



The Shadow Acquisitions Budget: APCs and Open Access Publications at a Research University

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I ILLINOIS
University Library

Environment – The Campus

- University of Illinois at Urbana-Champaign
 - Comprehensive, land-grant mission
 - 49,339 students
 - 14,672 graduate students
 - 1,880 faculty
 - ICR income 2017: \$138 million
 - Sponsored research 2017: \$462 million
 - Prominent programs in engineering, physical sciences, psychology, music, area studies

Environment – Scholarly Communications

- Status of OA Mandates
 - Campus Open Access Policy (2016)
- Library Partnership with Research Admin
 - Illinois Experts (www.experts.illinois.edu).
 - Illinois Data Bank (<https://databank.illinois.edu/>)
- Library Support for Open Access
 - Leadership in Campus OA Policy Development
 - Strong Support for Open Digitization
 - Support for Acquisition-related OA/Scholarly Communications Efforts
 - SCOAP3
 - ArXiv
 - Knowledge Unlatched
 - Developing Library Publishing Program
 - No history of Library or OVCR underwriting/paying APCs

Conversations Lead to Questions...

- How much does Illinois spend on subvention fees?
- How do subvention costs break down when analyzed against the type of OA publication?
- What is the percentage spent with commercial OA publications as a percentage of the institutional spend on similar content (journals) with the same commercial publishers?
- Could this data influence negotiation toward offsetting models for commercial journal pricing?
- Is there any correlation between author rank and OA publication?
- Do APC costs present a measurable opportunity cost to an institution?

Open Access

- Several studies attempt to determine % of literature that is OA
 - Science Metrix, 2018, funded by NSF: “at least 50% of articles become available in OA within 12-18 months of publication”
 - Piwowar, Priem, et al, 2018, PeerJ: 28%-47%
 - Martin-Martin, Costas, et al, 2018, Journal of Infometrics: “overall availability of 54.6% with important differences by country and subject”

Open Access Initiatives

- Pay it Forward project, OA2020 and Plan S pursuing Gold Open Access built around APC costs
- Research I (RI) universities have invested in Gold OA
- We are attempting to measure OA frequencies at UIUC

Methodology

- From local SciVal PURE database:
 - Extracted metadata from 37,229 UIUC researcher publications from 2013 to mid-2018
 - Identified 27,131 articles - not including erratum, letters, editorials; 72.9% of the publications, 4.93K articles/year
 - Metadata includes title, author, ISSN, EISSN, DOI
- Downloaded DOAJ database, Ulrich's Open Access records

Determination of Open Access

- From 27,131 Journal Articles (2013-2018)
 - Searched ISSN, EISSN, title against DOAJ & Ulrich's APIs for Gold OA articles
 - Searched article DOI against UnPaywall API to determine OA availability
- UnPaywall gives Gold, Green, Hybrid, and Bronze OA types
- Recorded APC Charges in US \$ using:
 - DOAJ database
 - Max Planck OA APC list

Journal websites

Caveats

- Used Base Cost APCs in calculations
 - Did not pro-rate for non-Illinois co-authorship
 - Did not attempt to calculate additional charges if journal charged based on pages, words, additional images, etc....
 - Did not differentiate between faculty, graduate students, etc...
- No date/time adjustment For:
 - Moving Walls
 - Embargo Periods for NIH Sponsored Articles

