

**The OhioLINK Study**

MCLS Annual Meeting, Lansing, Michigan, October 5

# **What We Learned About Book Usage in Academic Libraries**

Ed O'Neill

OCLC Research

# The Overview



# Why Study Use of Print Books?

## Print isn't dead!

- ❑ Libraries continue buy large quantities of print.
- ❑ Libraries retain large print collections.
- ❑ Copyright restrictions restrict mass digitization.
- ❑ There a many similarities between the usage patterns for print & digital resources.

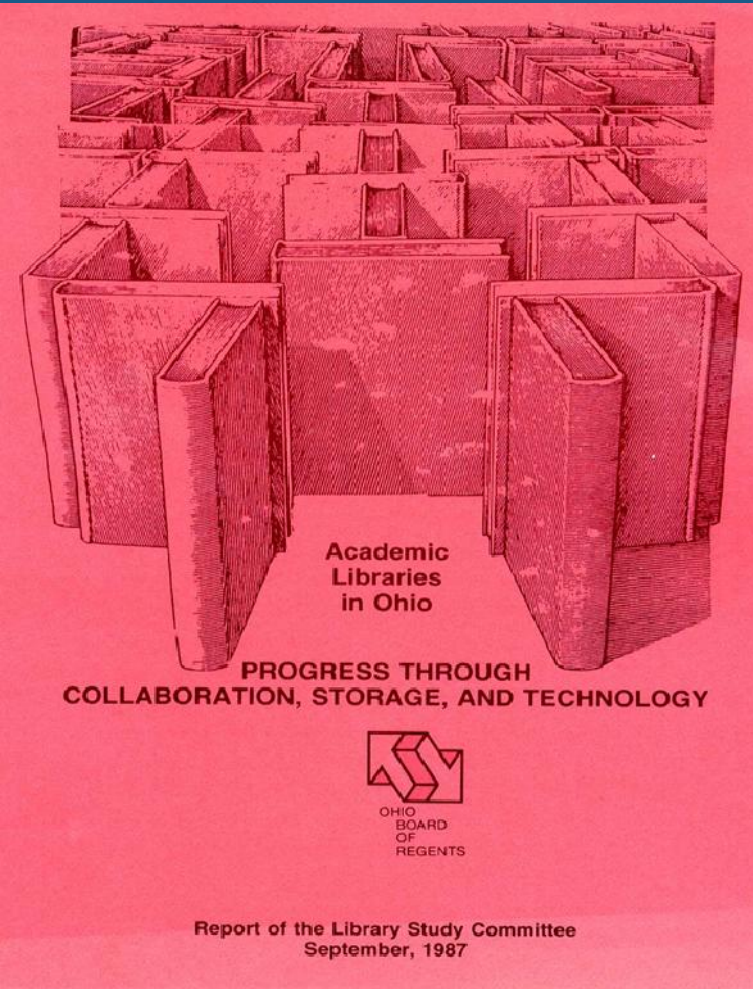
# Why Ohio?





# Origin of OhioLINK

Originated in 1987 with the *Library Study Committee Report's* recommendation to create a statewide catalog



# What is OhioLINK?

- ❑ Shared catalog with patron initiated borrowing
- ❑ 600,000+ Users
- ❑ 47.6 million books and other library materials
- ❑ Millions of electronic articles
- ❑ 12,000 electronic journals
- ❑ 140 electronic research databases
- ❑ 40,000 e-books
- ❑ Thousands of images, videos and sounds
- ❑ 17,500 theses and dissertations
- ❑ **Nearly 30 Million Books**

# Who is OhioLINK?

- ❑ 5 ARL Institutions
- ❑ 11 Universities
- ❑ 44 Colleges
- ❑ 15 Community Colleges
- ❑ 28 Branch campuses
- ❑ The State Library of Ohio
- ❑ 5 Depositories
- ❑ 3 Museums and other independent cultural institutions
- ❑ 20 Off-campus hospitals and medical centers

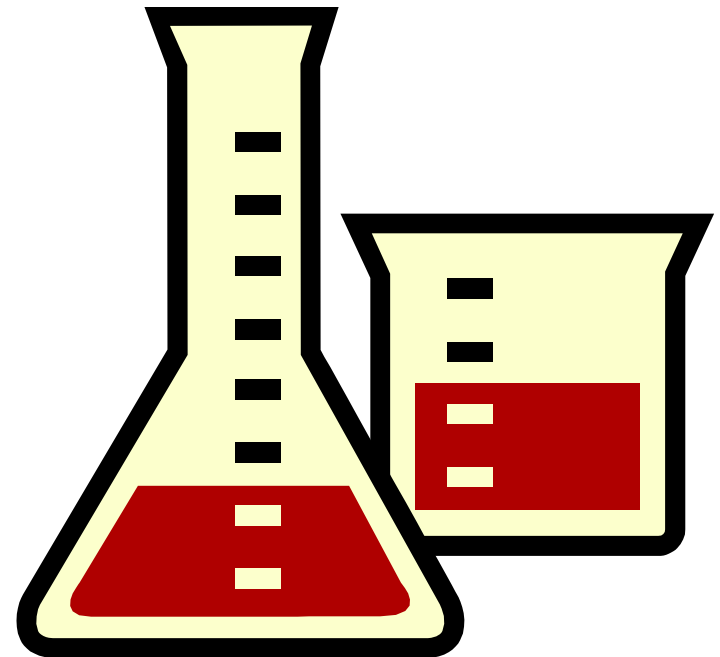


# The Project



# Research Project

- Julie Gammon from the University of Akron was a co-investigator for the study.
- Joint study by OhioLINK, OhioLINK members, OhioLINK Collection Building Task Force (CBTF) and OCLC Research.
- Much of the planned analysis is new and untested; not all of the analysis will be successful.
- This project is distinct from OCLC's collection analysis service.



# Distinctive Aspects

- ❑ Size and scope of collections.
- ❑ Use of local holdings and circulation information.
- ❑ Number and variety of institutions.
- ❑ FRBR (Functional Requirements for Bibliographic Records)
- ❑ Metrics used.



# Project Goals



- To reduce unnecessary duplication.
- To increase local collection development activities.
- To expand the amount spent on cooperative acquisitions.
- To strengthen the collective collection.

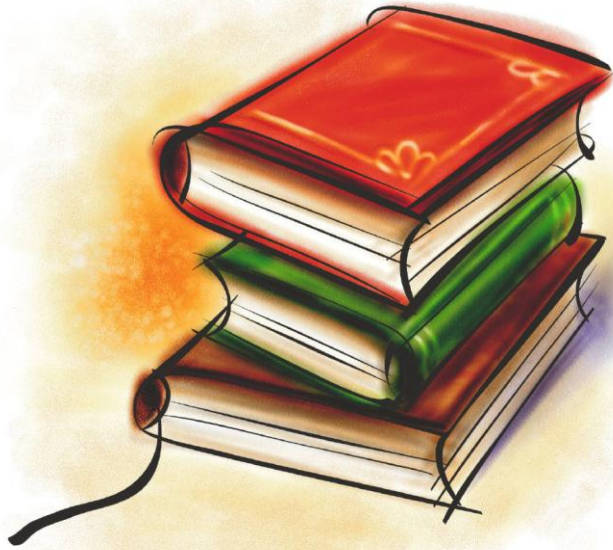
# *Individual Institutions: What's Where?*



- How big are the collections?
- What is being used?
- What are the subject strengths?
- How unique?
- How old are the books?
- How comprehensive?



# Collective Collection: What Do We Have?

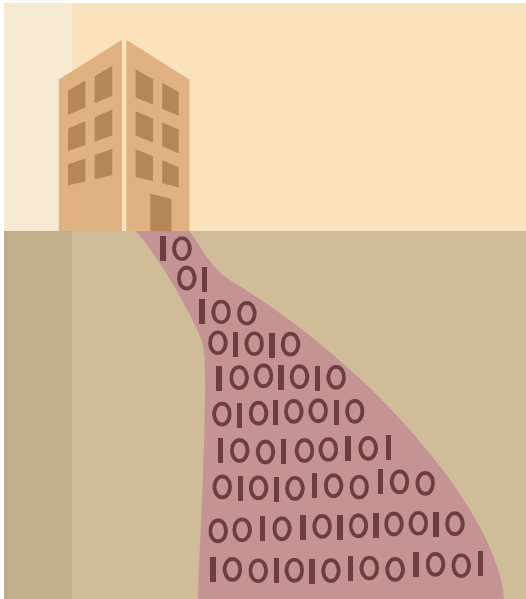


- How many items do we have?
- What languages do we have?
- How old are they?
- How many are unique?
- In what subjects?
- How many copies do we need?

# Data

Category	Value 1	Value 2	Value 3	Value 4	Value 5	Value 6	Value 7	Value 8	Value 9	Value 10
ences/Pharmacy	1,488,771	955,048	533,723	327,990	22.0%	0.67	2,914,405	0.269	0.270	0.399
y and Musuem	1,092,276	613,404	478,872	255,729	23.4%	0.67	1,810,884	0.280	0.185	0.003
aphical Studies	21,937	9,253	12,684	4,011	18.3%	0.65	41,402	0.040	0.213	1.815
	42,175	348	2,154	504	20.1%	0.57	0	0.167	0.225	6.1
	67,066	40,236	1,939	4,496	10.7%	0.70	141,607	0.221	0.116	452
	15,414	66,298	768	6,066	9.0%	0.66	153,360	0.225	0.111	182
	1,597	15,412	2	6,275	40.7%	0.48	504	0.584	0.505	0.278
ring	93,638	81,267	1,580	203	27.5%	0.71	206,512	0.278	0.116	0.306
	33,237	31,326	12,371	25,742	12.7%	0.72	84,786	0.116	0.116	1.248
	15,080	11,516	1,911	8,972	27.0%	0.68	22,334	0.111	0.111	0.111
	38,970	31,335	3,564	2,689	17.8%	0.73	91,531	0.111	0.111	0.111
ospital Library	54,890	47,388	7,635	7,856	20.2%	0.58	318,802	0.111	0.111	0.111
rary	2,329	0	7,502	3,054	5.6%	0.70	0	0.111	0.111	0.111
Library	7,660	7,248	2,329	7,856	5.2%	0.73	42,680	0.111	0.111	0.111
	45,516	38,690	412	122	29.6%	0.68	84,786	0.111	0.111	0.111
	7,574	5,701	6,826	2,271	8.8%	0.73	22,334	0.111	0.111	0.111
	37,710	32,819	1,873	4,012	6.0%	0.73	91,531	0.111	0.111	0.111
	232	170	4,891	454	9.4%	0.63	318,802	0.111	0.111	0.111
	105,279	72,705	32,574	3,551	3.0%	0.75	42,680	0.111	0.111	0.111
	11,785	11,075	710	7	16.6%	0.65	131,493	0.111	0.111	0.111
	33,042	31,069	1,973	17,479	12.1%	0.76	8,361	0.111	0.111	0.111
	37,994	36,634	1,360	1,425	1.8%	0.48	122,842	0.111	0.111	0.111
	33,724	30,509	3,215	600	2.3%	0.45	290	0.111	0.111	0.111
ent Center	9,399	8,984	415	883	2.5%	0.45	80,964	0.111	0.111	0.111
	1,485,021	1,426,400	58,621	1,121			23,006			

