National Institutes of Health
Office of Management

Publication Analysis Services in Libraries: What, Why, and How

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Office of Research Services
National Institutes of Health
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

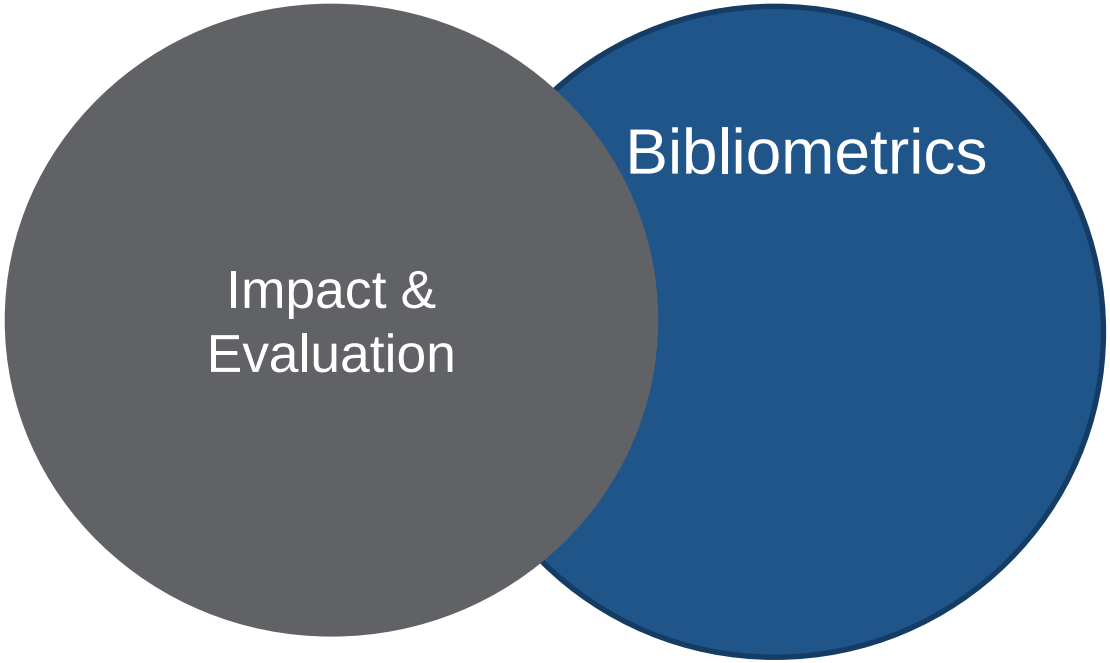
Agenda

- What are Bibliometrics? Key concepts
- Why Bibliometric services? Applications and uses
- Benchmarking individuals and research groups: Citation impact metrics
  - Getting data in and out of Web of Science
  - Basic bibliometric features in Web of Science
  - Basic bibliometric features in InCites and Essential Science Indicators
  - Citation percentiles: Why and how
  - Exercise

- Break: 15 minutes

- Visualizing collaboration and research topics
  - Getting the right data format
  - Basic features of the Science of Science Tool (Sci2)
  - Co-author network analysis
  - Basic features of Gephi
  - Research topic analysis
    - Word co-occurrence analysis
    - Bibliographic coupling
  - Exercise
- Questions and next steps for learning more

What are bibliometrics?



Bibliometrics are quantitative methods of studying scientific research using publications as a proxy for research

Bibliometrics are

- A set of tools
- A statistical approach
- Analysis of structure, dynamics, patterns.
- Rationale for policies & design

It has applications in

- History of science
- Sociology of science
- Library science (collection, weeding, policies)
- Information organization & management; IR
- Science policy; resource allocation

Why librarians?

We are part of its history.

We have skills in IS, IR, and KM.

