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## Introduction / Abstract

Libraries now use a variety of tools to meet the challenge of understanding usage of their electronic collections and rendering usage data in ways that can support reporting needs and informed decision making. We seek measures that adequately describe usage of different materials, enriched with data about costs, subject areas, scholarly impact (e.g., impact factor, CiteScore, Eigenfactor, etc.), longitudinal perspectives, and the impact of discovery services. This presentation illustrates some of the questions, tools, and techniques the Cheng Library has been using to address these challenges, with an eye toward wider collaboration and making improvements for greater efficiency.

## Objectives and Questions

The Cheng Library requires electronic resource usage data for a variety of purposes, including reporting, collection analysis, and decision making. Among our regular tasks are:

- Providing data for the Academic Libraries Survey (Integrated Postsecondary Education Data System)
- Annual reporting on the usage of library electronic resources
- Customized library usage reporting for colleges, departments, and programs
- Evaluation of new products for possible subscription or purchase following trials
- Collection evaluation and management
- Comparison of platforms
- Making informed decisions about budget reallocations and/or subscription cancellations/renewals
- Forecasting future usage based on historical trends

To carry out these tasks, we have asked a number of questions, including:

- What types of usage data can we collect and what should we prioritize?
- What tools can we use to store, organize, and retrieve this data?
- What types of additional information should we collect to provide context and make our usage data meaningful to us and to others?
- How should we render our usage data to make it useful for different purposes?
- What workflows should we implement to obtain good results while being mindful of the time needed to do this work?

## Getting Your Data Ducks in a Row

With the bulk of library collection budgets now committed to electronic resources, most vendors have adopted the COUNTER standard for usage reporting, and electronic resource management systems offer tools for collecting, storing, and retrieving various COUNTER reports. The Cheng Library currently uses EBSCO's Usage Consolidation to collect data about journals, e-books, and databases. To automate data collection we've enabled the Standardized Usage Statistics Harvesting Initiative (SUSHI) protocol for all vendors who support it.

Journal	Publisher	Platform	Journal DC	Proprietary	Print	ISSN	Online	ISS	Reporting	Reporting	Reporting	Jan-2016
Total for a								352213	6501	11935	12463	
10	14th Centi	Pennsylvania	Ithaka			0737-5840			0	0	0	
11	19th Centi	University	Ithaka			0148-2076	1533-8606		19	0	0	0
12	21st Centi	Hart Energ	ProQuest			1075-038X			1	0	0	0
13	291	Metropoli	Ithaka			1054-7193			0	0	0	0
14	3	Biotech	Springer S	SpringerLi		2190-572X	2190-5738		0	0	0	0
15	3D Printin	Springer	SpringerLi			2365-627L			0	0	0	0
16	3D Resear	Springer \	SpringerLi			2092-6731			0	0	0	0
17	401 (k)	Ad Aspen Pul	EBSCOhos			1080-2142			4	0	0	0
18	401 (k)	Ad Aspen Pul	ProQuest			1080-2142			3	0	0	0
19	4OR: A Qu	Springer S	SpringerLi			1619-4500	1614-2411		0	0	0	0
20	4S Review	SAGE Publ	Ithaka			0738-0526			1	0	0	0
21	AA Files	Architectu	Ithaka			0261-6823			0	0	0	0
22	AAA: Arbe	Gunter Nsi	Ithaka			0171-5410			0	0	0	0
23	AAACN vii	American	EBSCOhos						10	0	0	0
24	AAACE Inte	AAACE Inte	ProQuest			1528-7106			2	0	0	0
25	AAACN Boli	American	EBSCOhos			1948-7088	1948-7096		45	0	0	7
26	AAACN nev	American	EBSCOhos			1075-7732			3	0	0	0
27	AADE in P	SAGE Publ	Highwire I			2325-1603	2325-1611		0	0	0	0
28	The AAG F	Taylor & F	Taylor & F			2325-548X			1	0	0	0

### Sample Consolidated COUNTER Journal Report 1 for 2016

Bucknell (2012) and others note it is unwise to accept COUNTER data at face value when calculating the "cost-per-download" of journal articles or other items. Among the reasons are:

- Platform design differences that can result in "double-counting," such as in cases where a "landing page" for a full-text article is the HTML version and a user then selects the PDF version
- Differences between journal holdings that yield misleading impressions about use for a given publication year - generally, journals with more extensive backfiles typically indicate more use in a given year than newer journals with less total content available
- Variations in user information behavior by discipline that strongly suggest one should avoid making judgments about the value of subscription journals in the aggregate
- Variations caused by anomalous usage spikes, title changes, ownership transfers, a large share of open access articles in hybrid journals, and whether subscription titles are also available in aggregator databases, resulting in misleading "cost-per-download" figures; these issues are easier to detect when one tracks usage over several years

Being aware of the limitations of COUNTER data in its "raw" form can empower librarians to correct or flag problematic data before going forward with a collection evaluation or a cancellation decision. The newest release of the COUNTER Code of Practice, Release 5, also addresses some of these issues.

