



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

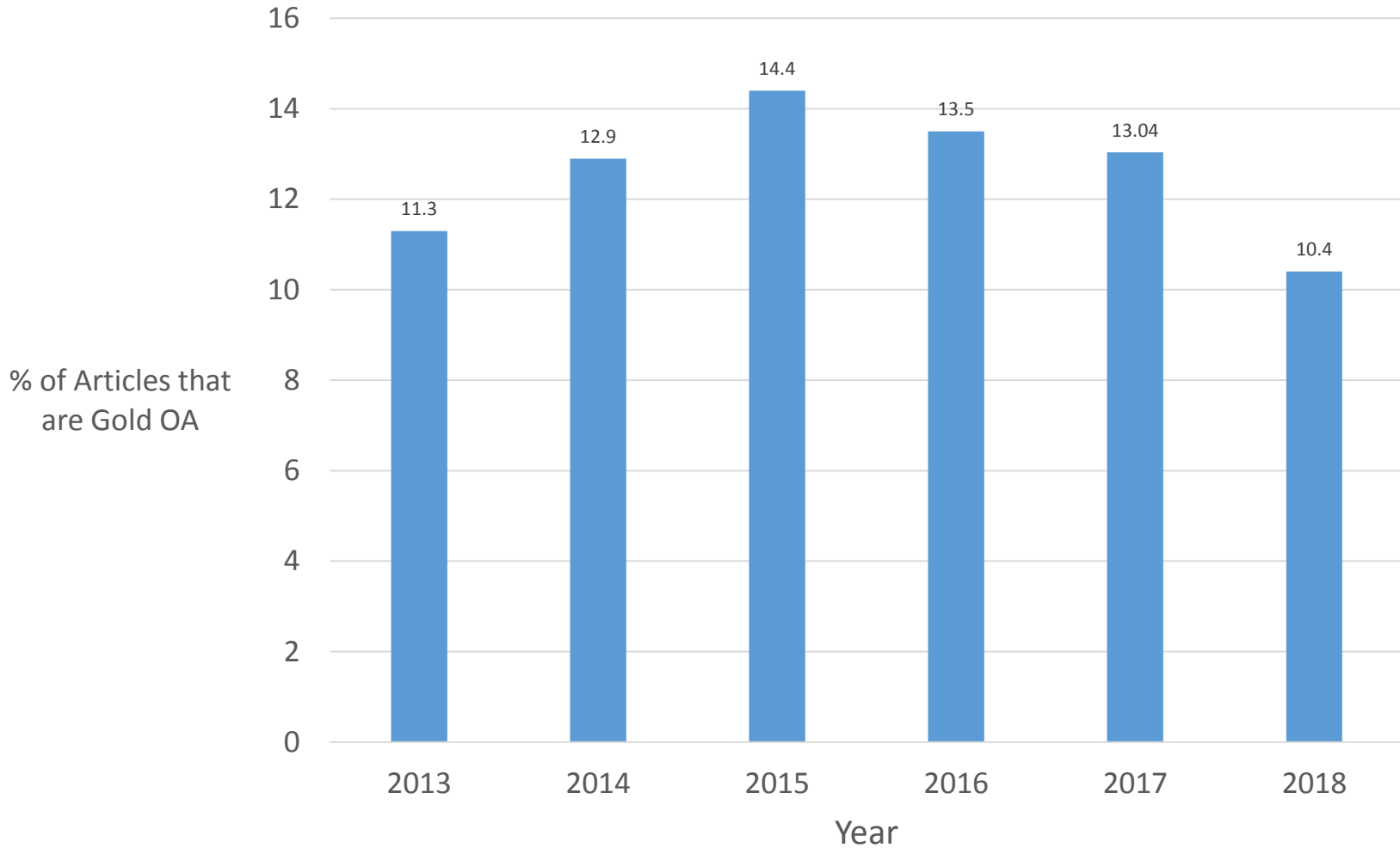
- 12.9% of articles (3,494) are in Gold OA journals
- Total of 409 different Gold journals. Long tail: 205 had 1 article only
- Only 9 of the top 100 Gold OA journals DO NOT charge APCs (incl 4 in Scoap3)
- Total APC expenses were \$4.785 million
- Average APC article charge was \$1,511
 - Compares with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