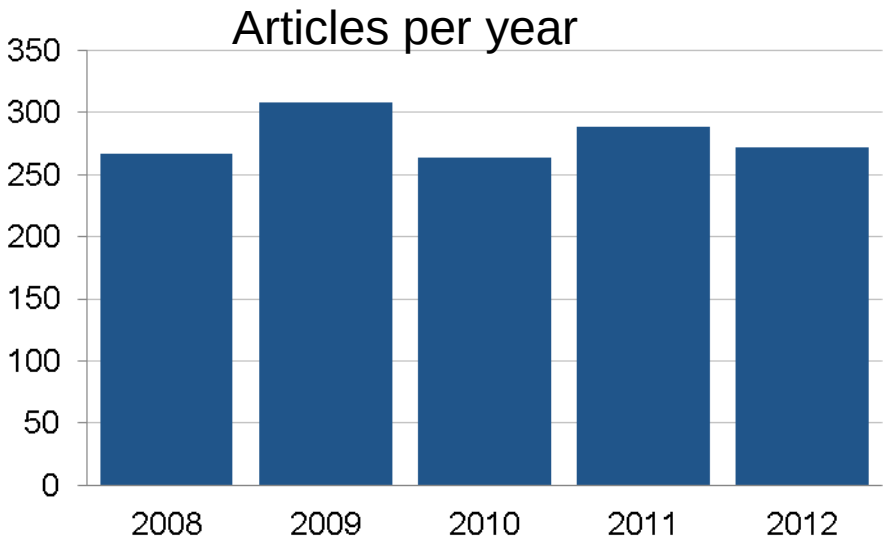
We have provided annotated bibliographies and topic summaries for decades.

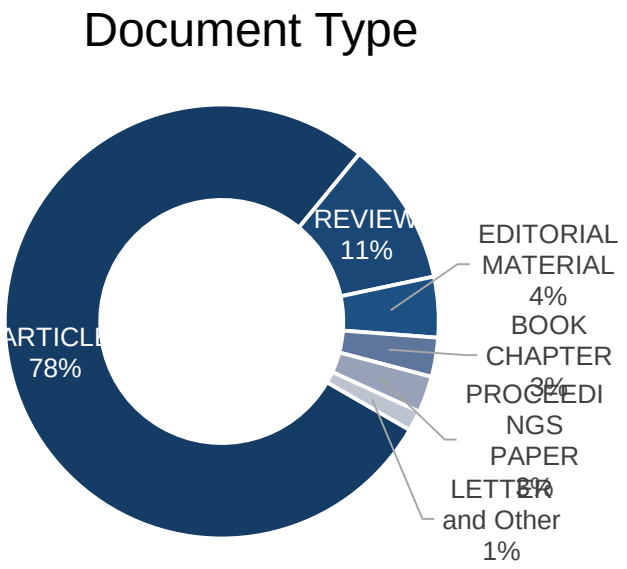
We are trusted to provide accurate and unbiased information.

We provide customized information services.

What can bibliometric analyses do?