Gold OA

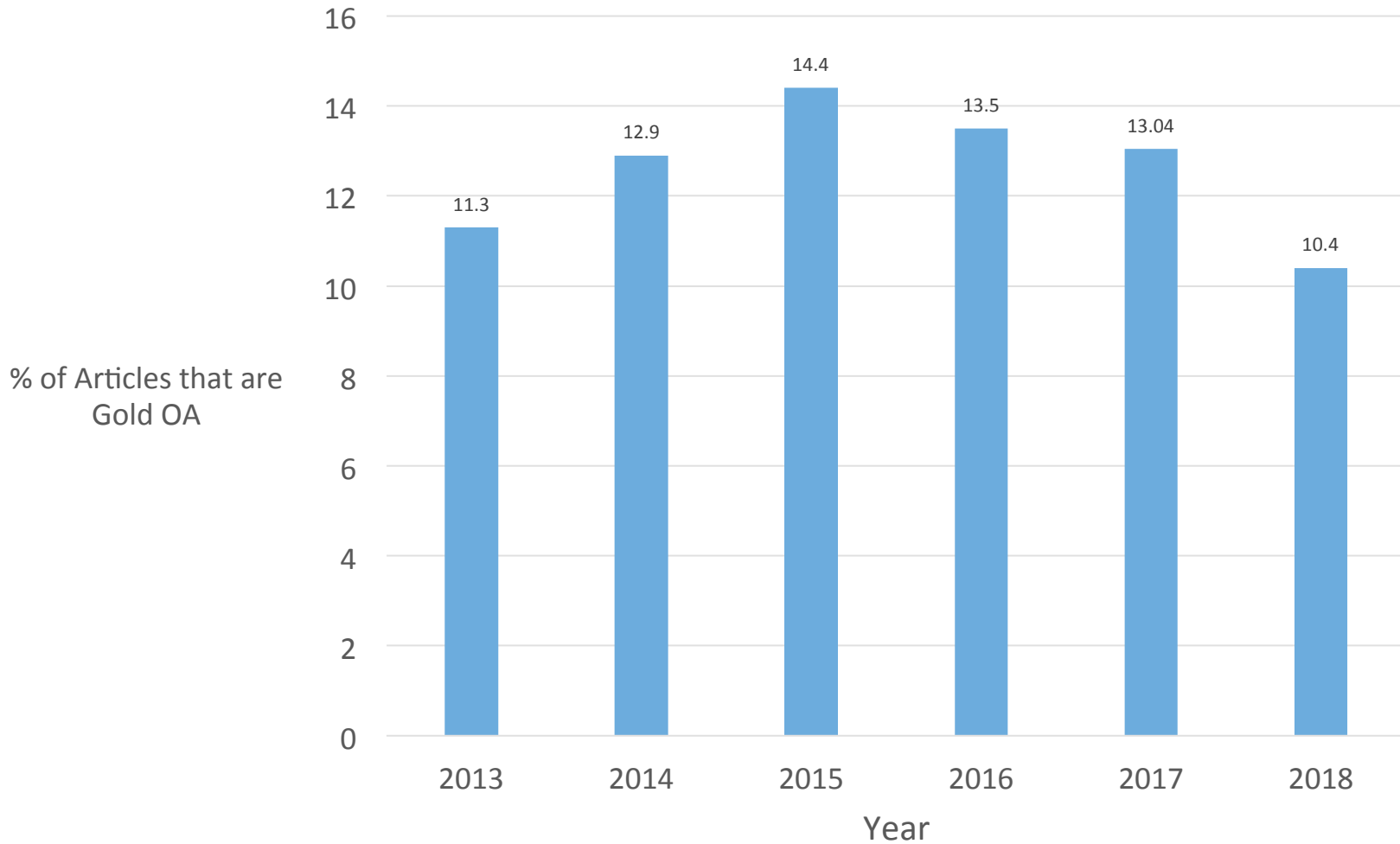
- 12.9% of articles (3,494) are in Gold OA journals
- Total of 409 different Gold journals.
Long tail: 205 had 1 article only
- Only 9 of the top 100 Gold OA journals DO NOT charge APCs (incl 4 in Scoap3)
- Total APC expenses were \$4.785 million
- Average APC article charge was \$1,511
 - Compares with \$1,825 for Research I universities in Pay it Forward Project

Scoap3 OA

- Scoap3 journals: CERN negotiates & tenders offers to 11 High Energy Physics journals
- UIUC authors were on 569 articles in these journals 2013 - 2018
- Assessed \$10,203 in 2018 for UIUC SCOAP3 access
- Cost of \$88 per article over the 5+ years
- At \$1,500 per article this would be \$854K
- Very inexpensive model