# OhioLINK Circulation Record



Item No.: **i25878591**  
OCLC No.: **45207959**  
Title: **The infinite / A.W. Moore**  
LCCN: **00051722**  
Location Code: **bc**  
Status Code: **-**  
Circulation: **5**  
Renewals: **1**  
Accession date: **8/3/2001**  
Date of Last Use: **8/23/2004**  
ISBN: **0415252857 (pbk.)**  
Source: **Akron**

# Data Cleaning

The OCLC Number is used to link the circulation records to the corresponding bibliographic record in WorldCat:

- ❑ For records with an obsolete OCLC No.; the obsolete OCLC No. is replaced with the current OCLC No.
- ❑ For records lacking an OCLC No. which had either a unique LCCN or ISBN; that number is used to identify the corresponding OCLC No.
- ❑ Records lacking any standard number were not validated and were excluded from the study.
- ❑ Records from the 2007 circulation files were paired with the 2008 to determine annual circulation
- ❑ The resulting data set contained the circulation records for ~30 million different items
- ❑ Approximately 93% of the records were validated; many of the unvalidated records were for non-book materials



# Combined Circ Record

- |                           |                       |  |
|---------------------------|-----------------------|--|
| 1. Item No.               | 3974388               | Identifier that is unique for each item within the institution |
| 2. OCLC No.               | 11842779              | The OCLC number  |
| 3. Work No.               | 11842779              | Work number as identified by the OCLC Workset algorithm.       |
| 4. Source                 | Ohio State            | The institution supplying the data.                            |
| 5. Campus                 | Ohio State University | The campus generating the circulation.                         |
| 6. Administrative Unit    | University Libraries  | Library level administrative unit                              |
| 7. Administrative Subunit | Thompson Library      | Subunit within the administrative unit                         |
| 8. Accession date         | 5/24/1994             | The date the book was acquired or entered into the system      |
| 9. Date of last use       | 3/12/2008             | The date the item last circulated.                             |
| 10. Circulation Status    | A                     | A circulating or non-circulating code                          |
| 11. Total Circulations    | 51                    | The total number of times the item has circulated              |
| 12. Annual Circulation    | 5                     | The number of times the item circulated in the year observed.. |

# The Annual Circulation Data

Annual Circulation	2,822,035
No. of Items (Volumes)	29,002,327
No. of Items Circulated	2,106,142
No. of Manifestations (Titles)	6,729,482
No. of Manifestations Circulated	1,025,318
No. of Works	5,488,502
No. of Works Circulated	891,423

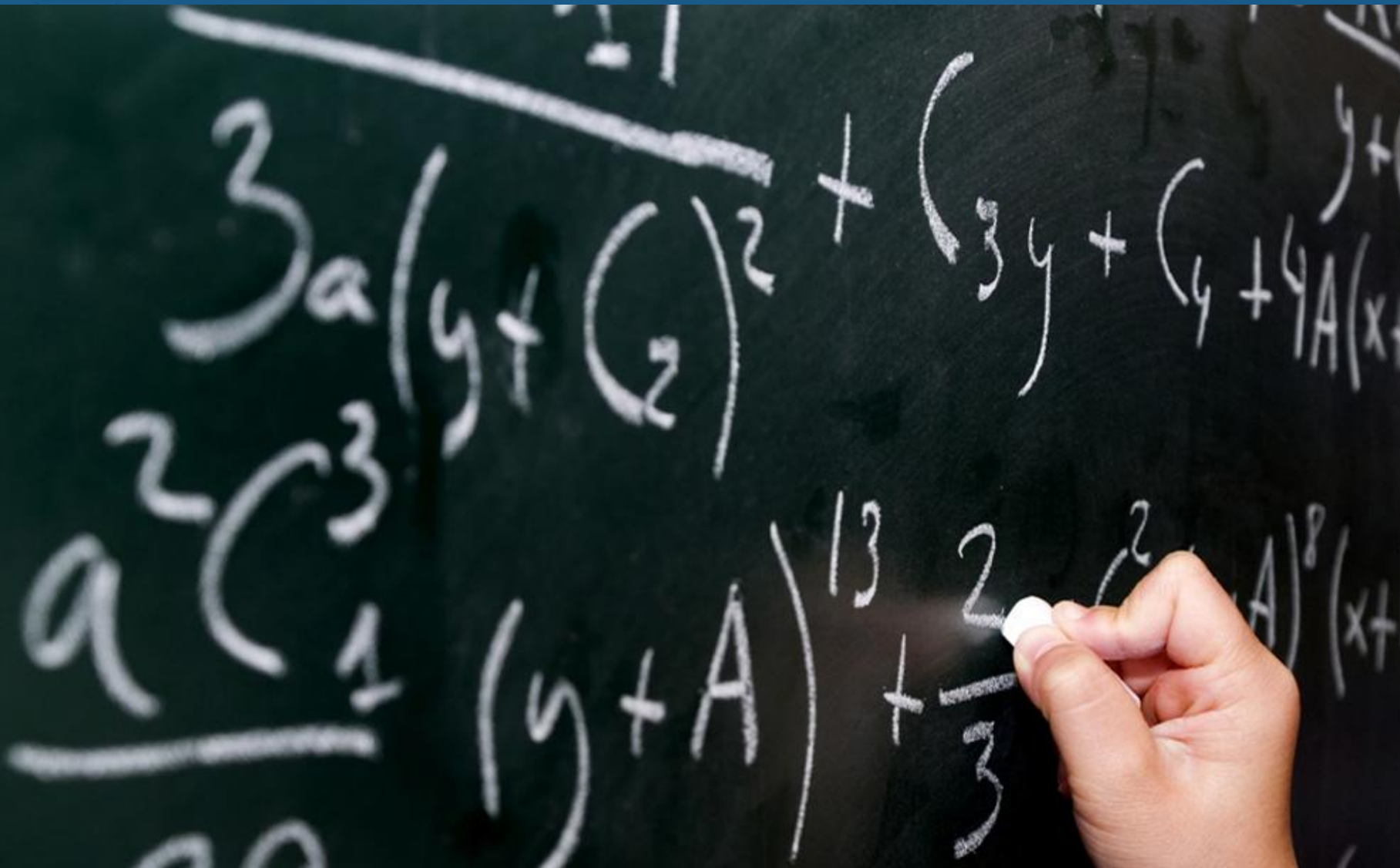
# Data is Public

Available under the Open Data Commons Attribution license

- ❑ 6,729,482 Bibliographic records
- ❑ 29,002,327 Circulations records
- ❑ Jointly released by OCLC & OhioLINK
- ❑ Downloadable from:

<http://www.oclc.org/research/activities/ohiolink/circulation.html>

# Analysis



A hand is shown writing mathematical equations on a chalkboard. The equations are written in white chalk on a dark background. The visible equations include:

$$3a(y + \frac{1}{2})^2 + (3y + (4 + 4A)(x + \dots))^2$$
$$\frac{a^2 C^3}{a} (y + A)^{13} + \frac{2}{3} (A)^8 (x + \dots)^2$$



# Individual Institution Focus

- Languages
- Age
- Subjects



# Language Table (Akron)

Language	All Items	Circ. Items	Circ.	Circ Rate
<b>Undetermined</b>	<b>91,035</b>	<b>75,349</b>	<b>2,867</b>	<b>0.038</b>
<b>English</b>	<b>735,130</b>	<b>642,244</b>	<b>83,928</b>	<b>0.131</b>
<b>Non-English languages</b>	<b>12,109</b>	<b>9,401</b>	<b>514</b>	<b>0.055</b>
German	3,580	2,361	79	0.033
French	3,528	2,717	155	0.057
Spanish	3,037	2,834	157	0.055
Russian	256	222	9	0.041
Chinese	58	50	18	0.360
Italian	397	325	29	0.089
Japanese	45	37	4	0.108
Latin	406	276	27	0.098
Hebrew	16	12	1	0.083
Polish	10	9	0	0.000
Greek	31	29	0	0.000
Arabic	11	11	1	0.091
Abkhaz	0	0	0	
Achinese	0	0	0	
Acoli	0	0	0	

12 Major Non-English Languages

# Age Tables (Akron)

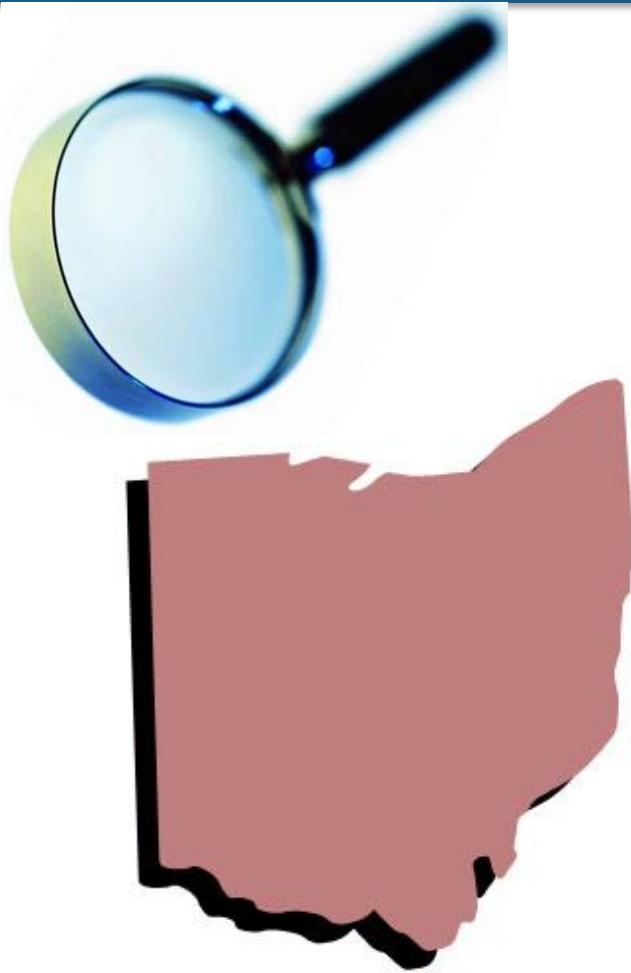
Publication Date	All Items	Circ. Items	Circ.	Circ Rate
1850 - 1874	2,890	1,720	122	0.071
1875 - 1899	5,711	3,612	245	0.068
1900 - 1909	4,535	3,146	225	0.072
1910 - 1919	5,344	3,895	242	0.062
1920 - 1929	8,712	6,641	547	0.082
1930 - 1939	10,290	8,388	541	0.064
1940 - 1949	12,028	10,031	701	0.070
1950 - 1959	21,836	18,887	1,504	0.080
1960 - 1969	62,690	57,284	3,826	0.067
1970 - 1979	121,792	111,474	7,873	0.071
1980 - 1989	139,767	127,288	11,087	0.087
1990 - 1999	202,883	182,506	27,637	0.151
2000 -	100,666	90,483	28,462	0.315