Productivity

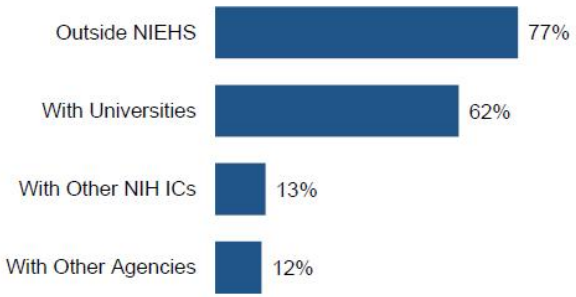




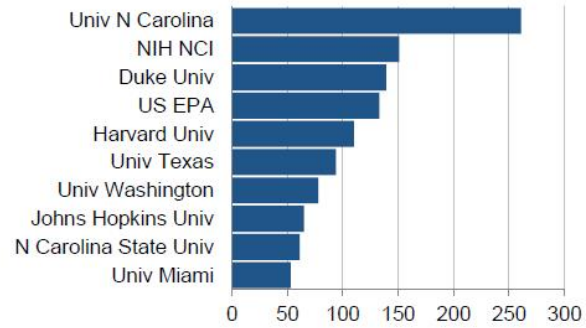
Collaboration: Institutional

Collaboration

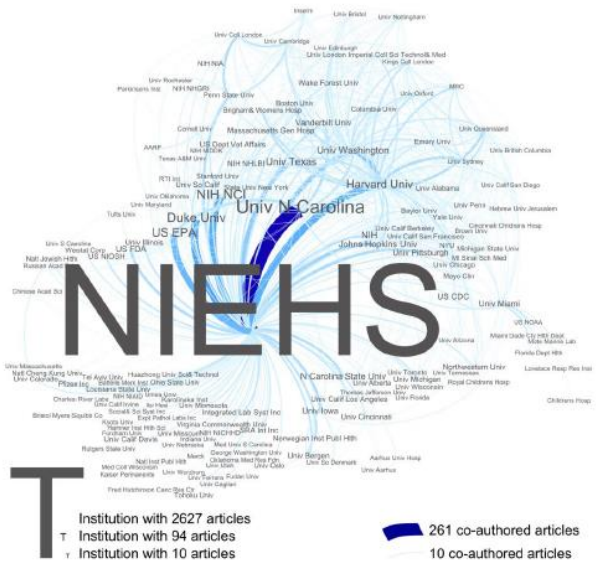
Estimated Co-Authorship Rates[4]



Institutional Co-Authored Papers[5]

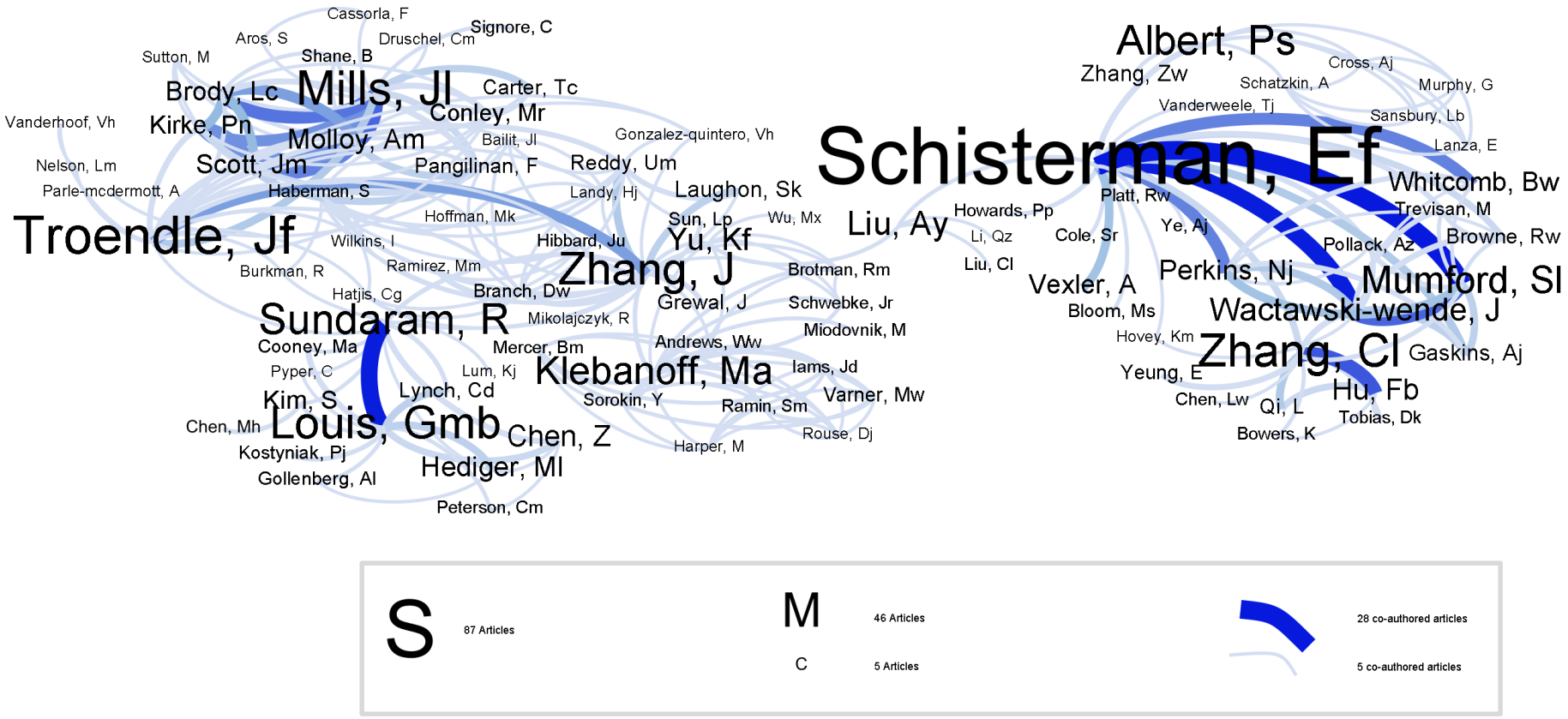


Institutional Co-Authorship Network[6]

