Introduction

• Retention and graduation rates are key performance indicators (KPIs) used in college rankings, accreditation and assessment reports, and national accountability systems.

• Retention and graduation rates are used increasingly as part of state-support funding formulas for public colleges and universities.
Background

• Today’s study builds on a research project completed at the AIR/NCES National Data Institute in Washington D.C. (2013).

• Objective of NDI work was to produce two institution-level prediction models (for retention and graduation rates) using IPEDS data and standard regression methods.

Purpose of Study

• Demonstrate online interactive reports to predict institutional retention and graduation rates.
  – Estimate predicted rates with IPEDS and WSCUC GRD-reported data.
  – Show interactive reports for institutional comparisons and benchmarking.
  – Show ‘what if’ scenarios associated with changes in key estimation inputs.
  – Highlight institutional characteristics associated with changes in variation between IPEDS and AGR rates.
Relevant Previous Literature

• Hosch, B. J. (2008). Institutional and student characteristics that predict graduation and retention rates. Paper presented at the annual meeting of the North East Association for Institutional Research.

Data Sources and Data Elements

• Sources
  – IPEDS
  – WSCUC GRD
• Institution cohorts
  – New full-time first-year students
  – Retention cohort: AY 2012-13
  – Graduation cohort: AY 2008-09
  – Absolute Graduation Rate (AGR): AY 2014-15
• Institutional data elements (predictors)
  – Demographics
  – Selectivity
  – Enrollment
  – Financial aid
  – Finances
  – Student-faculty ratio
Institution Selection in Data Center

Use the Data
Access IPEDS data submitted to NCES through our data tools or download the data to conduct your research.

Overview of IPEDS Data
Get a bird's eye view of IPEDS data learn what data are collected and how you can use the various tools on this page to access IPEDS data.

Data Trends
Use the Trend Generator to view trends on most frequently asked student-level variables including Enrollment, Graduation, Selectivity, Retention, and Financial Aid.

Look Up an Institution
Locate your institution by institution name, state, or zip code.

Data Feedback Report
Send us your comments or suggestions on the data feedback.

Final release data used; retrieved 10/26/2016

EZ-Group Selection

1) Total IPEDS First Look Universe, 7,252
2) US, Public/Private not-for-profit four-year above, 1,814
3) Has full-time undergraduates, 1,725
4) No completely online campuses, 1,719

Resulted in retrieval of >250 IPEDS variables

Variable Selection Framework

Institutional Characteristics

Demographics
Selectivity/Student Success
Enrollment
Financial Aid
Finances
Student-faculty Ratio

Retention Rates
(2012 cohort)
Graduation Rate
(2008 IPEDS)
(2014 WSCUC)

Resulted in retrieval of >250 IPEDS variables
The URR and AGR Rates

• Unit redemption rate (URR)
  – Approximation of proportion of institutional credits completed (all UG students) that ‘lead’ to a UG degree (all UG degree recipients) for AY

• Absolute graduation rate
  – Adjusts IPEDS-reported rate by average credits of dropouts to average credits of degree recipients (weighted by time)

The URR and AGR Rates

• Longitudinal enrollment impact on AGR

<table>
<thead>
<tr>
<th>UNR Absolute Graduation Rate (ref. WASC GRD formula)</th>
<th>AY 11-12</th>
<th>AY 12-13</th>
<th>AY 13-14</th>
<th>AY 14-15</th>
<th>AY 15-16</th>
<th>AVG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earned Credits</td>
<td>324,256</td>
<td>338,146</td>
<td>357,085</td>
<td>390,115</td>
<td>421,698</td>
<td>366,260</td>
</tr>
<tr>
<td>Unduplicated Undergrads (Final)</td>
<td>15,623</td>
<td>15,792</td>
<td>16,498</td>
<td>17,596</td>
<td>18,531</td>
<td>16,808</td>
</tr>
<tr>
<td>U multi-year avg</td>
<td>324,256</td>
<td>331,201</td>
<td>339,829</td>
<td>352,401</td>
<td>366,260</td>
<td></td>
</tr>
<tr>
<td>Total Earned Credits At UNR</td>
<td>275,912</td>
<td>286,898</td>
<td>291,431</td>
<td>333,462</td>
<td>350,239</td>
<td>307,588</td>
</tr>
<tr>
<td>Bachelor Degree Receivers</td>
<td>2,404</td>
<td>2,534</td>
<td>2,567</td>
<td>2,918</td>
<td>3,105</td>
<td>2,706</td>
</tr>
<tr>
<td>Avg earned units per grad</td>
<td>115</td>
<td>113</td>
<td>114</td>
<td>114</td>
<td>113</td>
<td>114</td>
</tr>
<tr>
<td>Credits Earned by Dropouts</td>
<td>126,164</td>
<td>113,583</td>
<td>122,610</td>
<td>131,046</td>
<td>130,761</td>
<td>123,351</td>
</tr>
<tr>
<td>Number of Dropouts</td>
<td>2,910</td>
<td>2,670</td>
<td>2,799</td>
<td>3,004</td>
<td>3,012</td>
<td>2,846</td>
</tr>
<tr>
<td>Avg earned units per dropout</td>
<td>43</td>
<td>43</td>
<td>44</td>
<td>44</td>
<td>43</td>
<td>43</td>
</tr>
<tr>
<td>d-ratio (dropout/grad units)</td>
<td>0.38</td>
<td>0.38</td>
<td>0.39</td>
<td>0.38</td>
<td>0.38</td>
<td>0.38</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AGR</th>
<th>2-Yr Avg</th>
<th>3-Yr Avg</th>
<th>4-Yr Avg</th>
<th>5-Yr Avg</th>
<th>AVG avg</th>
<th>Snap Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGR</td>
<td>71.0%</td>
<td>69.3%</td>
<td>87.2%</td>
<td>89.3%</td>
<td>79.2%</td>
<td>66.7%</td>
</tr>
</tbody>
</table>
IPEDS versus URR and AGR Rates