# Subjects Tables (Akron)

Subject	LC Class	All Items	Circ. Items	Circ.	Circ Rate
<b>Business &amp; Economics</b>		<b>67,718</b>	<b>65,038</b>	<b>4,536</b>	<b>0.070</b>
Economic Theory	HB	5,273	5,150	375	0.073
Economic History & Conditions: National Production	HC	8,229	7,929	521	0.066
Economics: Production	HD 1-100	8,008	7,892	794	0.101
Economics: Land	HD 101-1395	1,208	1,143	56	0.049
Agricultural Economics	HD 1401-2210	824	803	28	0.035
Economics: Industry	HD 2321-4730	1,983	1,900	89	0.047
Labor	HD 4801-8942	8,595	8,251	553	0.067
Special Industries and Trades	HD 9000-9999	3,932	3,744	278	0.074
Other Economic History and Conditions	any other HD	5	5	0	0.000
Transportation and Communication	HE	3,760	3,570	190	0.053
Commerce	HF 1-1186	654	548	51	0.093
Commercial Policy	HF 1401-4050	2,070	1,988	99	0.050
Business	HF 5001-5392	1,431	1,294	170	0.131
Marketing, Distribution	HF 5401-5541	3,617	3,546	193	0.054
Office Organization/Management	HF 5546-5549	3,756	3,615	259	0.072
Accounting	HF 5601-5689	2,005	1,951	105	0.054
Business Mathematics	HF 5691-5716	75	67	2	0.030
Business Communication	HF 5717-5746	324	303	34	0.112
Shipping of Merchandise	HF 5761-5780	58	56	0	0.000
Advertising	HF 5801-6182	942	908	117	0.129
Other Commerce	any other HF	519	503	42	0.083
Finance	HG	6,657	6,321	358	0.057



# 'Collective' Collection Focus



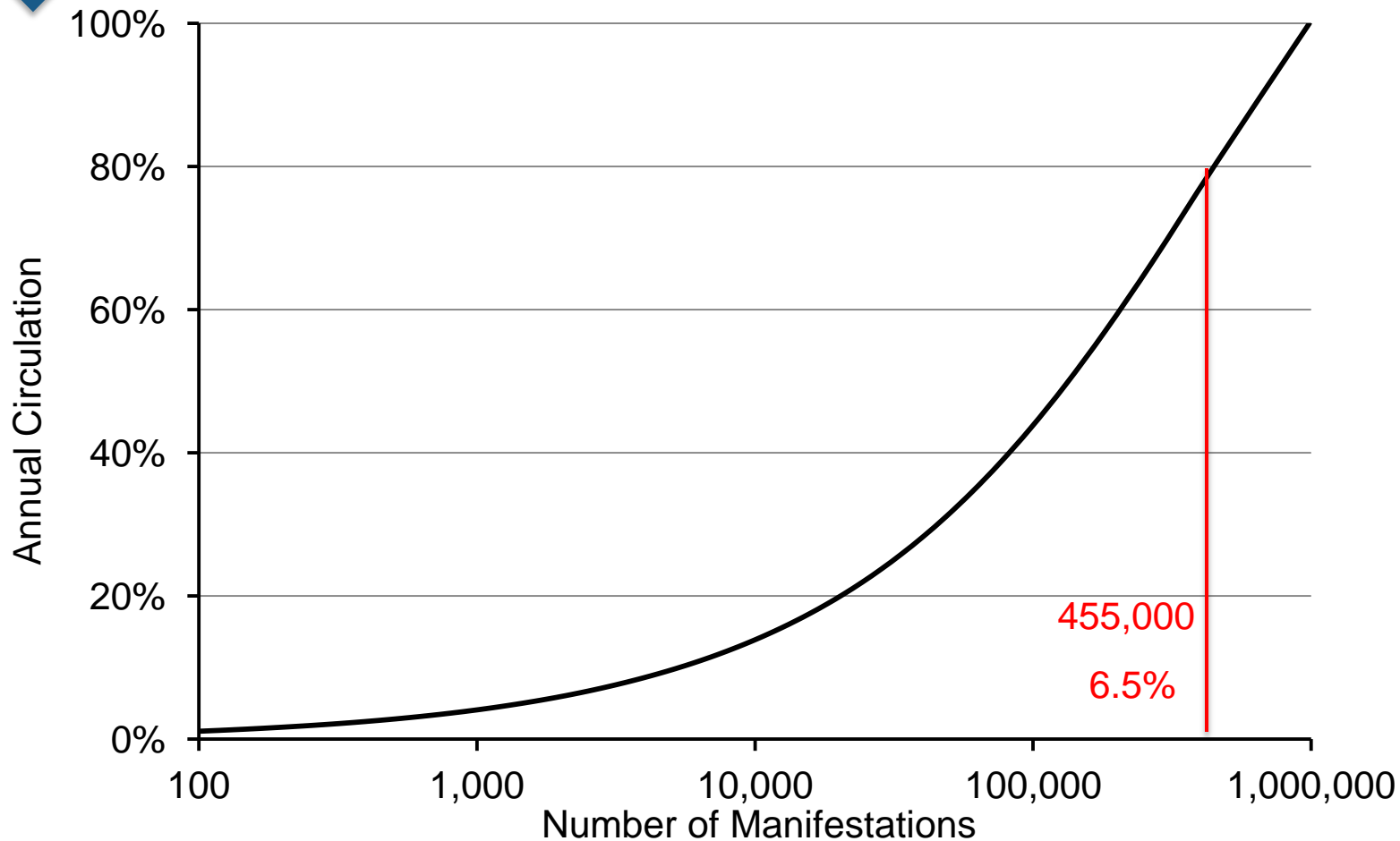
## Tables

- Subject
- Language

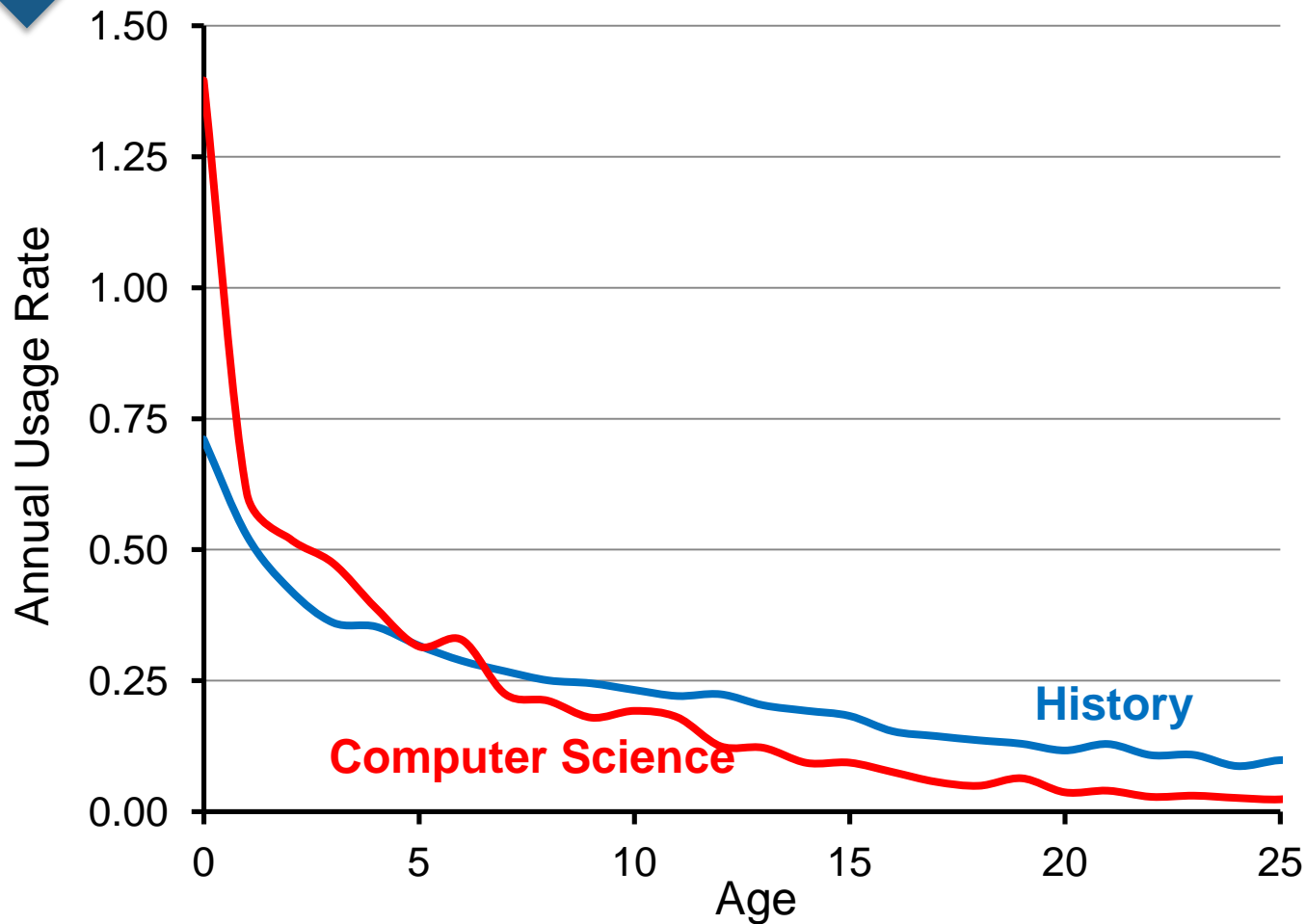
## Analysis

- Collection Size
- Comprehensiveness
- Duplication
- Obsolescence
- Library Type
- FRBR
- Audience Level
- etc.