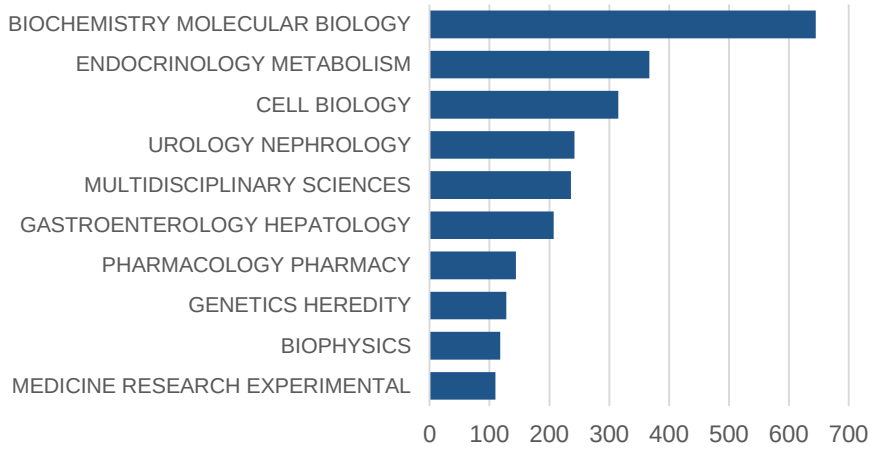


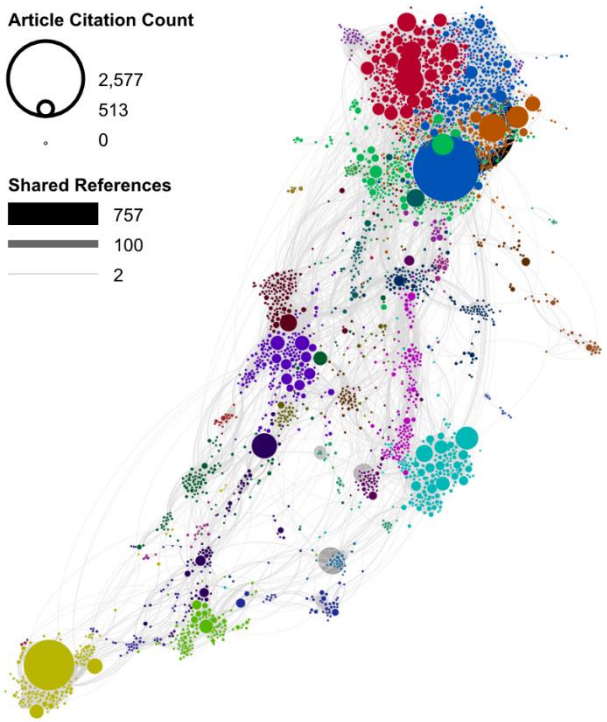
January 2015

Collaboration: Individual



Research topics





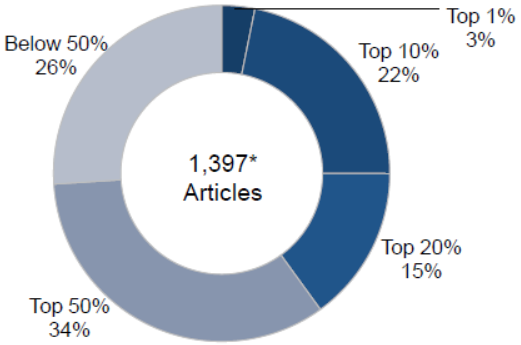
Major MeSH	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Wounds and Injuries	0	2	1	3	4	9	5	6	3	4	37
Suicide/attempted suicide/suicidal ideation	0	0	0	4	2	4	3	5	3	0	21
Alcohol-Related Disorders/Alcoholism/Alcohol drinking	0	0	0	1	2	4	2	6	3	0	18
Accidents/Traffic accidents	0	0	0	1	3	6	2	2	2	2	18
Emergency Medical Services	0	0	0	2	0	0	1	4	1	1	9
Occupational Exposure/Occupational Diseases/Occupational accidents	0	1	1	0	1	1	1	0	2	1	8
Agriculture/Agricultural Workers' Disease	0	1	1	0	1	1	1	1	1	1	8
Brain Injuries	0	0	0	0	2	2	1	2	1	0	8
Impulsive Behavior	0	0	0	1	1	1	0	2	2	0	7
Health education/Health knowledge/Health personnel	0	0	0	3	1	0	1	0	2	0	7
Population Surveillance	0	0	0	1	0	1	0	3	0	1	6
Polymorphism	0	0	0	0	1	0	1	2	2	0	6
Rural Population/Rural Health Services	0	0	1	0	2	2	0	0	0	0	5
