Cal Answers: Five Years Later

2017 Annual Conference
California Association for Institutional Research
November 9, 2017

Presenters
Amber Machamer
Russ Acker
Noam Manor
Sereeta Alexander
Cal Answers and IR at UC Berkeley

Amber Machamer
Agenda

• A brief history of Cal Answers
• Maintenance and Evolution
• Training and Adoption
Themes

• Not just and investment in technology: it’s an investment in partnerships

• Cal Answers: strengths and challenges
  – Built toward the middle
  – Analytical, not operational, tool
  – Shift in workload
  – Cost
Sense of who is in the room

• State of data warehousing at your institution?
Cal Answers

- Students
  - Applicants
  - Curriculum
  - Demographics and Outcomes
  - Financials

- Facilities
  - Space Inventory
  - Space Utilization (Timing TBD)

- Human Resources
  - Campus Workforce Planning
  - UCPath

- Research
  - PI Portfolio

- Finance
  - Procure to Pay
  - Financials

- Alumni
  - Career Success
  - Community Impact
  - Gifts (Timing TBD)

- Data currently available in system
A Brief History of Cal Answers and the UC Berkeley Data Warehouse

Russ Acker
The World Before Cal Answers

- SQL Server Database
  - Flat files generated for other purposes
  - Databases from other offices
  - Available only to IR analysts

- Cal Profiles
  - Web-based, interactive ASP app
  - Accessible to campus, but not very flexible
Building Cal Answers

- Opportunity
  - Pilot phase
  - Important data source unavailable
- Funding
  - Modest initial funding to rebuild data source
  - Later, accessed Operational Excellence funding
- Both IR and IT Contributed Analyst Resources
  - 9 months of development for EDW reporting
  - IR developed initial reports
Initial Release of Cal Answers

- Basic Dashboards
  - 4 main dashboards
  - Tables and charts
- Ad Hoc Subject Areas
  - 9 OBIEE subject areas
  - Limited access
- Only Targeted and Self-Serve Training
Maintenance and Evolution

Noam Manor
Maintenance and Evolution

• Hybrid IR / Business Analysts in the IR Office
  – lead data validation and QA for data loads and fixes
  – prioritize work of the technical team
  – enhancements
  – document project requirements
  – bug fixes
  – user acceptance testing
  – training materials
Training and Adoption

Sereeta Alexander
Documentation

• Wiki
  — Public facing
  — Contains info (e.g., data dictionaries) for both the Dashboard and Ad Hoc areas

• Overview Tab of Dashboards
  — Provides select info pertinent to a specific dashboard being viewed within Cal Answers

• Cal Answers Alerts Page
  — Provides info about select data issues being worked on and notification of their resolution
Student Demographics: Report Data Dictionary

16-Value Ethnicity - UCB Short Ethnic Desc (SD&O)
This is the lowest level of ethnicity reporting available in Cal Answers, providing additional detail within 9-value ethnic categories. Note that International students appear in a separate line here, since federal reporting specifies that they not be included in counts by particular ethnic categories.

4-Value Ethnicity - UCB Lvl 1 Ethnic Rollup (SD&O)
The highest level of ethnicity reporting available in Cal Answers consists of four values: Asian/Pacific Islander, International, Underrepresented Minority, and White/Other. Note that International students appear in a separate line here, since federal reporting specifies that they not be included in counts by particular ethnic categories.

9-Value Ethnicity - UCB Lvl 2 Ethnic Rollup (SD&O)
This is an intermediate level of ethnicity reporting in Cal Answers, providing additional detail within 4-value ethnic categories. Note that International students appear in a separate line here, since federal reporting specifies that they not be included in counts by particular ethnic categories.

Academic Year (SD&O)
Academic Year, as defined for purposes of degrees awarded, consists of a summer, the following fall, and the following spring semesters. For example, the 2013-14 academic year consists of Summer 2013, Fall 2013, and Spring 2014.

Average Calendar Time Elapsed (Years)
The average (arithmetic mean) number of years that have passed between matriculation and graduation. Note: Time off taken by students is counted as part of this time-to-degree calculation.

