Library Data and Student Success

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UMWUG
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Existing Measures

- Long history of measuring input, output, external perceptions of quality and satisfaction with library services
- Expenditures, staffing effects on retention
- Information literacy instruction
- Collections, facilities on enrollment decisions

...useful for management of library services, collections and resources but...
UK Library Impact Data Project

- 2010, University of Huddersfield
  - 700 courses (2005-2009)
  - 3 indicators of library usage (access to e-resources, book loans, access to the library)
- 2011, 8 UK institutions joined
  - 33,000 students, JISC funding
  - Grade, loans, e-resources accessed, times entered the library, school
- Focusing on non/low use and achievement
Call to Action

  – Assessment management systems
  – Develop systems to collect data on individual library user behavior
  – Record and increase library impact on student enrollment
  – Link libraries to improved student retention and graduation rates
  – Track library influences on increased student achievement
  – Demonstrate and develop library impact on student learning
Gym Bags and Mortarboards

• Student success measures
  – First Year Retention and 5 year graduation
• 5211 students in sample (2001)
• Tinto’s 1975 model of social and academic integration
• "able to demonstrate that actual usage of CRFs (campus recreational facilities) does have a positive association with academic success, even while controlling for other important academic, financial, and social fit factors."
Layers of Data

Office of Institutional Research Performance Data
Term and Cum GPA, Retention

Office of Institutional Research Demographics Data
College, Level, Major, Gender, Ethnicity, Age

Libraries Data (13 Access Points)
Circulation, Digital, Instruction, Reference, and Workstation
Layers of Data

Libraries Data (13 Access Points)
Circulation, Digital, Instruction, Reference, and Workstation
A Word about Privacy

• In order to use OIR data, we must retain the U of M Internet ID
• For now, not aggregating anything about the library interaction other than count

<table>
<thead>
<tr>
<th>This</th>
<th>But not this</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checked out X books</td>
<td>Titles</td>
</tr>
<tr>
<td>Attended X workshops</td>
<td>Which workshops</td>
</tr>
<tr>
<td>Reference interaction</td>
<td>Substance of interaction</td>
</tr>
<tr>
<td>Logged into library workstation</td>
<td>Location, duration, actual activity</td>
</tr>
<tr>
<td>Used X digital resources of Y type</td>
<td>Which ones</td>
</tr>
</tbody>
</table>
Circulation

• Loans
  – Both new check-outs and renewals
  – Gathered by extracting data from Aleph transaction records
  – Internet ID and date of transaction
  – About 45% = Renewal data

• ILL Requests
  – Gathered by extracting data from ILLiad
  – ILLiad ID and date of transaction
  – Not all IDs were U of M Internet IDs
Digital

• Anytime someone logged into our digital resources with a U of M Internet ID
  – Database logins
  – E-Journal logins
  – E-Book logins
  – Website logins
• Due to IP based authentication, we did not track on campus usage of databases, e-journals, and e-books
  – Estimate - Missing 10-20% of our traffic
• This is only initial point of access, not actual usage
Reference

• Online reference transactions
  – Captured from QuestionPoint data
  – Some of the more difficult data to capture
  – *We did not capture ref desk traffic or research consultations*

• Peer Research consulting data
  – One-on-one assistance to develop research strategies
  – U of M student consultants
Instruction

• Workshop registrations
  – Captured by Drupal-based registration module
    – *Registration does not mean attendance*

• Intro to Libraries I workshop

• Intro to Libraries II workshop

• Course-integrated librarian instruction
  – Everyone registered for the course/section
    – *All students may not have been present*
Workstation

• U of M library workstation logins
  – Captured by Cybrarian application used to authenticate library users
  – *Does not include complete data from SMART Learning Commons*

• Reveals a flaw with regard to capturing “library as place”
  – Difficult to gather Internet IDs if students don’t give them to us
Library Data Layer: 2012-13

- 3,807,288 total transactions in all 5 categories
- 69,952 unique Internet IDs interacted with the Libraries in some identifiable way
- 37,138 people did something in only one of the five categories we measured
- 283 people did something in all five categories over the course of the year
- 8349 people did only one of the 17 things we measured and did it only once
Questions we can’t answer alone

• How many undergraduates used the library?
• How many graduate students?
• Do some colleges use the libraries more than others?
• How many potential users are there?
• Are students who use the libraries more successful?
Layers of Data

Office of Institutional Research Demographics Data
College, Level, Major, Gender, Ethnicity, Age

Libraries Data (13 Access Points)
Circulation, Digital, Instruction, Reference, and Workstation
OIR Demographics Layer

• Office of Institutional Research
  – OIR collects and analyzes data to provide information for institutional planning, policy formation, and decision-making

• Key library data numbers:
  – 3,807,288 total transactions in 5 categories
  – 69,952 unique Internet IDs
76% of Undergrads made use of the Libraries during 2012-2013

