Participate | Collaborate | Innovate
Exploring Data Tools & Metrics for SEM
June 1-2, 2018
SEM Academy
USING DATA TOOLS AND METRICS TO INFORM AND ASSESS SEM PRACTICES
Background and Purpose

• Identify and assess SEM Practices
• Involve administrators, researchers, faculty, and staff
• Measure, track, and report
Transform Conversations

- Intimidating → Productive
- Unfocused → Highly targeted
- Disorganized → Improved efficiencies
- Interesting data → Relevant and critical data
Sequence of Data-usage Events

1. Identify Needed Data
2. Determine a reliable data source
3. Design data parameters & metrics
4. Collect the data
5. Process and organize data
6. Provide data visualizations
7. Analyze the data collaboratively
8. Determine action needed
9. Implement action
10. Evaluate impact of action

SEQUENCE OF DATA-USAGE EVENTS
Data Tools and Metrics for SEM

STRATEGIES AND PRACTICES
Enrollment and FTES

- Establish enrollment goals
- Budget allocations
- Planning purposes
  - Strategic planning
  - Education master planning
  - Staffing
  - Facilities planning
Productivity Measures

• Enrollment: the number of duplicated headcount
• Headcount: the number of unduplicated headcount
• FTES: full-time equivalent students
• WSCH: total weekly student contact hours
Efficiency Measures

- FTES/FTEF Ratio
- Yield (FTES/Sections)
- Load (WSCH/FTEF)
- Fill Rates (section enrollment capacity/enrollment)
Guided Questions

1. What type of data and information does your college currently have available that can be used for SEM planning?

2. What additional data and information and/or data tools does your college need for SEM planning?
# Enrollment and FTES Data Dashboard

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Headcount</td>
<td>44,653</td>
<td>45,632</td>
<td>46,213</td>
<td>45,986</td>
<td>44,924</td>
<td>271</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>120,431</td>
<td>122,684</td>
<td>125,964</td>
<td>124,625</td>
<td>123,448</td>
<td>3,017</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>FTES</td>
<td>14,425.9</td>
<td>14,762.6</td>
<td>15,022.1</td>
<td>14,895.7</td>
<td>14,591.5</td>
<td>166</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>FTEF</td>
<td>886.2</td>
<td>946.5</td>
<td>1,035.4</td>
<td>1,054.8</td>
<td>1,035.4</td>
<td>149</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>FTES/FTEF</td>
<td>16</td>
<td>16</td>
<td>15</td>
<td>14</td>
<td>14</td>
<td>-2</td>
<td>-13%</td>
<td></td>
</tr>
<tr>
<td>Load</td>
<td>575</td>
<td>574</td>
<td>566</td>
<td>559</td>
<td>555</td>
<td>-20</td>
<td>-3%</td>
<td></td>
</tr>
<tr>
<td>(WSCH/FTEF)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FTES Forecasting Techniques

• Purpose
  – Enrollment management
  – Establishing growth targets
  – Budget planning and development

• Techniques
  – Calculating FTES Potential
  – Yield Projection Model
Calculating FTES Potential

• What-If analytical approach based on established FTES accounting formulas
• Example
  – FTES for a census week class is calculated using the following formula:

\[
\frac{(WAH \times Enrollment \times TLM)}{525}
\]
Calculating FTES Potential

• Replacing Enrollment with Capacity and Projected Fill Rate will yield the potential FTES for that section

\[
\frac{(WAH \times (Capacity \times Projected Fill Rate) \times TLM)}{525}
\]
Calculating FTES Potential

• This process is repeated for each class type

Census Day

\[
\text{(DAH} \times (\text{Capacity} \times \text{Projected Fill Rate}) \times \text{Number of Days})
\]

\[
525
\]

Positive Attendance

\[
\text{(WAH} \times (\text{Capacity} \times \text{Projected Fill Rate}) \times \text{Number of Weeks})
\]

\[
525
\]