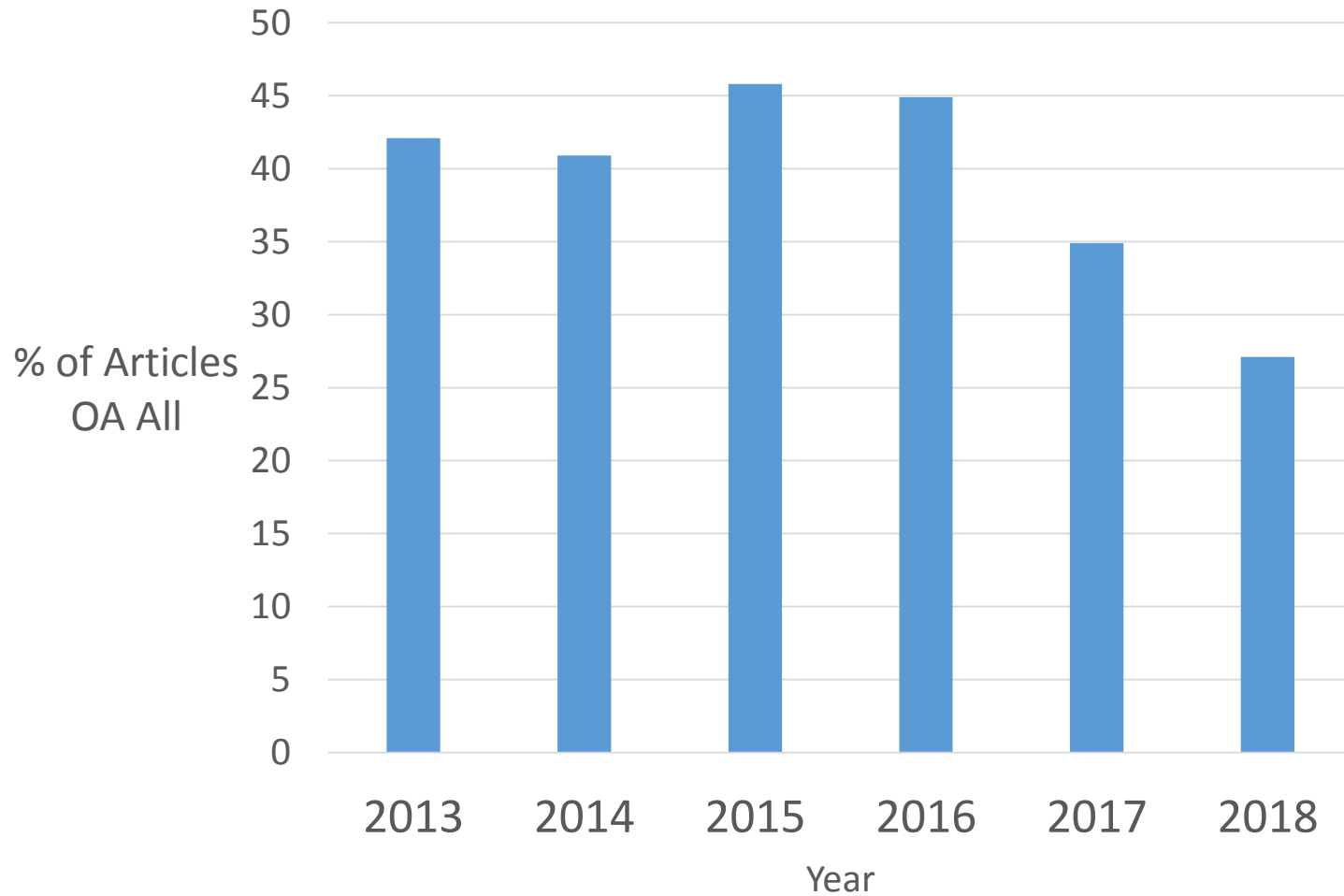


% of Articles any Type of OA

- 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....