Developing Countries	0	0	0	1	0	1	0	1	2	0	5
Mental health/Mental disorders	0	0	0	1	0	1	0	1	1	1	5
Social adjustment/Social control/Social support	0	0	0	1	0	0	1	0	2	0	4
Receptor, Serotonin, 5-HT1A/genetics	0	0	0	0	0	0	1	2	1	0	4
Sleep Disorders	0	0	0	0	1	1	1	1	0	0	4
Automobile Driving	0	0	1	1	1	0	0	0	1	0	4
Abdominal injuries	0	0	0	0	0	0	2	2	0	0	4

Citation impact

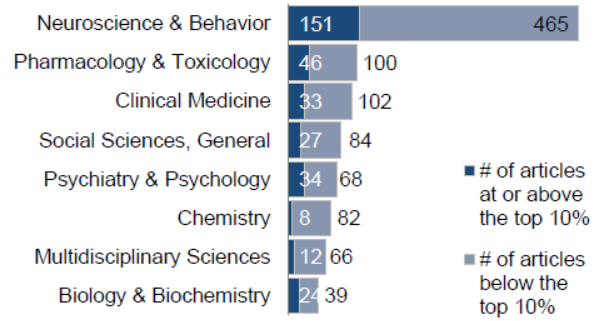
Citation Impact: Entire Institute

Bibliometric Indicator[11]	Value
Number of articles	1,399
Number of citations	29,517
Mean citation count	21.09
Median citation count	12
H-Index	72
# of articles in the top 10% for citations	341
% of articles in the top10% for citations	25%

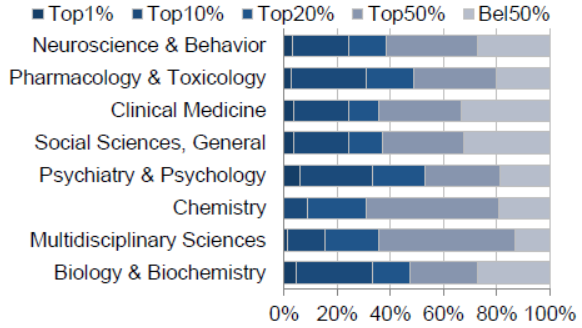
% of Articles per Citation Percentile Rank[12]



Distribution of Articles per ESI Subject Category[13]



% Distribution of Articles per ESI Subject Category[14]



*Note: two articles could not be accurately assigned to percentile ranks, so we excluded them from these analyses.