86% of Grad Students made use of the Libraries during the 2012-2013 (including professional schools)
Carlson School of Business
Higher undergrad usage than professional/grad student

Pharmacy Professional Students: 100%!
(411 students)
Circulation
Graduate Student Use

College of Design Graduate Students: 90%
(279 students)
Colleges at the U of M - TC

• The Big Seven
  – CBS: Biological Sciences
  – CFANS: Food, Agricultural, Natural Resource Sciences
  – CEHD: Education and Human Development
  – CLA: Liberal Arts
  – CDES: Design
  – CSOM: Management
  – CSE: Science and Engineering
Undergrad Digital Usage

<table>
<thead>
<tr>
<th>College</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBS</td>
<td>71.61</td>
</tr>
<tr>
<td>CFANS</td>
<td>69.38</td>
</tr>
<tr>
<td>CEHD</td>
<td>74.12</td>
</tr>
<tr>
<td>CLA</td>
<td>66.07</td>
</tr>
<tr>
<td>CDES</td>
<td>65.02</td>
</tr>
<tr>
<td>CSOM</td>
<td>66.07</td>
</tr>
<tr>
<td>CSE</td>
<td>47.35</td>
</tr>
</tbody>
</table>

College of Education and Human Development
College of Science and Engineering
Undergrad Circulation Usage

College of Design

17.01
18.34
14.19
27.64
37.23
12.82
18.17
Layers of Data

Office of Institutional Research Performance Data
Term and Cum GPA, Retention

Office of Institutional Research Demographics Data
College, Level, Major, Gender, Ethnicity, Age

Libraries Data (13 Access Points)
Circulation, Digital, Instruction, Reference, and Workstation
Undergrad Cumulative GPA as of Fall 2011

<table>
<thead>
<tr>
<th>College</th>
<th>No Library Use</th>
<th>Library Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carlson School of Management</td>
<td>3.24</td>
<td>3.36</td>
</tr>
<tr>
<td>Col of Educ/Human Development</td>
<td>3.04</td>
<td>3.16</td>
</tr>
<tr>
<td>Col of Food, Agr &amp; Nat Res Sci</td>
<td>2.98</td>
<td>3.13</td>
</tr>
<tr>
<td>College of Biological Sciences</td>
<td>3.20</td>
<td>3.36</td>
</tr>
<tr>
<td>College of Design</td>
<td>2.99</td>
<td>3.23</td>
</tr>
<tr>
<td>College of Liberal Arts</td>
<td>2.95</td>
<td>3.14</td>
</tr>
<tr>
<td>College of Sci &amp; Engineering</td>
<td>3.07</td>
<td>3.19</td>
</tr>
</tbody>
</table>
ACT, Library Use, and GPA
Library use vs. Non-library use

Below 19: 2.755
19-22: 2.784
23-24: 2.932
25-27: 3.079
28-30: 3.141
31-36: 3.503
31-36: 3.258
FIRST YEAR UNDERGRADS
Inferential Analyses

• First-year students (non-transfer, \( n = 5,368 \))

• Many ways to slice the data:
  – Any use of the library
  – Type of library use
  – Frequency within type of library use
  – Frequency of total use
Methods: Measures

Use of library (71.3%)

- Database
- E-books
- Book loans
- E-journals
- Inter-library loans
- Intro to Libraries (part 1 & part 2)
- Peer references

- Reference librarians
- Websites
- Workshops
- Workstations
- Course-integrated instruction
Methods: Measures

– Demographics:
  • Gender (M = 47.8%)
  • Race/ethnicity (SOC= 18.4%)
  • Pell grant (22.3%)
  • Veteran status (.6%)
  • First-generation (25.9%)

– Prior academics
  • ACT/SAT scores (M = 27.49)
  • AP credits (n = 3137, M = 8.73)

– College environment:
  • Freshmen seminar (27.8%)
  • Access to Success program (8.8%)
  • Dorm (85.2%)
Analyses

• Ordinary least squares regressions
  – Fall cumulative grade point average
  – Spring cumulative grade point average
  – Academic engagement (SERU survey)
  – Scholarship (SERU survey)

• Logistic regressions
  – Retention from fall to spring semesters
  – Retention from first year to second year
Fall GPA Results

• Controlling for demographics, college environment, and academic variables:
  – Using the library one time was associated with a \(0.23\) increase in students’ GPA holding other factors constant
  – A one-unit increase in \textit{types of use} was associated with a \(0.07\) increase in GPA
Additional Fall GPA Results

• Controlling for the same variables, we examined using different types of sources at least once (dummy-coded):
  – Course integrated instruction: -.11
  – Database .14
  – E-journal .10
  – Loan .11
Additional Fall GPA Results

