time first-time undergraduates awarded</th>
<th>Core Expenses (FY 2014-15)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHWO</td>
<td>14</td>
<td>34</td>
<td>36,430,091</td>
</tr>
<tr>
<td>Current Peer Avg* (Min; Max)</td>
<td>39 (7; 67)</td>
<td>42 (33; 52)</td>
<td>65,760,003 (26,222,558; 135,248,718)</td>
</tr>
<tr>
<td>Manoa; Hilo</td>
<td>58; 35</td>
<td>28; 48</td>
<td>891,514,873; 110,693,736</td>
</tr>
</tbody>
</table>

*average includes UHWO
What are the 10 (or n) most similar institutions to UH West Oahu?
Selecting peers

The Peer Selection Process Continuum

Data <-> Judgment

IPEDS
• Present overview and timeline of peer revision process to senior administration.

Sept.

Oct/Nov.

• Present IPEDS descriptive statistics to senior admin and Div chairs.
• Present first round of peer revision analysis (senior admin, Div Chairs, faculty senate, etc).
• Solicit and incorporate stakeholder input in to peer selection.
• Iterate data analyses and presentations.

Dec/Jan.

• Final campus presentations of peer analysis.
• UH CCAO meeting presentation for final approval.
The Integrated Postsecondary Education Data System (IPEDS) is a system of interrelated surveys conducted annually by the National Center for Education Statistics (NCES), a part of the Institute for Education Sciences within the United States Department of Education. IPEDS consists of twelve interrelated survey components that are collected over three collection periods (Fall, Winter, and Spring) each year as described in the Data Collection and Dissemination Cycle. The completion of all IPEDS surveys is mandatory for all institutions that participate in, or are applicants for participation in, any federal financial assistance program authorized by Title IV of the Higher Education Act of 1965, as amended.[1] Statutory Requirements For Reporting IPEDS Data.

Data collected in IPEDS:
- Institutional characteristics
- Institutional prices
- Admissions
- Enrollment
- Student financial aid
- Degrees and certificates conferred (completions)
- Student persistence and success (retention and graduation rates)
- Institutional resources
IPEDS Descriptive Statistics
### Institution characteristics selection

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPEDS Universe</td>
<td>7,521</td>
</tr>
<tr>
<td>U.S. Public 4 year or above, degree granting</td>
<td>741</td>
</tr>
<tr>
<td>Bachelors &amp; Master Carnegie Classification; primarily baccalaureate or above</td>
<td>360</td>
</tr>
<tr>
<td>Title IV participating, institutional Size: 1,000 – 4,999</td>
<td>137</td>
</tr>
</tbody>
</table>

**Final = 137 Institutions**

*Data retrieved November 13, 2017*
Total enrollment and percent part-time enrollment

IPEDS FALL 2015

Total enrollment (DRVEF2015)

- UHWO = 2,692

PercentPartTimeEnrollment2015

Mean = 27
Std. Dev. = .173
N = 137
Percent out-of-state and first-time freshmen enrollment

**IPEDS FALL 2015**

**Percent of first-time undergraduates - out-of-state (DRVEF2015)**

- **UHWO = 2%**

**First-time degree/certificate-seeking undergraduate enrollment (DRVEF2015)**

- **UHWO = 254**

Mean = 20.48
Std. Dev. = 15.216
N = 102

Mean = 486.97
Std. Dev. = 252.093
N = 137
Transfer-in and continuing enrollment

IPEDS FALL 2015

Transfer-in degree/certificate-seeking undergraduate enrollment (DRVEF2015)

Continuing degree/certificate-seeking undergraduate enrollment (DRVEF2015)

UHWO = 557
OTHER IPEDS ETHNICITY CODES ARE:

- Alaskan Native or Native American
- Asian
- Black/African American
- Hispanic/Latino
- Native Hawaiian
- Mixed Race 2 or more

Note:

- IPEDS reporting methodology significantly under-reports Native Hawaiian students.
- Asian racial groups are consolidated in IPEDS
- IPEDS inadequate for UH to make institutional comparisons based on race/ethnicity.
Admissions selectivity and yield (first-time freshmen)