## Enriching Your Data for Context

Consolidated item type usage reports can be far more useful when they are enhanced with additional data. In the example below, the Cheng Library added the following to its 2016 Journal Report 1:

- LC Call Numbers (which can be obtained from MARC records or another source, e.g., Ulrichsweb) – one could also use fund codes or subject headings
- Scopus' CiteScore journal impact metric for 2016 (available for download at <https://journalmetrics.scopus.com/>) – other metrics are also available
- Subscription prices for 2016
- Usage and subscription prices for 2014 and 2015, used to calculate average annual usage for a three-year period

Journal Title	ISSN	LC Call Number	CiteScore for 2016	2014 Price	2014 Usage	2015 Price	2015 Usage	2016 Price	2016 Usage	Average Annual Usage 2014-2016
SOUTH ATLANTIC QU	0038-2876	AP2	0.9	\$ 275	22	\$ 294	27	\$ 319	22	24
PHILOSOPHICAL REV	0031-8108	B1	1.75	\$ 175	71	\$ 189	30	\$ 208	31	44
JOURNAL OF PHILOS	0022-362X	B1	1.11	\$ 154	83	\$ 154	61	\$ 157	50	65
JOURNAL OF PSYCHO	0022-3980	BF1	1.05	\$ 464	191	\$ 534	191	\$ 640	147	176
JOURNAL OF GENERA	0022-1309	BF1	0.88	\$ 374	49	\$ 392	67	\$ 411	39	52
JOURNAL OF APPLIE	0021-8855	BF636.A1	1.31	\$ 135	41	\$ 148	64	\$ 161	377	161
PAST & PRESENT - PR	0031-2746	D1	1.12	\$ 453	66	\$ 480	74	\$ 508	48	63
FOREIGN AFFAIRS - P	0015-7120	D410	0.86	\$ 47	370	\$ 52	526	\$ 55	423	440
HUMAN ORGANIZATI	0018-1367	GN1	1.3	\$ 112	29	\$ 112	22	\$ 115	26	26
RESEARCH QUARTER	0270-1367	GV201	1.68	\$ 341	189	\$ 392	161	\$ 431	164	171
QUEST : NATIONAL A	0033-6297	GV201	1.53	\$ 379	20	\$ 399	37	\$ 418	22	26
INTERNATIONAL JOU	0047-0767	GV706.4	0.84	\$ 269	1	\$ 241	2	\$ 215	1	1
JOURNAL OF STRENG	1064-8011	GV711	2.23	\$ 710	337	\$ 776	362	\$ 849	176	292
REVIEW OF ECONOMI	0034-6535	HA1	4.17	\$ 646	58	\$ 662	76	\$ 682	53	62
AMERICAN ECONOMI	0002-8282	HB1	4.6	\$ 467	263	\$ 482	244	\$ 485	215	241
ACADEMY OF MANA	0363-7425	HD28	7.5	\$ 173	121	\$ 183	177	\$ 195	104	134
MANAGEMENT SCIEN	0025-1909	HD28	3.62	\$ 1,010	47	\$ 1,061	55	\$ 1,115	21	41
JOURNAL OF BUSINE	0025-6668	HD28	0.77	\$ 719	8	\$ 769	11	\$ 769	3	7
JOURNAL OF HUMAN	0022-166X	HD5701	3.86	\$ 307	84	\$ 322	51	\$ 344	76	70
ACADEMY OF MANA	0001-4273	HD70.15	8.41	\$ 173	161	\$ 183	191	\$ 195	190	181
JOURNAL OF INTERN	0047-2506	HF1	6	\$ 510	84	\$ 584	154	\$ 644	56	98
JOURNAL OF COUNSE	0748-9633	HFS381.A1	1.7	\$ 339	1061	\$ 360	1084	\$ 382	639	928
CAREER DEVELOPME	0889-4019	HFS381.A1	1.33	\$ 214	183	\$ 226	129	\$ 243	171	161
JOURNAL OF EMPLOY	0022-0787	HFS382.S.U	0.91	\$ 164	59	\$ 173	67	\$ 186	46	57
MARKETING SCIENCE	0732-2399	HFS410	2.3	\$ 507	45	\$ 532	41	\$ 558	16	34
JOURNAL OF MARKE	0022-2437	HFS415.2	5	\$ 380	61	\$ 385	99	\$ 385	128	96
JOURNAL OF MARKE	0022-2429	HFS415.A2	6.55	\$ 380	196	\$ 385	122	\$ 385	253	190

### Sample Enriched COUNTER Journal Report 1 for 2016

Even a small number of additional variables can provide a better context for evaluation and decision making. For example:

- More longitudinal data helps make usage and pricing trends clearer, and calculating the mean and median use over time can help mitigate the impact of usage anomalies
- Grouping titles by subject to align your subscriptions with departments can help you establish discipline-specific use patterns so as to make evaluation of titles better informed
- Using journal metrics derived from scholarly usage in the broader environment can also help you evaluate a journal's merits

## Further Applications

Similar techniques can be applied to books and databases to yield more useful data sets for analysis and evaluation. The introduction of discovery platforms has made the calculation of database-specific "search" metrics more challenging.

The Cheng Library's current usage database does not currently support the collection of COUNTER Platform Report 1, and as a result our work in evaluating database use in the context of federated search is more labor-intensive. COUNTER Release 5 aims to address the challenge of disentangling discovery-based database searches from other database searches by use of the "Searches\_Automated" metric.

It is also useful to maintain a database containing important contextual data for journals, books, and other materials and simply add annual consolidated usage reports to these, building a good tool for strategic longitudinal analysis, the study of user behavior, and as a data source for data visualization tools such as Tableau Public.

## References

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