- Predicting AGR rates
  - Model estimation with IPEDS data
  - Model estimation with IPEDS and WASC-requested member institution data

- Identifying key factors associated with graduation-rate metrics
  - Compare factor set for IPEDS rate versus AGR

A Framework for GRD Prediction

WSCUC Data
- Total/Graduated headcount, credits
- Dropout headcount, credits

IPEDS Data
- Academic Preparation
- Socio-demographics
- Financial aid
- Institution type

Absolute Graduation Rate (AGR)
### Key Predictors for IPEDS 
Retention Rate Prediction

<table>
<thead>
<tr>
<th>Predictors</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Six-year graduation rate</td>
<td>19.14</td>
<td>***</td>
</tr>
<tr>
<td>Percent of full-time first-time Asian</td>
<td>8.00</td>
<td>***</td>
</tr>
<tr>
<td>SAT Math and Reading 75th percentile avg.</td>
<td>5.93</td>
<td>***</td>
</tr>
<tr>
<td>Percent of first-time undergraduates out-of-state</td>
<td>-3.19</td>
<td>***</td>
</tr>
<tr>
<td>Student-to-faculty ratio</td>
<td>3.15</td>
<td>**</td>
</tr>
<tr>
<td>Rural institution</td>
<td>-3.01</td>
<td>**</td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.75$

### Key Predictors for IPEDS 
Graduation Rate Prediction

<table>
<thead>
<tr>
<th>Predictors</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>First-time full-time freshmen retention rate (2009 cohort)</td>
<td>31.36</td>
<td>***</td>
</tr>
<tr>
<td>Average net price of high income students(&gt; $110k)</td>
<td>8.84</td>
<td>***</td>
</tr>
<tr>
<td>SAT Math and Reading 75th percentile avg.</td>
<td>6.98</td>
<td>***</td>
</tr>
<tr>
<td>Percent first-time full-time students women</td>
<td>3.92</td>
<td>***</td>
</tr>
<tr>
<td>Percent of full-time first-time Black</td>
<td>-3.44</td>
<td>***</td>
</tr>
<tr>
<td>Percent first-time full-time students receiving pell grants</td>
<td>-2.42</td>
<td>*</td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.88$
Key Predictors for WSCUC
Absolute Graduation Rate Prediction

<table>
<thead>
<tr>
<th>Predictors</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Units earned by inactives to units earned by enrolled ratio (GRD)</td>
<td>9.03</td>
<td>***</td>
</tr>
<tr>
<td>Units earned by inactives to units earned by graduated ratio (GRD)</td>
<td>-8.08</td>
<td>***</td>
</tr>
<tr>
<td>Headcount inactives to graduated students ratio (GRD)</td>
<td>-7.92</td>
<td>***</td>
</tr>
<tr>
<td>ACT Math 75th percentile (IPEDS)</td>
<td>-5.27</td>
<td>***</td>
</tr>
<tr>
<td>Six-year graduation rate (IPEDS)</td>
<td>3.97</td>
<td>***</td>
</tr>
<tr>
<td>SAT Math 25th percentile (IPEDS)</td>
<td>3.85</td>
<td>***</td>
</tr>
<tr>
<td>Headcount part-time transfers to all undergraduates (IPEDS)</td>
<td>-2.88</td>
<td>**</td>
</tr>
<tr>
<td>GRS cohort as a percent of entering class (IPEDS)</td>
<td>-2.76</td>
<td>**</td>
</tr>
</tbody>
</table>

Adjusted $R^2 = 0.88$
Questions & Comments

Presentation at
www.wscuc.org/pmss

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