Gold OA Percent by Year

Gold OA Articles (as % of total articles) by Year



UIUC Gold OA 2013-2018 Top 16

Title	Articles	APC	Total
PLoS One	388	\$1,495.00	\$580,060.00
Journal of High Energy Physics	243	\$0.00	\$0.00
Scientific Reports	205	\$1,675.00	\$343,375.00
European Physical Journal C, Zeitschrift fur Physik C-Particles and Fields	191	\$0.00	\$0.00
Physics Letters, Section B: Nuclear, Elementary Particle and High-Energy Physics, Physics Letters B	186	\$0.00	\$0.00
Nature Communications	164	\$5,200.00	\$852,800.00
Optics Express	74	\$1,400.00	\$103,600.00
Nucleic Acids Research	54	\$2,670.00	\$144,180.00
BMC Genomics	53	\$2,145.00	\$113,685.00
Journal of Veterinary Internal Medicine	42	\$1,700.00	\$71,400.00
GCB Bioenergy	39	\$2,500.00	\$97,500.00
eLife	38	\$2,500.00	\$95,000.00
Atmospheric Chemistry and Physics	33	\$1,300.00	\$42,900.00
RSC Advances	33	\$958.00	\$31,614.00
Frontiers in Human Neuroscience	31	\$2,490.00	\$77,190.00
Frontiers in Plant Science	31	\$2,490.00	\$77,190.00



UIUC Gold OA 2013-2018 #17 - 35

Frontiers in Microbiology	29	\$2,490.00	\$72,210.00
Proceedings of Science*	29	\$110.00	\$3,190.00
PLoS Computational Biology	28	\$2,250.00	\$63,000.00
Hydrology and Earth System Sciences	28	\$1,100.00	\$30,800.00
Frontiers in Psychology	27	\$2,490.00	\$67,230.00
ZooKeys	26	\$590.00	\$15,340.00
Ecology and Evolution	26	\$1,950.00	\$50,700.00
Journal of Physics: Conference Series	23	\$2,500.00	\$57,500.00
Chemical Science	23	\$0.00	\$0.00
New Journal of Physics	22	\$2,080.00	\$45,760.00
PloS Genetics	22	\$2,250.00	\$49,500.00
PLoS Pathogens	21	\$2,250.00	\$47,250.00
Sustainability (Switzerland)	20	\$1,462.75	\$29,255.00
Biomedical Optics Express	20	\$2,360.00	\$47,200.00
Genome Biology	18	\$2,975.00	\$53,550.00
Cell Reports	17	\$5,000.00	\$85,000.00
G3: Genes, Genomes, Genetics	17	\$1,950.00	\$33,150.00
Nutrients	17	\$1,804.00	\$30,668.00
Environmental Research Letters	16	\$2,080.00	\$33,280.00