October 2014

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Office of Management

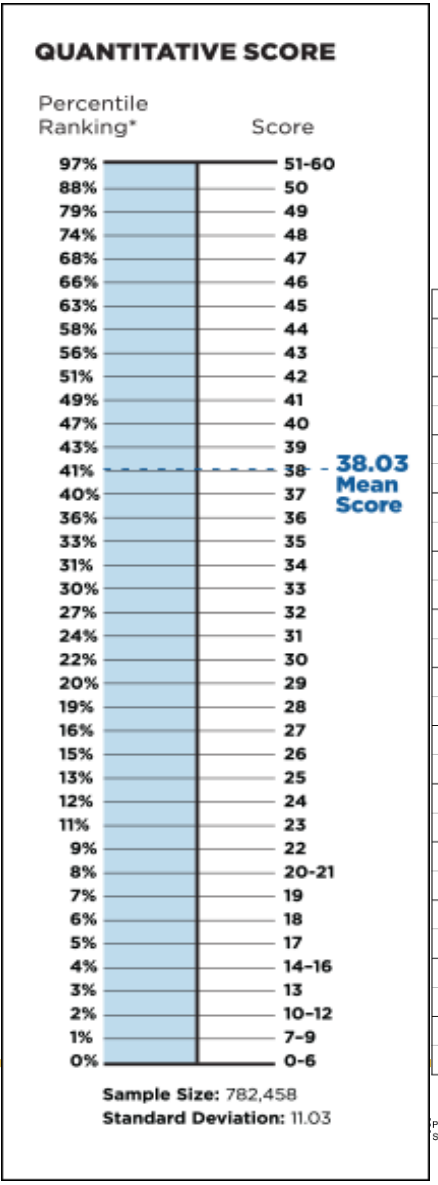
DEMO: How?

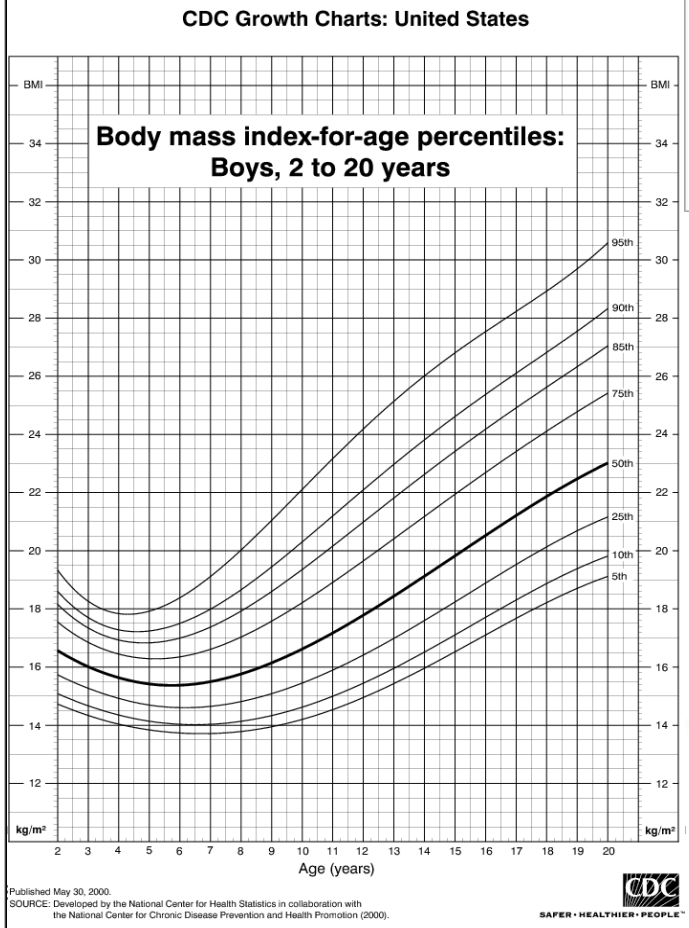
Getting data in and out of WOS

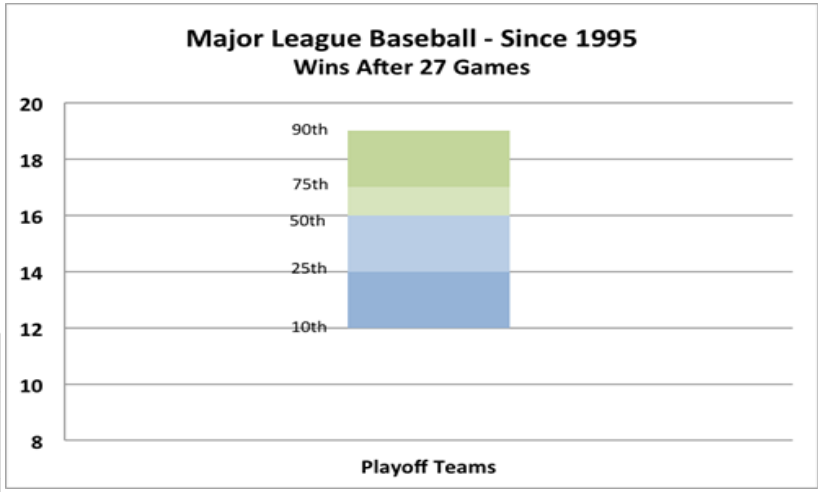
National Institutes of Health
Office of Management