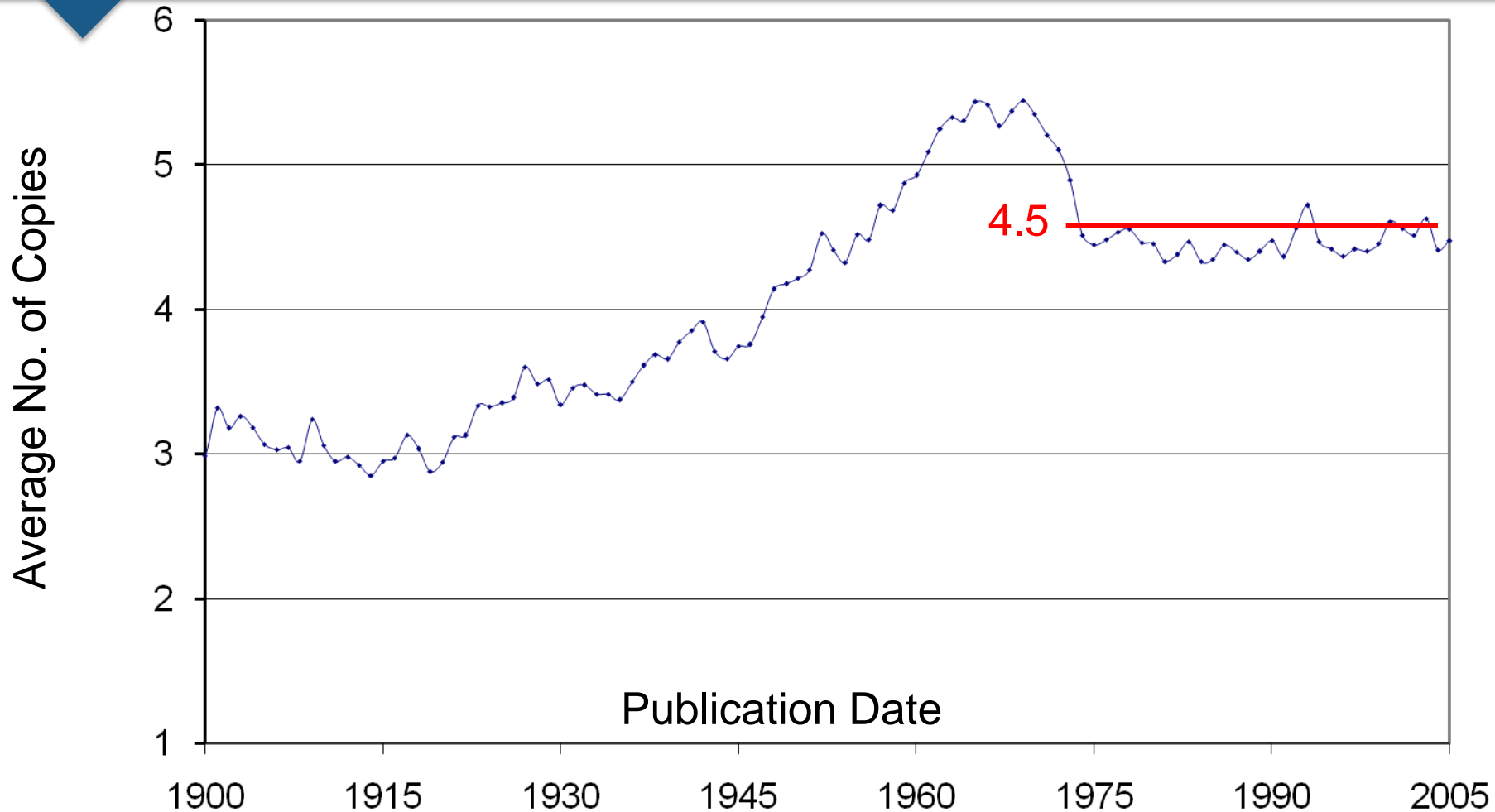
# Usage Distribution



# Obsolescence Rates



# Duplication Rate

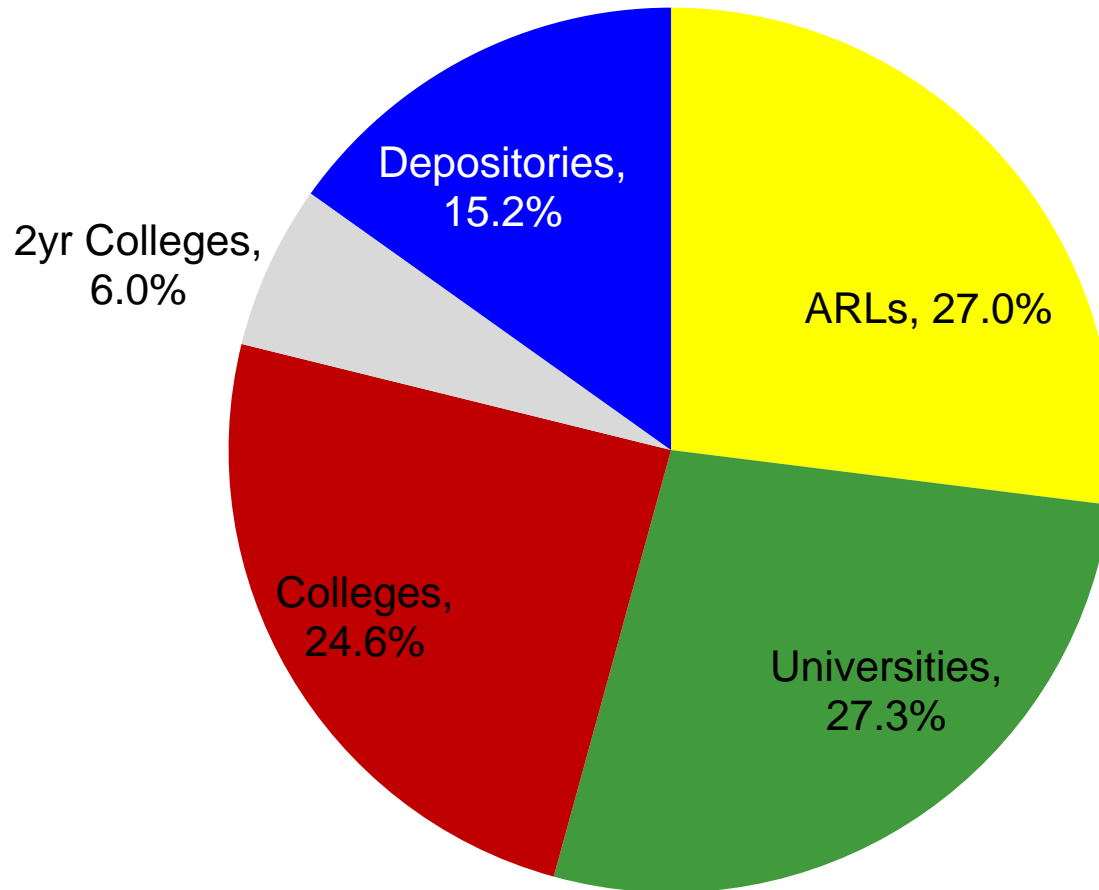


# Analysis

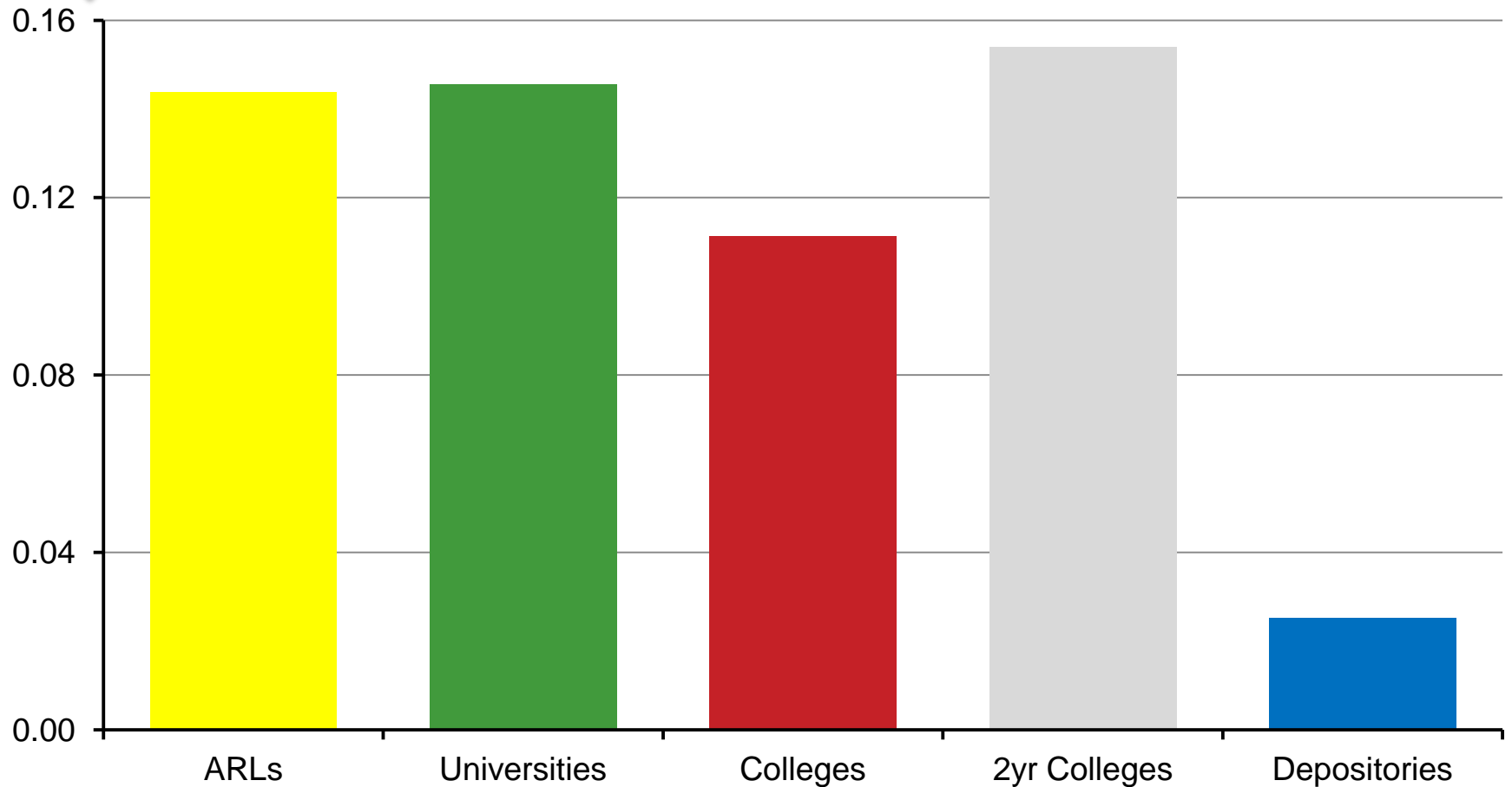
# Library Type



# Holdings by Library Type



# Circulation Rates by Library Type



# Analysis Subject

# Subject Table (Advertising)

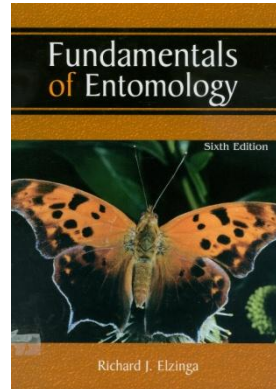
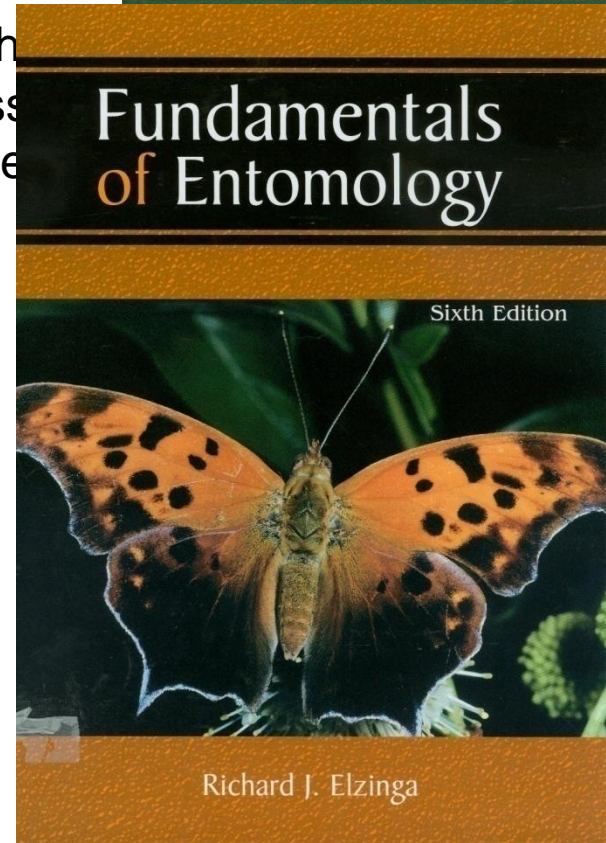
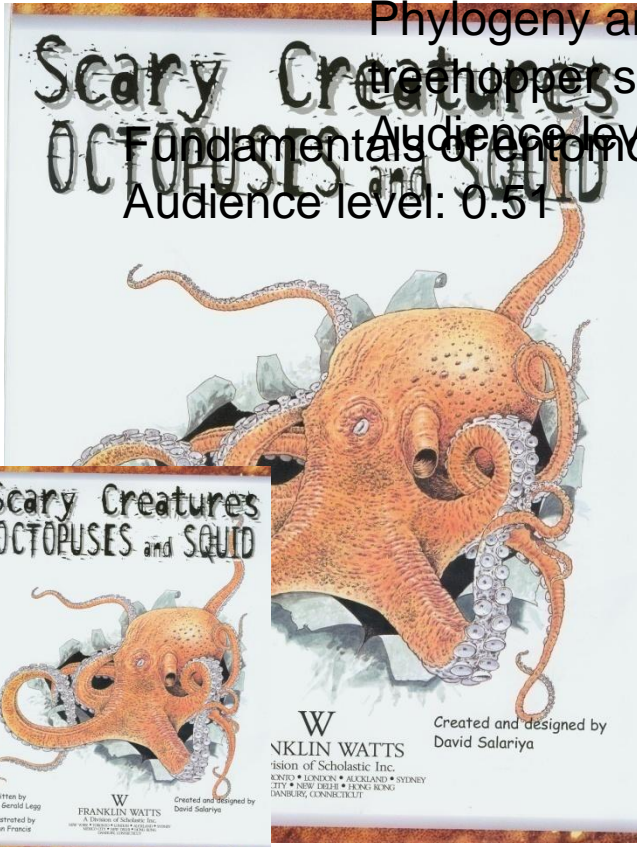
Subject	Institution	Number of Works	No. of Manifestations	Number of Items	Percent Non-circulating	Annual Circulation	Circulation Rate	Percent Coverage	Comprehensiveness	Average Age	Percent English	Audience Level
Advertising [HF 5801-6182]		3,321	3,948	21,683	6.3%	3,217	0.158	100.0%	1.000	35.0	96%	0.61
	Miami University	792	822	857	7.4%	235	0.296	20.8%	0.666	19.3	99%	0.53
	University of Cincinnati	832	877	1,002	3.5%	217	0.224	22.2%	0.653	23.6	98%	0.56
	Bowling Green State University										99%	0.53
	Kent State University										96%	0.60
	Ohio University										96%	0.59
	University of Akron										96%	0.57
	Case Western Reserve University	4									96%	0.62
	Wright State University	4									96%	0.55
	Ohio State University	878	934	1,171	41.8%	116	0.170	23.7%	0.385	33.5	97%	0.61
	University of Toledo	468	489	510	2.5%	47	0.095	12.4%	0.381	24.9	99%	0.56
	University of Dayton	599	614	651	3.1%	54	0.086	15.6%	0.373	30.7	100%	0.59