Independent Study/Work Experience

\[
\text{(Units} \times (\text{Capacity} \times \text{Projected Fill Rate)} \times \text{TLM})
\]

\[
525
\]
## Calculating FTES Potential

<table>
<thead>
<tr>
<th></th>
<th>Sections</th>
<th>Capacity</th>
<th>FTES Projected at 70%</th>
<th>FTES Projected at 80%</th>
<th>FTES Projected at 100%</th>
<th>FTES Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census Week</td>
<td>891</td>
<td>23,264</td>
<td>2,205</td>
<td>2,520</td>
<td>3.149</td>
<td>–</td>
</tr>
<tr>
<td>Census Day</td>
<td>117</td>
<td>3,650</td>
<td>286</td>
<td>327</td>
<td>409</td>
<td>–</td>
</tr>
<tr>
<td>Positive Attendance Credit</td>
<td>163</td>
<td>6,071</td>
<td>457</td>
<td>522</td>
<td>653</td>
<td>–</td>
</tr>
<tr>
<td>Independent Study Census Week</td>
<td>2</td>
<td>90</td>
<td>8</td>
<td>9</td>
<td>11</td>
<td>–</td>
</tr>
<tr>
<td>Independent Study Census Day</td>
<td>7</td>
<td>295</td>
<td>22</td>
<td>25</td>
<td>31</td>
<td>–</td>
</tr>
<tr>
<td>Work Experience Census Week</td>
<td>6</td>
<td>112</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>–</td>
</tr>
<tr>
<td>Work Experience Census Day</td>
<td>5</td>
<td>65</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,191</strong></td>
<td><strong>33,577</strong></td>
<td><strong>2,984</strong></td>
<td><strong>3,411</strong></td>
<td><strong>4,263</strong></td>
<td><strong>4,000</strong></td>
</tr>
</tbody>
</table>
Yield Projection Model

• Methodology
  – Begin with the FTES file from the previous like term
  – Aggregate yields by specified variables
    • College, Accounting Method, Subject, Course Number
  – Calculate number of sections per course
    • 30 sections of English 101
Yield Projection Model

• Methodology (continued)
  – Calculate FTES for the total number of sections
    • 108 FTES for 30 sections
  – Calculate yield by dividing total FTES by the number of sections
    • $\frac{108}{30} = 3.6$ FTES per section
Yield Projection Model

• Methodology (continued)
  – Now get file with current sections offered
  – Aggregate the number of sections offered
    • Current term is offering 25 sections of English 101
  – Match prior term’s yields to current term
    • Unique ID (English101)
  – Multiply number of current sections by previous term’s yield
    • 25 sections * 3.6 yield = 90.0 FTES
Yield Projection Model

• Adjustments
  – Change in the number of sections
    \[ \text{Current Term Sections} - \Delta \text{Sections} \]
  – Change in yields
    • Apply an overall growth/attrition factor based on current trends
Yield Projection Model

• Limitations
  – Can only be calculated when the schedule is ready
  – New courses are given a marginal mean
  – May not account for external factors that impact enrollment
Scheduling

• Ensure the college is offering relevant courses that meet student demand
• Tied to two major resources
  – Faculty
  – Facilities
• Data driven, student centered examination of the class schedule
  – Improve utilization of classroom space
  – Optimize faculty allocation
  – Inform schedule policies
Scheduling and Space Utilization Measures

- Number and distribution of course sections
- Enrollments by discipline and course length
- Sections by course classification
- Fill rates by course and modality
- Room and seat utilization
- Occupancy rate
- Distribution of learning spaces by type and size
- Alignment of course enrollments to classroom capacity
## Scheduling Data Dashboard

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sections</td>
<td>4,256</td>
<td>4,454</td>
<td>4,682</td>
<td>4,752</td>
<td>4,952</td>
<td>696</td>
<td>16%</td>
<td></td>
</tr>
<tr>
<td>Enrollment</td>
<td>120,431</td>
<td>122,684</td>
<td>125,964</td>
<td>124,625</td>
<td>123,448</td>
<td>3,017</td>
<td>3%</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>145,462</td>
<td>150,456</td>
<td>153,222</td>
<td>154,462</td>
<td>156,424</td>
<td>10,962</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>Fill Rate</td>
<td>83%</td>
<td>82%</td>
<td>82%</td>
<td>81%</td>
<td>79%</td>
<td>-4%</td>
<td>-5%</td>
<td></td>
</tr>
</tbody>
</table>
## Course Schedule Heatmap