IPEDS FALL 2016

Percent admitted - total (DRVADM2016)

Mean = 71.61
Std. Dev. = 18.645
N = 117

UHWO = 68%

Admissions yield - total (DRVADM2016)

Mean = 36.32
Std. Dev. = 15.841
N = 117

UHWO = 39%
Percent of undergraduate enrollment: ages 18-24, 25-64

UHWO = 51%
Percent of first-time full-time undergraduates receiving financial aid

**IPEDS 2015-16**

- **UHWO = 77%**
- **UHWO = 34%**

![Histogram showing the percent of full-time first-time undergraduates awarded any financial aid.](image)

Mean = 91.57
Std. Dev. = 6.71
N = 134

![Histogram showing the percent of full-time first-time undergraduates awarded federal grant aid.](image)

Mean = 48.32
Std. Dev. = 17.212
N = 134

**Percent of first-time full-time undergraduates awarded any financial aid (SFA1516)**

**Percent of full-time first-time undergraduates awarded federal grant aid (SFA1516)**
Percent of first-time full-time undergraduates receiving financial aid

IPEDS FY 2015-16

Percent of full-time first-time undergraduates awarded Pell grants (SFA1516)

- Mean = 47.33
- Std. Dev. = 18.999
- N = 134

UHWO = 34%

Percent of full-time first-time undergraduates awarded institutional grant aid

- Mean = 55.22
- Std. Dev. = 21.096
- N = 134

UHWO = 69%
Degrees awarded

IPEDS FY 2015-16

Number of students receiving a Bachelor’s degree (DRVC2016)

UHWO = 474

Mean = 156.27
Std. Dev. = 63.373
N = 157

UHWO = 152

UHWO = 152
Retention and four-year graduation rate

IPEDS Retention = 2014 cohort; 4-yr grad rate = 2010 cohort

UHWO = 67%

UHWO = 0%
Six-year graduation and transfer-out rate

IPEDS Retention = 6-yr grad rate = 2010 cohort; transfer-out rate = 2015 cohort

Graduation rate - Bachelor degree within 6 years total (DRVGR2016)

Transfer-out rate - Bachelor cohort (DRVGR2016)

UHWO = 14%

No Data reported
Distance education enrollment

**IPEDS FALL 2015**

- **Percent of undergraduate students enrolled exclusively in distance education courses (DRVEF2015)**
  - Mean = 10.39
  - Std. Dev. = 15.594
  - N = 137
  - UHWO = 28%

- **Percent of undergraduate students enrolled in some but not all distance education courses (DRVEF2015)**
  - Mean = 21.66
  - Std. Dev. = 16.291
  - N = 137
  - UHWO = 40%
Distance education

IPEDS FALL 2015

Percent of undergraduate students not enrolled in any distance education courses (DRVEF2015)

Mean = 67.92
Std. Dev = 23.644
N = 1,576

UHWO
= 32%
IPEDS FY 2014-15

Core revenues: total dollars (GASB) (DRVF2015)

UHWO = $34,427,340

Core expenses: total dollars (GASB) (DRVF2015)

Mean = 51844328.81
Std. Dev. = 36152432
N = 120
Total employees and non-instructional staff

FALL 2015

UHWO = 277

Mean = 487.38
Std. Dev. = 207.664
N = 130

Mean = 242.38
Std. Dev. = 121.174
N = 130
Total employees (service and sales)

IPEDS FALL 2015

Full-time employees (EAP2015 Service Occupations)
Mean = 38.23
Std. Dev. = 26.125
N = 133

UHWO = 11

Full-time employees (EAP2015 Sales and related Occupations)
Mean = 2.17
Std. Dev. = 2.516
N = 45

UHWO = 1
Total employees (office/admin support and construction)

IPEDS FALL 2015

UHWO = 7

UHWO = 1
Instructional faculty (headcount and FTE)

IPEDS FALL 2015

Institutional staff on 9 10 11 or 12 month contract-total (SAL2015_IS All full-time instructional staff total)