	Cleveland State University	545	577	624	3.8%	53	0.088	14.6%	0.301	34.7	100%	0.59
	John Carroll University	343	353	363	2.5%	48	0.136	8.9%	0.256	26.9	100%	0.57
	Tiffin University	159	161	170	2.4%	27	0.163	4.1%	0.241	16.3	100%	0.47
	Youngstown State University	557	575	587	1.9%	59	0.102	14.6%	0.240	31.5	99%	0.57
	Wittenberg University	248	257	265	0.0%	37	0.140	6.5%	0.237	27.5	99%	0.53
	Depositories	1,692	1,889	3,423	0.9%	72	0.021	47.8%	0.235	44.6	96%	0.66
	Ohio Northern University	231	232	237	3.0%	24	0.104	5.9%	0.228	20.1	99%	0.51
	College of Wooster	172	176	179	0.0%	29	0.162	4.5%	0.227	32.6	100%	0.59
	Xavier University	228	235	244	0.4%	55	0.226	6.0%	0.222	26.7	100%	0.51
	Cedarville University	159	163	167	4.2%	17	0.106	4.1%	0.221	19.5	99%	0.49
	Ohio Wesleyan University	194	197	207	1.0%	18	0.088	5.0%	0.221	32.9	100%	0.56
	Denison University	173	173	178	2.8%	40	0.231	4.4%	0.212	34.4	100%	0.57
	Ashland University	219	227	238	5.0%	23	0.102	5.7%	0.211	24.5	100%	0.51
	Columbus College of Art and Design	235	242	254	3.9%	68	0.279	6.1%	0.196	22.1	98%	0.47

**Audience Level:** The type of audience for which the collection is most suitable.

manifestations in the collection.

# Audience Level

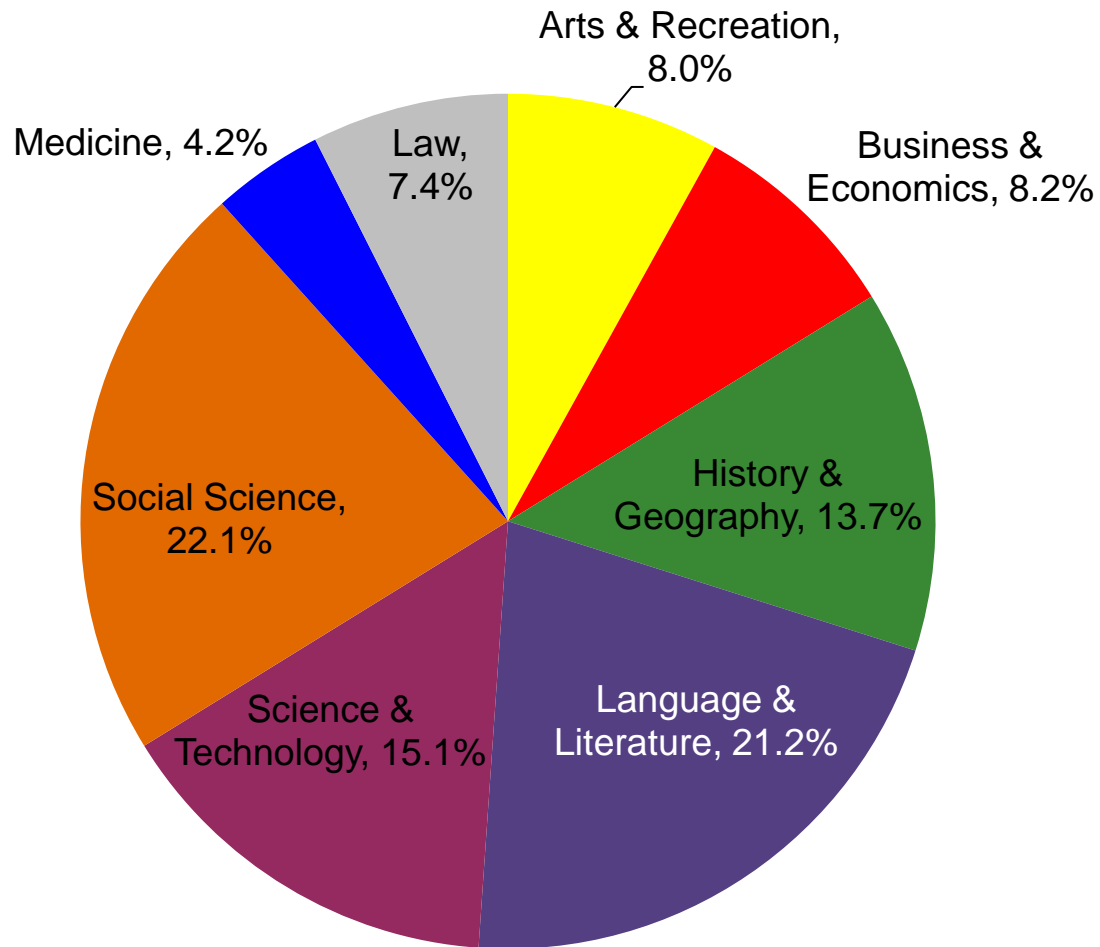
Phylogeny and systematics of the  
 treehopper subfamily Octopuss  
 Audience level: 0.96  
 Audience level: 0.51



0 (Juvenile)