Average Enrolled Semesters
The average (arithmetic mean) number Fall and Spring semesters at UC Berkeley in which an undergraduate was enrolled before earning a degree. Semesters are counted if the student was registered at the time of Census or End of Term, or both. Previous time-to-degree calculations reported by UC Berkeley counted a student as registered for a given semester only if the student was enrolled at time of Census. Thus, this new methodology will likely result in a slightly higher time-to-degree calculation.
Documentation - Overview Tab
## Documentation - Alerts Page

<table>
<thead>
<tr>
<th>Subject Area</th>
<th>Dashboard</th>
<th>Page</th>
<th>Report/View</th>
<th>Description of Issue</th>
<th>Date Started</th>
<th>Date Resolved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Demographics &amp; Outcomes</td>
<td>Degrees Earned</td>
<td>All tabs</td>
<td></td>
<td>Some graduate degrees awarded in Summer 2015 are missing from the 2015-16 academic year.</td>
<td>November 2015 (when other summer degrees were loaded) and September 23, 2016.</td>
<td>Missing degrees from Summer 2015 were loaded into Cal Answers on Friday, September 23, 2016.</td>
</tr>
<tr>
<td>Student Curriculum</td>
<td>Weekly Enrollment Management</td>
<td>Course Tracking</td>
<td>Course Tracking</td>
<td>Spring 17 course titles are loading from Campus Solutions in all caps instead of sentence case, resulting in data split across 2 lines for each course.</td>
<td>January 2017</td>
<td>1/20/2017</td>
</tr>
<tr>
<td>Student Curriculum</td>
<td>Students &amp; Courses</td>
<td>Courses Taken by Majors</td>
<td>Majors' Enrollments by Course</td>
<td>Data quality issues have been identified with this report. Do not use data from this report until a fix is in place.</td>
<td>End of Feb 2017</td>
<td>03/10/2017</td>
</tr>
</tbody>
</table>
Super User Training Program

- **Strategic Selection of ~40 Trainees**
  - Each UG school/college represented
  - Select admin units (e.g., Student Affairs, E&I)

- **Intensive Training**
  - 1-year long program (2016-2017)
  - All of the student data subject areas covered
  - Culminating capstone project

- **Long Term Super User (SU) Commitment**
  - SUs expected to be point of contact for their unit when Cal Answers questions arise
Super User Profiles

- Example of titles held by the Super Users
  - Curriculum Analysts
  - Program Directors
  - Financial Analysts
  - Advisors/Directors of Advising
  - CFO; Assistant Vice Chancellor

- Two Super Users:

  Chelan Huddleston: College Curriculum Analyst, College of Letters and Science
  Year you started working at UC Berkeley: 2012
  Year you started using Cal Answers Student Data: 2012
  One or two questions you have answered with Cal Answers Student Data: Applicant, Curriculum, Demographics & Outcomes, Ad Hoc
  One or two questions you have answered with Cal Answers Student Data: (a) What proportion of students taking course “x” end up declaring major “y” (b) Do GPA and probationary status vary with residency status?
  Favorite chart type: Whatever best illustrates the data!

  Christopher Hunn: Director of Undergraduate Instruction, College of Engineering
  Year you started working at UC Berkeley: 2011
  Year you started using Cal Answers Student Data: 2013
  Which Cal Answers dashboard do you use? Applicant, Curriculum, Demographics & Outcomes and Ad Hoc
  One or two questions you have answered with Cal Answers Student Data:
  Favorite chart type:
Community of Practice

• Background
  — Launched in July 2017 & meets monthly
  — Co-chaired by 2 Super Users
  — Forum for campus users to ask questions and share experiences about both the Cal Answers tool and using the data to inform decisions
  — Cal Answers trainer & OPA analysts contribute to content development and attend CoP sessions as Subject Matter Experts
Community of Practice

• Mission
  – Increase campus usage of Cal Answers Dashboards in the Student Data areas
  – Foster a supportive and collaborative community that leverages Cal Answers data in their operations and for decision support
Where Are We Now

- Lessons Learned / Opportunities
- New Development
# Lessons Learned/Opportunities

<table>
<thead>
<tr>
<th>Underestimated cost of ongoing operations</th>
<th>Pay off technical debt (e.g., fixes, enhancements); provide user support (e.g., Help Desk, Super User Training, Community of Practice)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overestimated “time saving”</td>
<td>IR Business Analysis as part of the OPA IR work</td>
</tr>
<tr>
<td>Limitations of OBIEE Visualizations</td>
<td>Analysts often export data from Cal Answers/OBIEE for graphing, rather than using the chart options native to OBIEE</td>
</tr>
<tr>
<td>Limitations of proprietary tools</td>
<td>Future State is open source / flexible systems, following the example of industry leaders. One goal is to be tool agnostic (i.e., leverage Tableau, D3, Google Charts, etc. in graphing Cal Answers data)</td>
</tr>
</tbody>
</table>