- UHWO = 77

Mean = 126.76
Std. Dev. = 39.614
N = 135

Institutional FTE (DRVHR2015)

- UHWO = 100

Mean = 154.15
Std. Dev. = 64.512
N = 137
Instructional faculty count by selected programs

IPEDS FALL 2015
Freshmen Cohort Characteristics
- Retention and graduation rates
- Acceptance rate and admissions yield
- # of Freshmen

Undergraduate Demographics
- # Undergraduates (part-time, transfers, continuing, out-of-state, etc)
- # Bachelor degrees awarded
- # Undergraduates ages 25-64
- % Enrolled in distance education

Institutional Size, Scope, Mission, Budget
- Total Enrollment, BUSA enrollment
- Total revenues, expenses
- Tuition and fees as % of Revenues
- # I-faculty, # of employees
- SSH per faculty
- Expenses per BA completion

Variables for peer selection

...what else?
Data preprocessing

- Considering reliability & validity of data
- Standardization
- Random ordering
- Address outliers (noise handling) & missing data
- Descriptive statistics
- Dimension reduction
Statistical clustering is the most commonly used methodology in peer selection.


Clustering is a statistical procedure that combines individual cases into homogeneous groups, called clusters, so that distances between clusters are maximized and distances within clusters are minimized.

Several different clustering methods (i.e. hierarchical, two-step)

Supporting methods to clustering include factor analysis and discriminant function analysis
Advantages of HAC:

- Hierarchical agglomerative clustering works better when there is an underlying hierarchical pattern in the data.
- When there is a relatively lower number of cases (e.g., <100 colleges).
- Used as the methodology to select UH Manoa peer and benchmark schools in 2013.
Two-Step Sequential Clustering Example

Advantages of Two-Step:

• Can use when there is a large number of cases (e.g., >100 colleges).
• Can handle continuous and categorical data.
• Chosen method for this study.
• Choose clustering procedure
  – Hierarchical Agglomerative Clustering (UH Manoa)
  – 2-step sequential (UH West Oahu)

• Choose method for forming groups
  – Between-Groups Linkage (HAC) (UH Manoa)
  – Within-Groups Linkage (HAC)
  – Nearest Neighbor/Furthest Neighbor (HAC)
  – Bayesian Information Criterion (2SS)
  – Akaike Information Criterion (2SS) (UHWO)

• Choose statistic to measure distance
  – Euclidian
  – Log-likelihood (UH Manoa & UH West Oahu)
  – Pearson correlation
  – Cosine
  ...many more
Cluster analysis data element selection

Four models tested: Fixed 10 cluster solutions

#1 Freshmen Cohort Performance
1. Six-Year Grad. Rate (3-yr avg.)
2. Five-Year Grad. Rate (3-yr avg.)
3. Retention Rate
4. Admissions Yield
5. # First-Time Freshmen
6. Acceptance Rate

#2 Undergraduate Makeup
1. Total SSH Attempted 12-months UGs
2. # Undergraduates
3. # Continuing
4. # Students Receiving BA
5. % Part-time
6. # Transfer-In
7. % UGs Ages 25-64
8. % Out-of-state
9. % Some but not all DE

#3 Institutional Size, Scope, Mission, Budget
1. Total Core Expenses
2. Total Core Revenues
3. # I-Faculty
4. # Employees
5. Total Enrollment
6. BUSA Enrollment
7. Tuition and Fees as % of Core Revenues
8. SSH/I-Faculty Ratio
9. % Some but not all DE

#4 Hybrid
1. # Continuing
2. Five-Year Grad. Rate (3-yr avg.)
3. Six-Year Grad. Rate (3-yr avg.)
4. # Students Receiving BA
5. Total SSH Attempted 12-months Ugs
6. # Undergraduates
7. # I-Faculty
8. Retention Rate
9. Total Core Revenues
10. Total Core Expenses
11. Admissions Yield