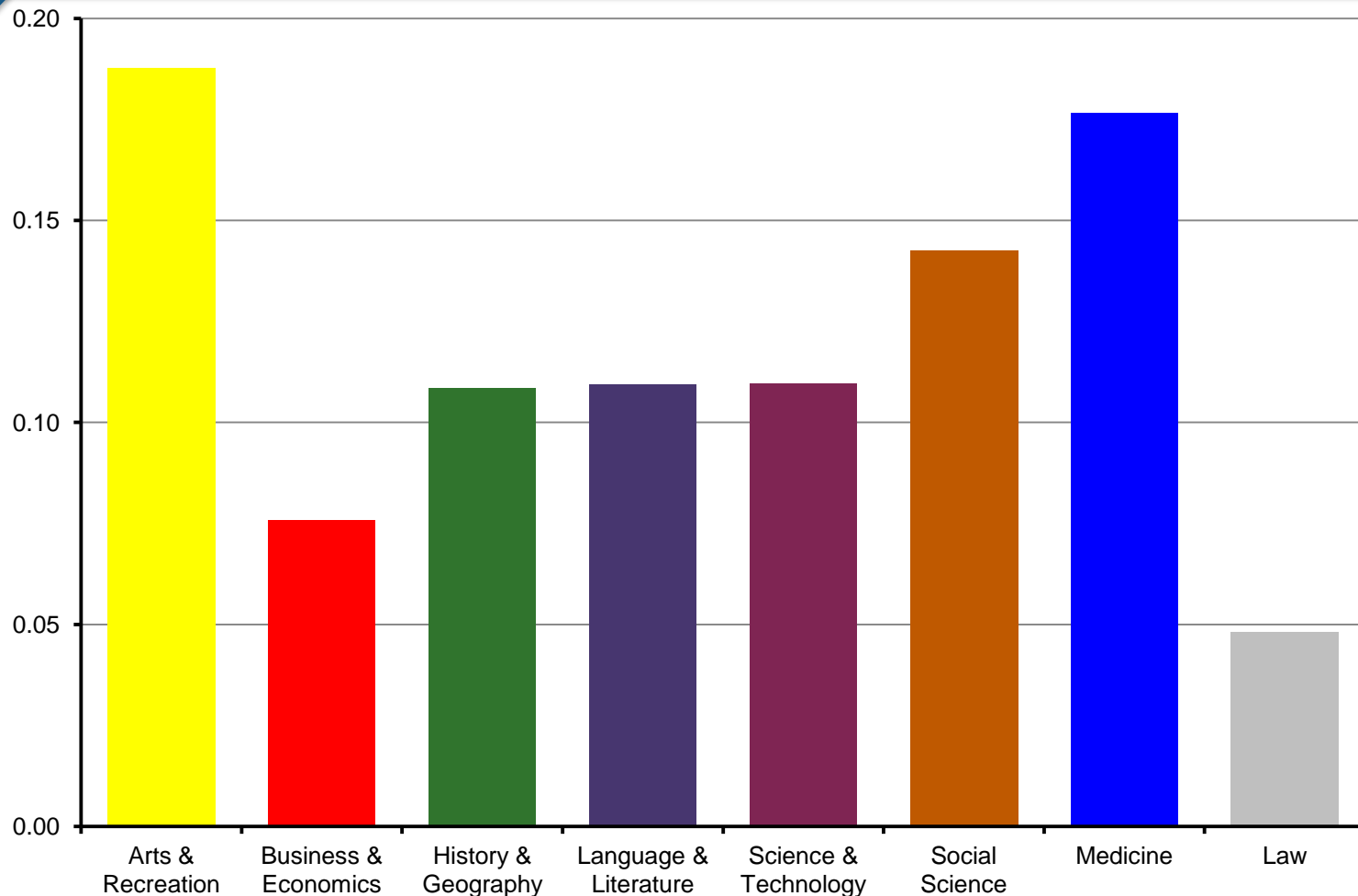
(Scholarly) 1

# Subject Distribution of Items

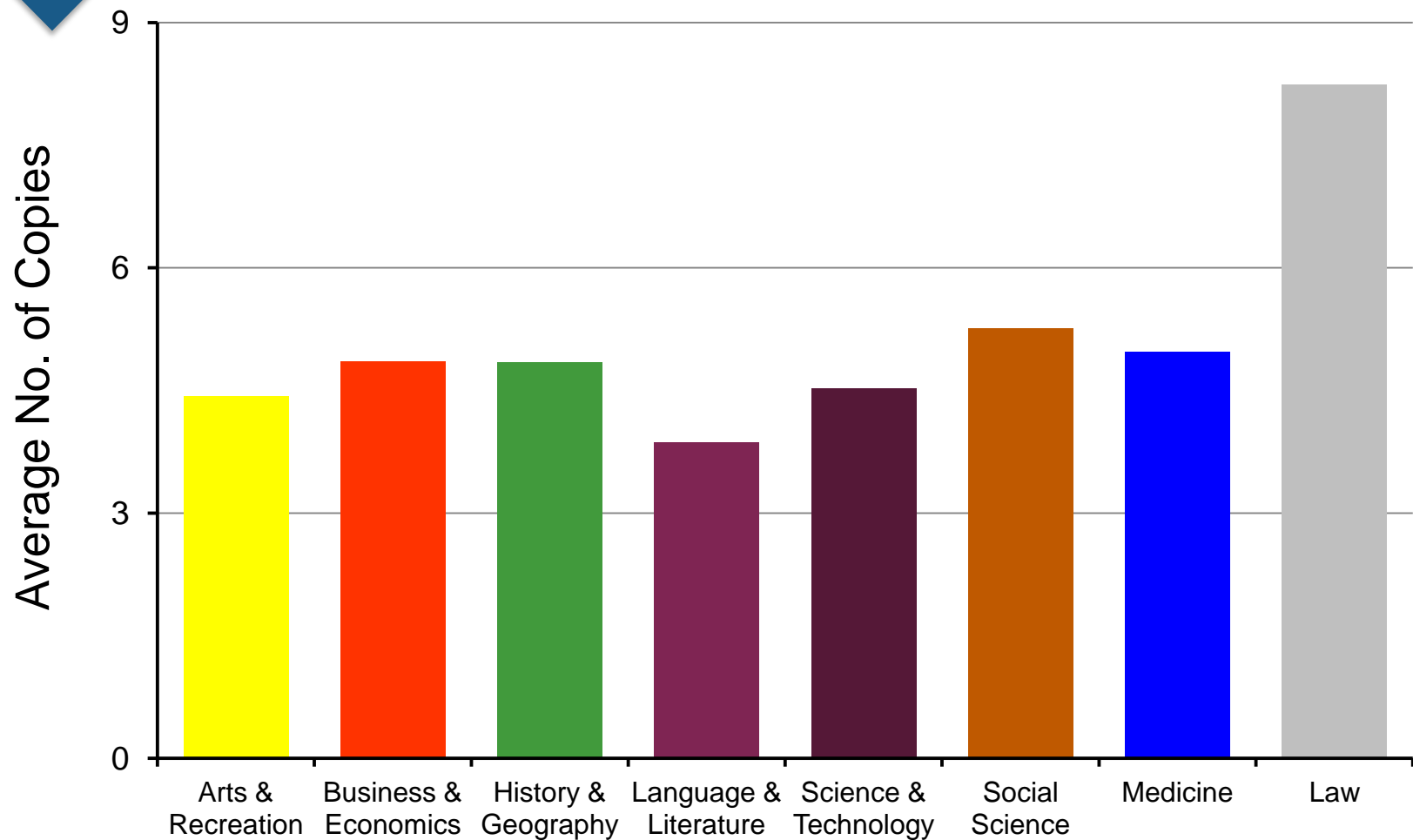




# Annual Circulation Rates



# Duplication Rates



# Analysis Language

# Language Table (German / Language & Literature)

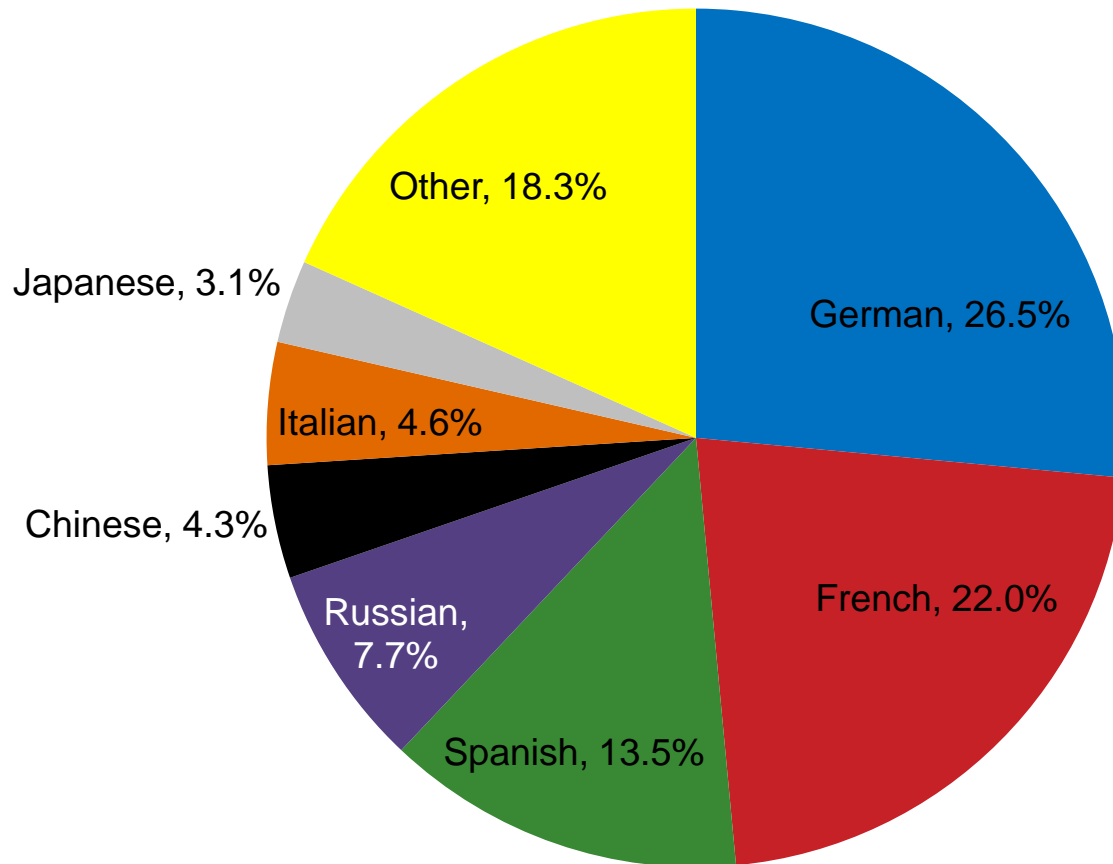
Language / Campus	Number of Works	Number of Man.	Number of Items	Circ. Items	Non-Circ. Items	Annual Circ.	Circ. Rate	Relative Circ. Rate	Average Age
<b>German</b>	<b>87,394</b>	<b>107,670</b>	<b>264,271</b>	250238	5.3%	6,990	0.028	0.219	51.8
Depositories	44,280	49,455	79,421	79398	0.0%	1,645	0.021	0.164	53.3
University of Cincinnati	40,077	42,648	50,475	45938	9.0%	1,606	0.035	0.273	43.5
Oberlin College					1.1%	456	0.023	0.180	51.8
Case Western Reserve University						280	0.025	0.195	82.3
Kent State University									48.8
Ohio State University									34.8
University of Dayton									57.6
Ohio University									41.8
Miami University									35.4
Cleveland State University									44.8
University of Toledo									47.6
Kenyon College						111	0.027	0.211	45.4
Youngstown State University						22	0.006	0.047	47.2
Denison University						129	0.035	0.273	51.6
Ohio Wesleyan University	2,540	2,733	4,481	4,412	1.5%	42	0.010	0.078	82.2
Bowling Green State University	2,445	2,660	2,909	2589	11.0%	187	0.072	0.563	21.1
College of Wooster	2,384	2,504	3,449	3449	0.0%	74	0.021	0.164	66.4
John Carroll University	1,967	2,036	2,300	2210	3.9%	31	0.014	0.109	50.1
Antioch University	1,897	1,991	2,658	2570	3.3%	49	0.019	0.148	58.2
Wittenberg University	1,370	1,490	2,580	2478	4.0%	36	0.015	0.117	61.3
Baldwin-Wallace College	1,089	1,104	1,302	1195	8.2%	36	0.030	0.234	47.9