Office of Planning & Analysis
New Development

• New types of dashboards and visualizations
  – Departmental Curriculum Profile
  – Multiple Majors (with D3)
  – Enrollment at a Glance (Google Charts)

• “Our Berkeley” Data Digest
Multiple Majors Dashboard

Campus Summary (Excluding Undeclared)

<table>
<thead>
<tr>
<th>Majors</th>
<th>Major Type</th>
<th>Student Headcount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Majors</td>
<td>Individual Major</td>
<td>6</td>
<td>0.0%</td>
</tr>
<tr>
<td></td>
<td>Joint Major</td>
<td>47</td>
<td>0.3%</td>
</tr>
<tr>
<td></td>
<td>Single Major</td>
<td>16,162</td>
<td>91.1%</td>
</tr>
<tr>
<td><strong>Single Majors Total</strong></td>
<td></td>
<td><strong>16,215</strong></td>
<td><strong>91.4%</strong></td>
</tr>
<tr>
<td>Multiple Majors</td>
<td>Double Major</td>
<td>1,483</td>
<td>8.4%</td>
</tr>
<tr>
<td></td>
<td>Triple Major</td>
<td>44</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Multiple Majors Total</strong></td>
<td></td>
<td><strong>1,527</strong></td>
<td><strong>8.6%</strong></td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td></td>
<td><strong>17,742</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Campus Summary by Major Program

<table>
<thead>
<tr>
<th>Major Short Nm</th>
<th>Multiple Majors</th>
<th>Single Majors</th>
<th>Total Count of Students</th>
<th>% Multiple Majors</th>
</tr>
</thead>
<tbody>
<tr>
<td>L&amp;S Computer Science</td>
<td>330</td>
<td>1,121</td>
<td>1,451</td>
<td>22.7%</td>
</tr>
<tr>
<td>Economics</td>
<td>308</td>
<td>834</td>
<td>1,142</td>
<td>27.0%</td>
</tr>
<tr>
<td>Statistics</td>
<td>201</td>
<td>158</td>
<td>359</td>
<td>56.0%</td>
</tr>
<tr>
<td>Applied Mathematics</td>
<td>162</td>
<td>304</td>
<td>466</td>
<td>34.8%</td>
</tr>
<tr>
<td>Business Administration</td>
<td>145</td>
<td>587</td>
<td>732</td>
<td>19.8%</td>
</tr>
<tr>
<td>Political Science</td>
<td>121</td>
<td>787</td>
<td>908</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

All Multiple Majors Detail for Statistics

<table>
<thead>
<tr>
<th>Other Major</th>
<th>Count of Students’ Other Majors</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics</td>
<td>67</td>
<td>30.2%</td>
</tr>
<tr>
<td>L&amp;S Computer Science</td>
<td>57</td>
<td>25.7%</td>
</tr>
<tr>
<td>Applied Mathematics</td>
<td>44</td>
<td>19.8%</td>
</tr>
<tr>
<td>Business Administration</td>
<td>13</td>
<td>5.9%</td>
</tr>
<tr>
<td>Mathematics</td>
<td>10</td>
<td>4.5%</td>
</tr>
</tbody>
</table>
Multiple Majors Dashboard (D3)

Year & Term: 2017 Spring  
Order By: Majors that Co-Occur Most Frequently

[Diagram showing a heat map of majors and their co-occurrence across different departments.]

Berkeley  
Office of the  
Vice Chancellor of Finance  

Office of Planning & Analysis
"Our Berkeley" Data Digest
Resources

- Office of Planning & Analysis
  https://opa.berkeley.edu; opa@berkeley.edu

- Cal Answers
  https://calanswers.berkeley.edu

- Cal Answers Video Tutorials
  https://calanswers.berkeley.edu/training/express-video-tutorials

- Our Berkeley
  https://opa.berkeley.edu/campus-data/our-berkeley

- Super User Program
  https://calanswers.berkeley.edu/superusers
Questions?