UHWO’s Cluster N = 19
UHWO’s Cluster N = 10
UHWO’s Cluster N = 18
UHWO’s Cluster N = 14
Hybrid model cluster sizes

Cluster Sizes

- Cluster Size 1: 16.5%
- Cluster Size 2: 11.7%
- Cluster Size 3: 11.7%
- Cluster Size 4: 13.6%
- Cluster Size 5: 11.7%
- Cluster Size 6: 4.9%
- Cluster Size 7: 8.7%
- Cluster Size 8: 8.7%
- Cluster Size 9: 10.7%
- Cluster Size 10: 1.9%

- Size of Smallest Cluster: 2 (1.9%)
- Size of Largest Cluster: 17 (16.5%)
- Ratio of Sizes: Largest Cluster to Smallest Cluster: 8.50

UHWO's Cluster, N=14
## Hybrid model cluster distributions

### UHWO’s Cluster

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Label</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Input (Predictor) Importance

- 1: Very Important
- 0: Not Important

#### Input (Predictor) Importance

- Graduation Rate 5 Years Three-year average
- Graduation Rate 5 Years Three-year average
- Graduation Rate 6 Years Three-year average
- Number of students receiving a Bachelor's degree (DRIVE2015)
- Number of students obtaining a Bachelor's degree (DRIVE2015)
- 12-month instructional activity undergraduate (DRIVE2015)
- 12-month instructional activity undergraduate (DRIVE2015)
- Core revenue total dollars (DRIVE2016)
- Core revenue total dollars (DRIVE2016)
-Admissions yield total (DRVA2016)
-Admissions yield total (DRVA2016)
Hybrid model – UHWO’s cluster box plot

Cluster Comparison

1. # Continuing Students Enrolled
2. Five-Year Graduation Rate
3. Six-Year Graduation Rate
4. # Students Receiving BA Degree
5. 12-Month Instructional Activity in UG SSH
6. Undergraduate Enrollment
7. # I-Faculty (9, 10, 11, or 12 month)
8. Retention Rate
9. Core Revenues Total
10. Core Expenses Total
10. Admissions Yield
Cluster group #5 includes...

1. Black Hills State University
2. Delta State University
3. Eastern Oregon University
4. Georgia Southwestern State University
5. Indiana University-East
6. Indiana University-Kokomo
7. Lewis-Clark State College
8. Louisiana State University-Shreveport
9. Nevada State College
10. Shepherd University
11. Southeastern Oklahoma State University
12. Southern Arkansas University Main Campus
13. University of Hawaii-West Oahu
14. University of South Carolina-Aiken
## Cluster Group #5 Details (2015-16 data)

<table>
<thead>
<tr>
<th></th>
<th>UH WEST OAHU</th>
<th>OLD PEER AVERAGE</th>
<th>NEW GROUP AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Enrollment</td>
<td>2,692</td>
<td>4,019</td>
<td>3,739</td>
</tr>
<tr>
<td>Number of I-Faculty (9,10,11,12 mo.)</td>
<td>77</td>
<td>152</td>
<td>120</td>
</tr>
<tr>
<td>12-month UG SSH per I-Faculty FTE</td>
<td>570</td>
<td>637</td>
<td>584</td>
</tr>
<tr>
<td>Bachelors Awarded</td>
<td>474</td>
<td>841</td>
<td>539</td>
</tr>
<tr>
<td>4 year Grad Rate</td>
<td>0</td>
<td>22</td>
<td>14</td>
</tr>
<tr>
<td>5 year Grad Rate</td>
<td>10</td>
<td>35</td>
<td>28</td>
</tr>
<tr>
<td>6 year Grad Rate</td>
<td>14</td>
<td>39</td>
<td>32</td>
</tr>
<tr>
<td>Retention Rate</td>
<td>67</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>Core Expenses (in millions)</td>
<td>$36</td>
<td>$66</td>
<td>$40</td>
</tr>
<tr>
<td>Core Expenses per Completion (in thousands)</td>
<td>$76</td>
<td>$116</td>
<td>$77</td>
</tr>
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Questions?

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kguo@hawaii.edu

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