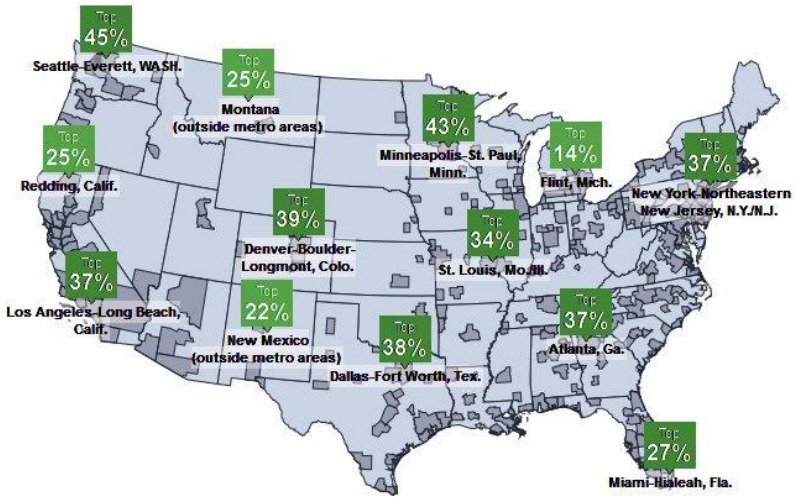
Citation Impact: Percentile ranking using InCites and ESI

Percentiles







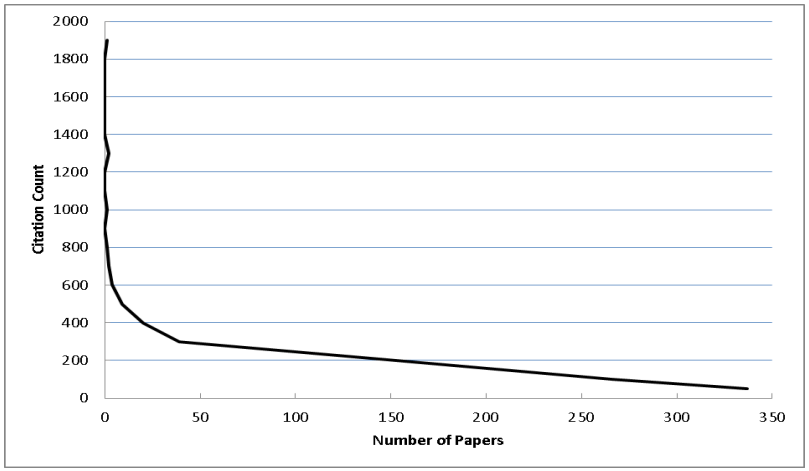


Why percentiles?

- Easy to interpret/compare:
  - You know where you are (paper 5 times better than average papers in field A vs. Top 10% paper in field A)
  - Theoretically, an average institution/author should have 10% of the papers in the top 10% for citation.
  - We can also use the top 10% value as an indicator of excellence paper. The more top 10% papers, the better the research in terms of citation impact.

- Percentiles are not strongly influenced by extremes

Citation distribution is not a normal distribution



- Percentiles can normalize citation impact of publications: based on subject category and publication year

Challenges

- Calculation
  - Equal citations?
    - Use the average rank
    - Use the same rank
  - 0 citation?
  - Articles that have multiple subject categories?
    - “Why do I have to know citation percentiles?” NIHL Journal, 2012.
    - Subject category: A, B, C, D
- Database limitation
- Time consuming!