<table>
<thead>
<tr>
<th></th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>7am</td>
<td>53</td>
<td>61</td>
<td>67</td>
<td>74</td>
<td>42</td>
</tr>
<tr>
<td>8am</td>
<td>108</td>
<td>123</td>
<td>132</td>
<td>147</td>
<td>106</td>
</tr>
<tr>
<td>9am</td>
<td>153</td>
<td>260</td>
<td>228</td>
<td>256</td>
<td>142</td>
</tr>
<tr>
<td>10am</td>
<td>187</td>
<td>253</td>
<td>205</td>
<td>242</td>
<td>186</td>
</tr>
<tr>
<td>11am</td>
<td>183</td>
<td>247</td>
<td>190</td>
<td>234</td>
<td>169</td>
</tr>
<tr>
<td>12pm</td>
<td>154</td>
<td>234</td>
<td>193</td>
<td>218</td>
<td>153</td>
</tr>
<tr>
<td>1pm</td>
<td>158</td>
<td>221</td>
<td>180</td>
<td>220</td>
<td>142</td>
</tr>
<tr>
<td>2pm</td>
<td>149</td>
<td>203</td>
<td>156</td>
<td>201</td>
<td>129</td>
</tr>
<tr>
<td>3pm</td>
<td>143</td>
<td>148</td>
<td>118</td>
<td>136</td>
<td>125</td>
</tr>
<tr>
<td>4pm</td>
<td>120</td>
<td>145</td>
<td>105</td>
<td>113</td>
<td>112</td>
</tr>
<tr>
<td>5pm</td>
<td>75</td>
<td>94</td>
<td>93</td>
<td>82</td>
<td>69</td>
</tr>
</tbody>
</table>
Guided Questions

1. What needs to be strengthened or improved in your college’s process for sharing SEM planning data
2. What are some steps your college can take to do this?
HIGH IMPACT RETENTION & SUCCESS PRACTICES FOR SEM
MARKET SEGMENTATION TECHNIQUES
Establish Target Enrollment Groups
Establish Target Enrollment Groups
Market Segmentation Data

Geographic

Demographic

Psychographic

Behavioral
Questions for Discussion

1. Which type of market segmentation data does your college currently use for identifying target enrollment groups?

2. What other type of market segmentation data can your college incorporate into the current mix of data for identifying target enrollment groups?
Segmentation Techniques
Cluster Analysis
Segmentation Techniques
Cluster Analysis

![Graph showing data points scattered across a grid with axes labeled 'athletics' and 'grade'.]
De Anza College
Cluster Analysis for Enrollment Planning

<table>
<thead>
<tr>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full/Part-Time Status</td>
</tr>
<tr>
<td>Credits Attempted</td>
</tr>
<tr>
<td>Orientation Completion</td>
</tr>
<tr>
<td>GPA</td>
</tr>
<tr>
<td>Financial Aid Applicant</td>
</tr>
<tr>
<td>Education Goal Selected</td>
</tr>
<tr>
<td>Income Status</td>
</tr>
</tbody>
</table>

![Image of cluster analysis software]

![Image of data set in cluster analysis software]
De Anza College
Target Enrollment Groups

Full-Time, Transfer Bound, Lower Income
- Ensure students are aware of resources to help them remain enrolled full-time and be successful.

Part-Time, Possible Transfer, Lower Income
- special program outreach
- Educational plan
- Financial Aid

Full-Time, Transfer Bound, Higher Income
- Recruit as mentors or tutors

Part-Time, Returning Students
- Meet with a counselor

DSPS and Adaptive PE Students
- Waive repeatability requirements
Segment Identification Activity

**Step 1.** Examine the data output provided on the handout

**Step 2.** Create a profile and name for each segmented group

**Step 3.** Propose communications/outreach strategies for each segmented group
Further Developing Profiles of Targeted Groups
For more information about the SEM-ASK visit:

https://prolearningnetwork.cccco.edu/ask/topic/sem