12 major languages combined with 8 broad subjects are used:

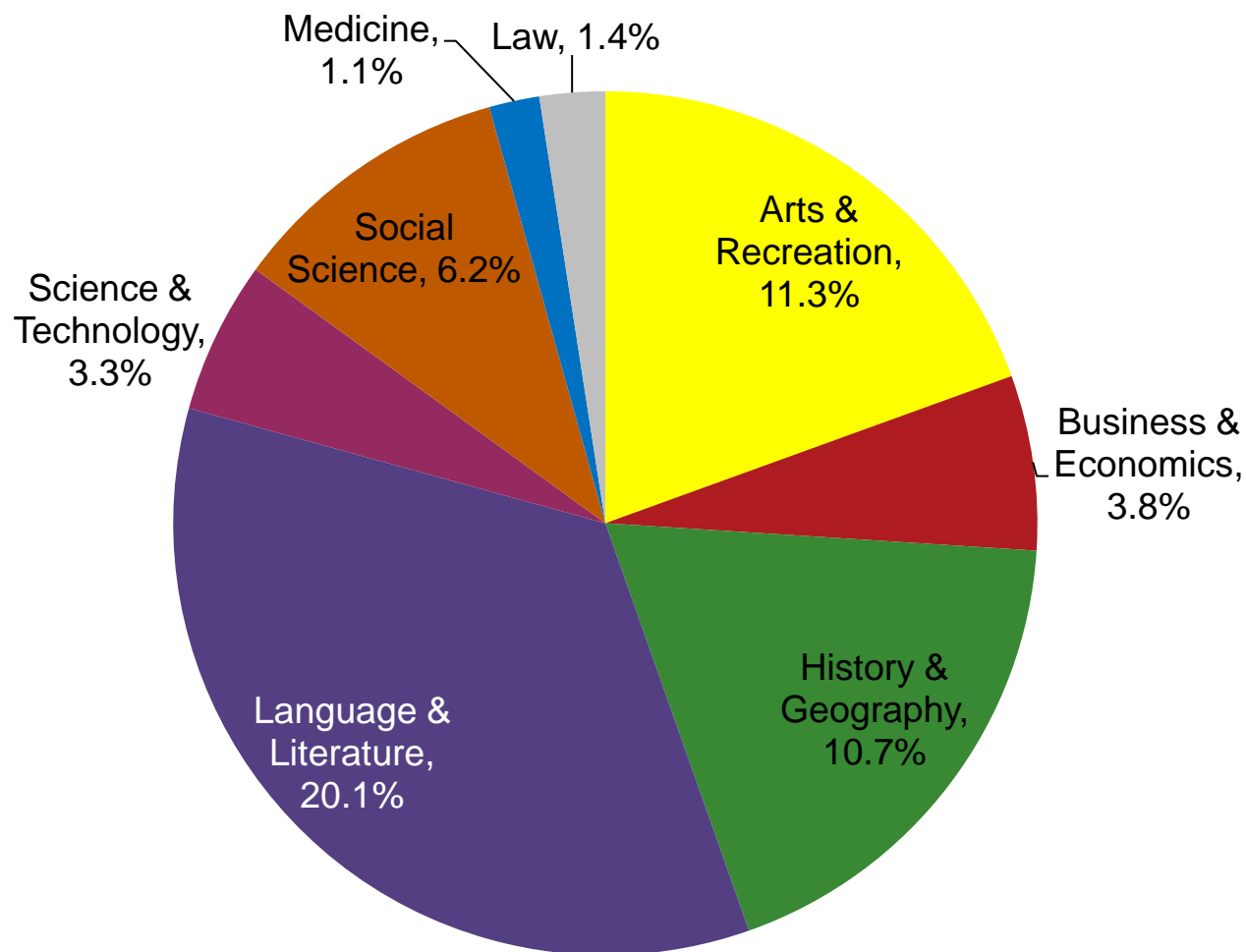
- Arts & Recreation
- Business & Economics
- History & Geography
- Language & Literature
- Science & Technology
- Social Science
- Medicine
- Law