• Controlling for the same variables, we examined using different types of sources by frequency (a one-unit increase is associated with…):
  – Course integrated instruction: -.08
  – Database: .01
  – E-Journal: .004
  – Workstation: .006
  – Reference: .08

*note: 12 outliers removed
Additional GPA Results – E-Journals

• Controlling for the same variables, we binned e-journal frequency for variables:
  – E-Journal 1-5: .17
  – E-Journal 6-10: .21
  – E-Journal 11-15: .23
  – E-Journal 16-20: .30
  – E-Journal 21-25: .31
  – E-journal over 25: .32

Sweet spot?
Spring GPA Results

• Controlling for demographics, college environment, and academic variables (including college of enrollment):
  – Using the library one time was associated with a \(0.17\) increase in students’ GPA holding other factors constant
Additional Spring GPA Results

- Controlling for the same variables, we examined using different types of sources by frequency (a one-unit increase is associated with...):
  - Course integrated instruction: -.08
  - Intro to Libraries part one (-.076) and part two (.098)
  - Database: .005
  - E-Journal: .005
  - Workstation: .004
  - Book loans: .006

*note: 12 outliers removed*
Fall Retention Results

• Controlling for the same variables, we examined retention:
  – Students who used the library at least once were **1.54 times more likely to re-enroll**
  – For every one-unit increase in the types of library use, students were **1.1 times more likely to re-enroll**
Additional Fall Retention Results

- Controlling for the same variables, we examined retention:
  - Students who had “Intro to Libraries 2” library instruction were 7.58 times more likely to re-enroll
  - A one-unit increase in database uses was associated with students being 1.03 times more likely to re-enroll
Spring Retention Results

• Controlling for the same variables, we examined retention from first year to second year:
  – Students who used the library at least once (increased to 82.2% of students) were 2.08 times more likely to re-enroll the following year.
Academic Engagement (SERU survey)

- Contributed to a class discussion
- Talked with an instructor outside of class about issues/concepts from course
- Had a class in which the instructor knew or learned name
- Asked insightful questions in class
- Brought up different ideas from different courses during class discussions
- Interacted with faculty during lectures
- ($\alpha = .80$)
Academic Engagement

- Controls: demographics, college experience (same as above for GPA/retention), in addition to classmate interactions, library research skills, and critical thinking skills (three factors)
- \( n = 1,322 \) FY students
- Using the library at least once is significantly and positively associated with students’ academic engagement \( (p < .05) \)
Scholarship (SERU survey)

- Examined how others gathered/interpreted data and assessed soundness of conclusions
- Reconsidered your own position on a topic after assessing the arguments of others
- Incorporated ideas/concepts from different courses when completing assignments
- Used facts/examples to support your viewpoint

$\alpha = .85$
Scholarship

- Controls: demographics, college experience (same as above for GPA/retention), in addition to classmate interactions, library research skills, and critical thinking skills (three factors)
- $n = 1,322$ FY students
- Using the library at least once is significantly and positively associated with students’ scholarship ($p < .01$)
### Student Advising

**University of Minnesota**

**Mapping student success**

- Students in the College of Liberal Arts.

<table>
<thead>
<tr>
<th>Name</th>
<th>Major(s)</th>
<th>Term Credits</th>
<th>Cumul Credits</th>
<th>Cumul GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allison</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>John A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robert</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>David A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evelyn</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnny</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary A</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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**APLUS** (formerly Enrollment Tracking)

- Welcome, Jennifer Seander
- Erin Abbott
  - #000229325; ab447937@umn.edu; 555/555-5555

**Characteristics**

- Effective: Sep 06, 2011 12:00 AM

**Academic Plans**

- Applied for Graduation

**Credit Load**

- Undergraduate credit load and GPA information for Spring 2012.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>173.9</td>
<td>3.462</td>
</tr>
</tbody>
</table>
Aerospace Engineering Undergrads
Percent using the library

Library instruction for Senior Design Class for the first time

<table>
<thead>
<tr>
<th></th>
<th>Fall 2011</th>
<th>Spring 2012</th>
<th>Fall 2012</th>
<th>Spring 2013</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No</strong></td>
<td>73</td>
<td>103</td>
<td>71</td>
<td>73</td>
</tr>
<tr>
<td><strong>Yes</strong></td>
<td>62</td>
<td>69</td>
<td>72</td>
<td>97</td>
</tr>
</tbody>
</table>
Predictions for the Alma Era

• We’re moving to Primo+Primo Central in December

• We predict Database numbers will decrease but journal use will increase

• We further predict that we’ll need Spring semester to figure out how to count everything we’ve been counting
Questions?
Contact information

• Jan Fransen (fransen@umn.edu)
• Shane Nackerud (snackeru@umn.edu)

http://blog.lib.umn.edu/ldss/
Resources