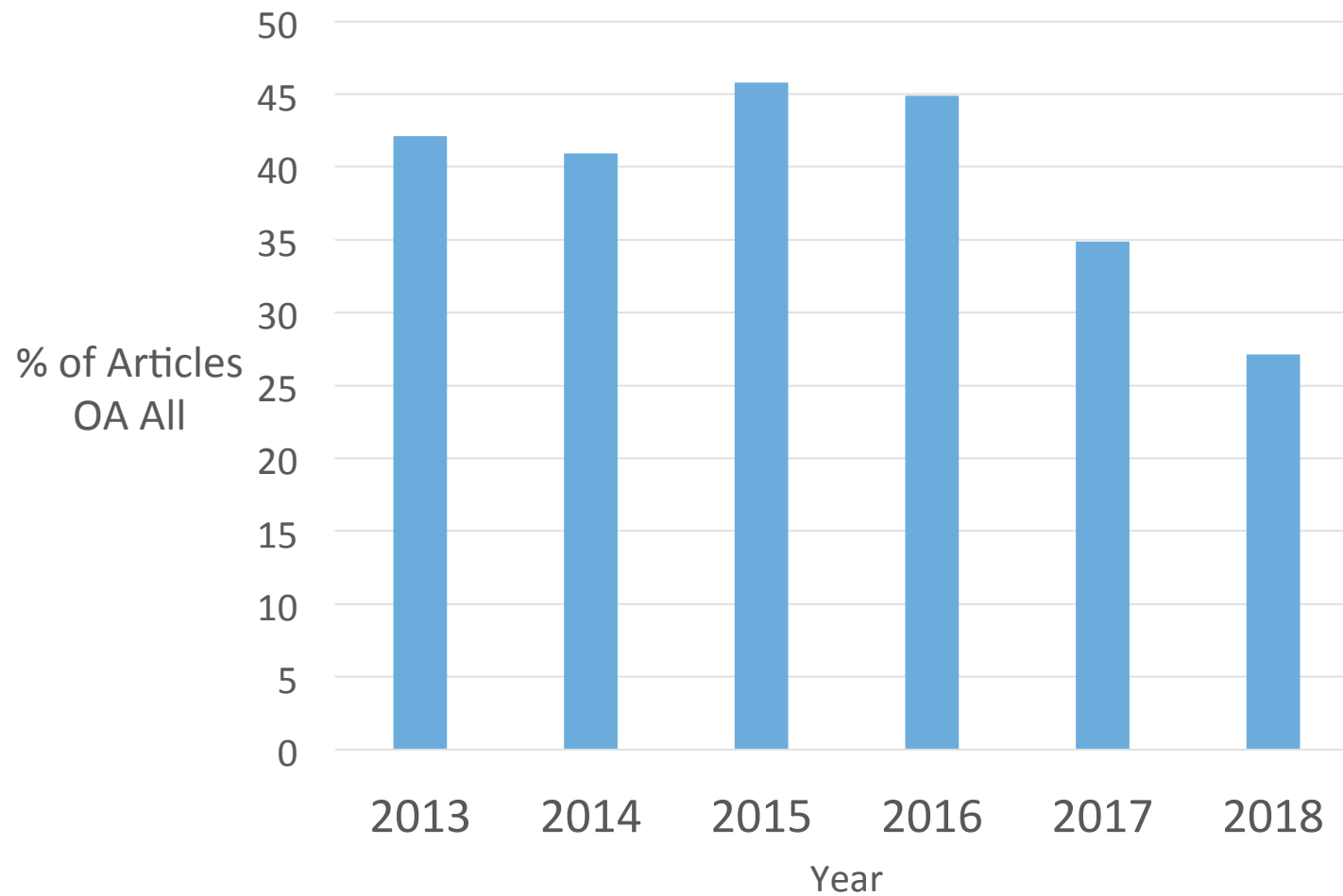


% of Articles any Type of OA

- Totaling DOAJ, Ulrichs, Unpaywall OA:
- 40.9% of all articles (11,095)
- Includes Gold, Green, Hybrid, or Bronze OA – adding in UnPaywall matches
- Problems with Bronze UnPaywall data
- Compares with numbers in quoted previously
- Is this representative of similar R1 institutions?

All OA (Gold, Green, Bronze)

Percent of Articles that are OA (Gold, Green, Bronze) by Year



Next Steps

- Duplicate the study at other Institutions
- More Questions to Answer:
 - How do existing models contribute toward, drive, or undermine negotiation toward offsetting models for commercial journal pricing?
 - How do the publications released via OA line up in terms of author type? For example, tenured faculty, tenure line faculty, and graduate students/research assistants?
 - Do APC costs present a measurable opportunity cost to an institution?
 - Is there a correlation between the cost of the APC-based publications and the relative impact factor of the titles?
 - How does align with Plan S requirements?
- Qualitative Surveys with Faculty
- Discussion of Economic Implications (who will pay?)
 - For Campus....
 - For Faculty....