**Relative Circ. Rate:** The circulation rate relative to the rate for English language books.

# Size of Non-English Collections

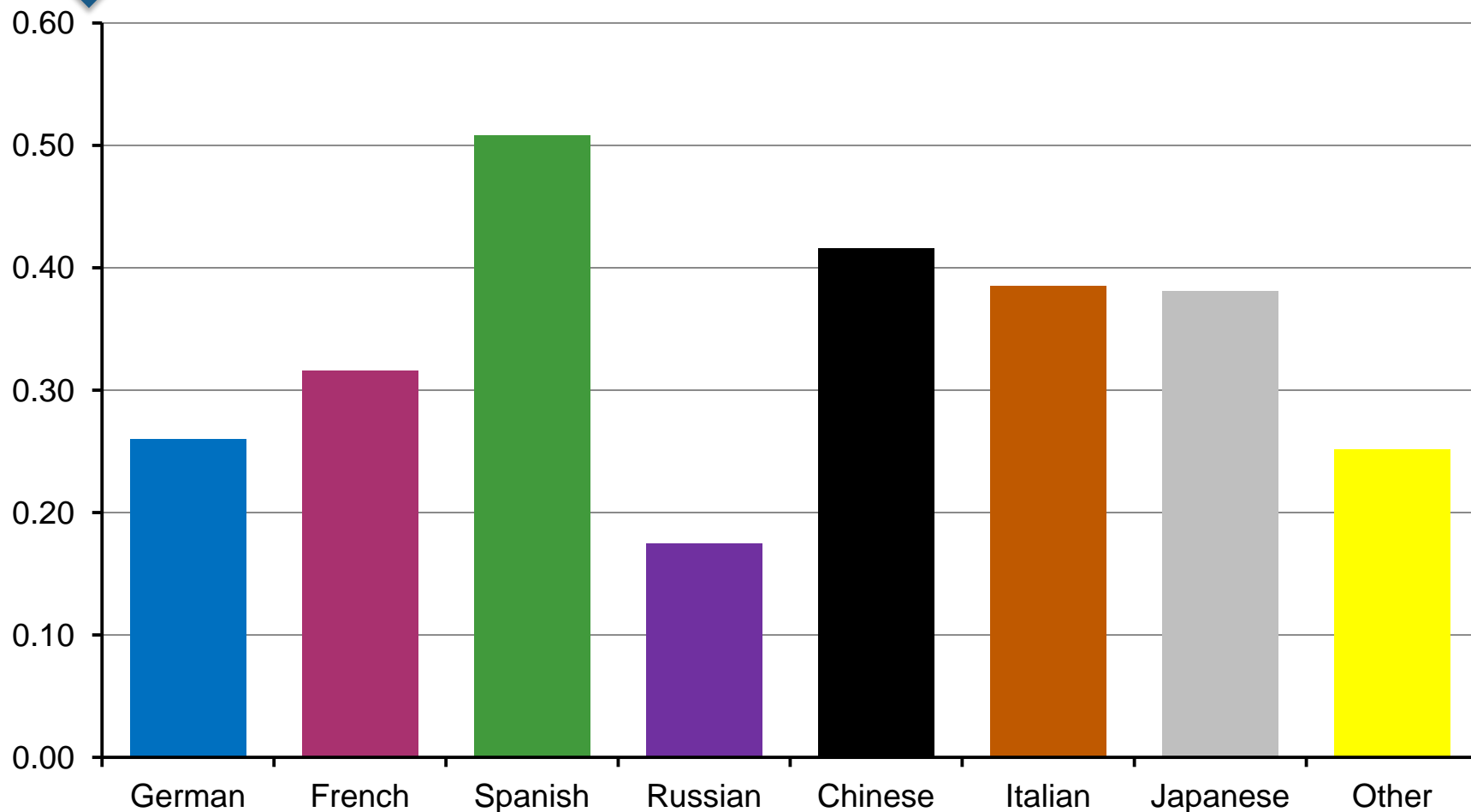


# Non-English by Subject

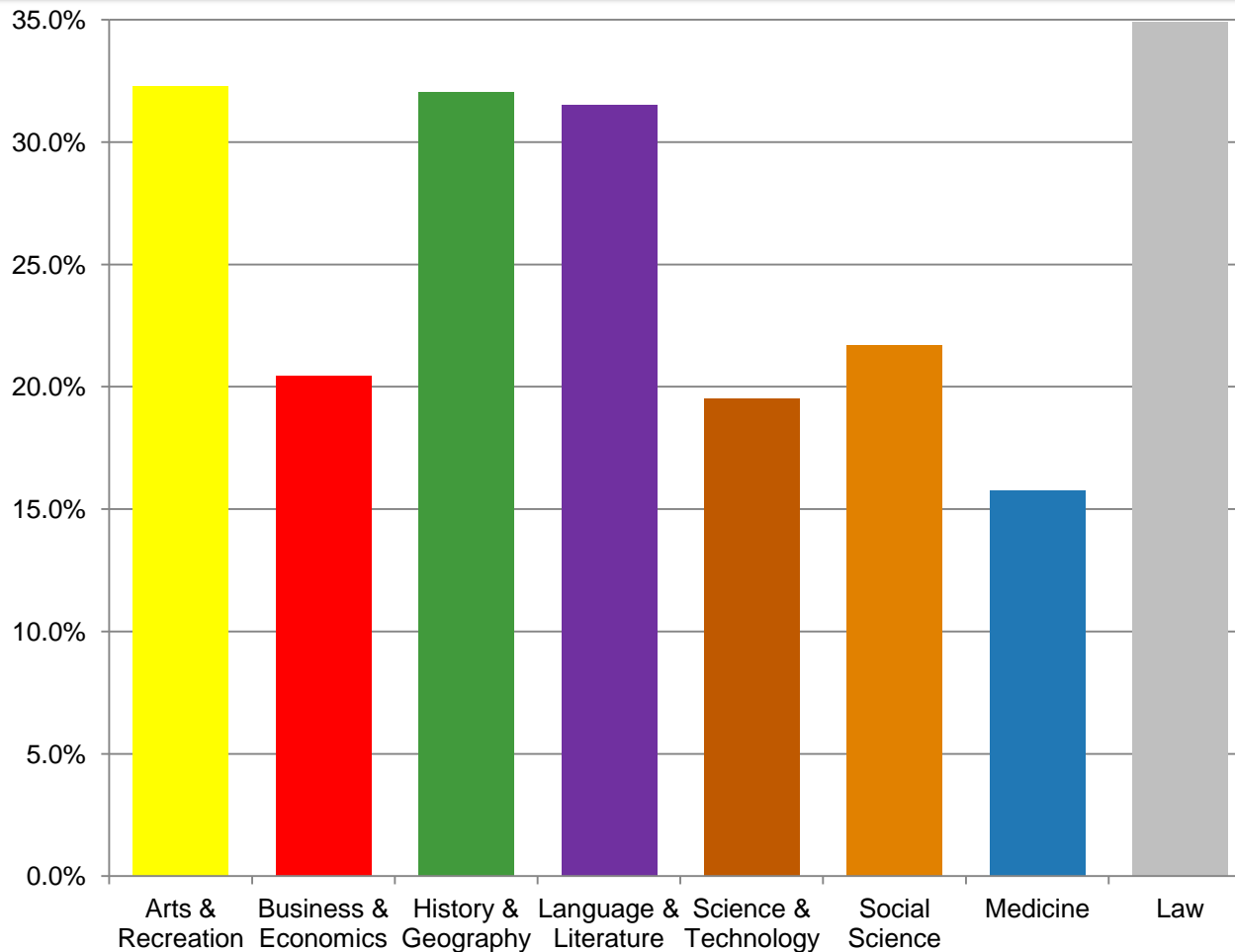




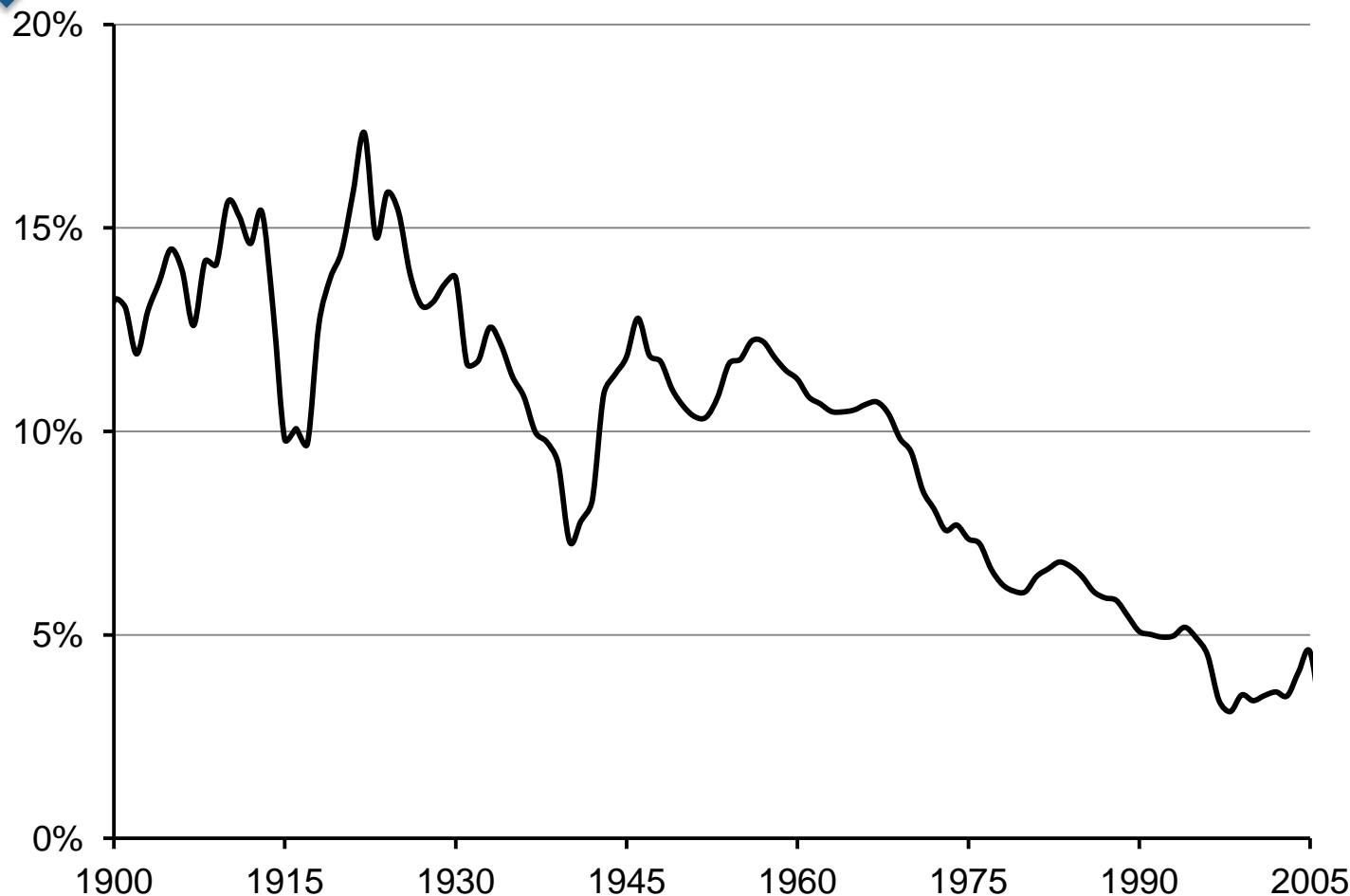
# Relative Usage by Language



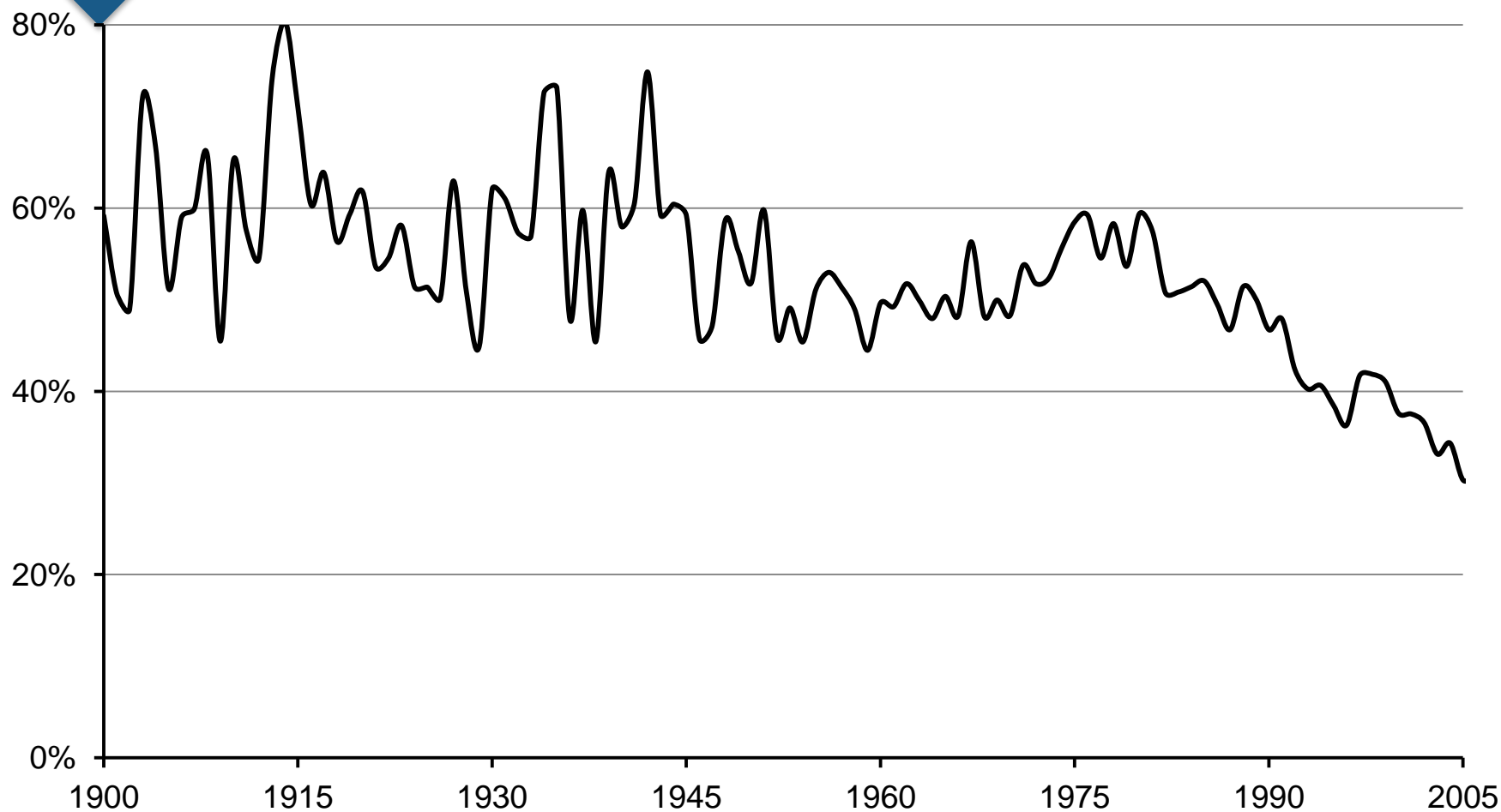
# Relative Usage by Subject



# Non-English Percent of Collection



# Relative Use of Non-English Books by Publication Date



# Project Website

## Activities

[Advancing the Research Mission](#)

[Mobilizing Unique Materials](#)

[Metadata Management](#)

[Infrastructure and Standards Support](#)

[System-wide Organization](#)

[User Behavior Studies & Synthesis](#)

[ResearchWorks](#)

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### OhioLINK Collection & Circulation Analysis

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## OhioLINK Collection and Circulation Analysis

The primary goal of this activity is to better understand the usage patterns of books in academic libraries: what books are (or are not) being used, how many copies are needed, the ideal size of subject collections, etc.

The study is limited to books and manuscripts since these materials typically circulate and circulation is a significant element in evaluating book collections.

Another goal is to investigate whether there has been a shift in the general patterns of use of library collections in a situation where libraries have instituted patron-initiated borrowing from one another.

This project uses OhioLINK circulation data and OCLC WorldCat bibliographic and holdings data to address these concerns. This is a rare and valuable combination, which has been leveraged through the working partnership between OhioLINK, the Collection Building Task Force, and OCLC Research.

### Background

### Lead

[Edward T. O'Neill](#)

### Team Members

#### OCLC

- [Rick Bennett](#)
- Chris Stanton

#### OhioLINK Collections Building Task Force

- Joyce Baker, Belmont Technical College
- Margo Warner Curl, The College



# Complete Analysis Online



OhioLINK Analysis Results:

- [By Institution](#)
- [Collective Results](#)

## [Final Report](#)

OhioLINK Collection Building Task Force, Julia Gammon, and Edward T. O'Neill. 2011. *OhioLINK–OCLC Collection and Circulation Analysis Project 2011*. Dublin, Ohio: OCLC Research.



# Conclusions

- ❑ Very limited use of non-English materials.
- ❑ Unique resources widely distributed.
- ❑ Circulation rates vary greatly by subject, institution, language, ...
- ❑ Collectively duplication level are high.
- ❑ Massive amount of rarely used in copyright books.
- ❑ Analysis is ongoing within OCLC & OhioLINK.
- ❑ Other researchers encouraged to study the data.

Questions?

Comments?

Suggestions?

ONEILL@OCLC.ORG