How to do it (manually)?

A1 to A10	99 percentile	Top 1%
A11 to A20	98 percentile	Top 2%
A21 to A30	97 percentile	Top 3%
.	.	.
.	.	.
.	.	.
.	.	Below 50%
.	.	Below 90%
A981 to A990	2 percentile	.
A991 to A1000	1 percentile	.

Percentile Ranking	Citation Threshold	Where is your paper?
Top 1%	204	
Top 10%	52	?
Top 20%	32	
Top 50%	14	

Further reading

- Bornmann, L., Leydesdorff, L., & Mutz, R. (2013). The use of percentiles and percentile rank classes in the analysis of bibliometric data: Opportunities and limits.*Journal of Informetrics, 7*(1), 158-165. doi:10.1016/j.joi.2012.10.001
- Bornmann, L., Leydesdorff, L., & Wang, J. (2013). Which percentile-based approach should be preferred for calculating normalized citation impact values? an empirical comparison of five approaches including a newly developed citation-rank approach (P100). *Journal of Informetrics, 7*(4), 933-944. doi:10.1016/j.joi.2013.09.003
- Waltman, L., & Schreiber, M. (2013). On the calculation of percentile-based bibliometric indicators. *Journal of the American Society for Information Science and Technology, 64*(2), 372-379. doi:10.1002/asi.22775

How to do it in InCites?

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Web of Science Documents

Documents Per Page 10

Article Title	Authors	Source	Volume	Issue	Pages	Publication Date	Times Cited	Journal Expected Citations	Category Expected Citations	Journal Normalized Citation Impact	Category Normalized Citation Impact	Percentile in Subject Area	Journal Impact Factor
Mutations of LRTOMT, a fusion gene with alternative reading frames, cause nonsyndromic deafness in humans	Ahmed, Zubair M.; Masmoudi, Saber; Kalay, Ersan; Belyantseva, Inna A.; Mosrati, Mohamed Ali	NATURE GENETICS	40	11	1335-1340	2008	26	219.08	28.66	0.12	0.91	30.44	29.35
Do mutations of the Pendred syndrome gene, SLC26A4, confer resistance to asthma and hypertension?	Madeo, A. C.; Manichaikul, A.; Pryor, S. P.; Griffith, A. J.	JOURNAL OF MEDICAL GENETICS	46	6	405-406	2009	8	36.27	24.57	0.22	0.33	64.19	6.34
Segregation of enlarged vestibular aqueducts in families with non-diagnostic SLC26A4 genotypes	Choi, B. Y.; Madeo, A. C.; King, K. A.; Zalewski, C. K.; Pryor, S. P.	JOURNAL OF MEDICAL GENETICS	46	12	856-861	2009	14	36.27	24.57	0.39	0.57	46.5	6.34
A Noncoding Point Mutation of Zeb1 Causes Multiple Developmental Malformations and Obesity in Twirler Mice	Kurima, Kiyoto; Hertzano, Ronna; Gavrilova, Oksana; Monahan, Kelly; Shpargel, Karl B.	PLOS GENETICS	7	9	n/a	2011	8	34.2	16.53	0.23	0.48	51.97	7.53
Cell Type-Specific Transcriptome Analysis Reveals a Major Role for Zeb1 and miR-200b in Mouse Inner Ear Morphogenesis	Hertzano, Ronna; Elkon, Ran; Kurima, Kiyoto; Morrisson, Annie; Chan, Siaw-Lin	PLOS GENETICS	7	9	n/a	2011	21	34.2	16.53	0.61	1.27	20.09	7.53
Hypo-Functional SLC26A4 Variants Associated with Nonsyndromic Hearing Loss and Enlargement of the Vestibular Aqueduct: Genotype-Phenotype Correlation or Coincidental Polymorphisms?	Choi, Byung Yoon; Stewart, Andrew K.; Madeo, Anne C.; Pryor, Shannon P.; Lenhard, Suzanne	HUMAN MUTATION	30	4	599-608	2009	70	31.08	24.57	2.25	2.85	6.17	5.34
Allelic hierarchy of CDH23 mutations causing non-syndromic deafness DFNB12 or Usher syndrome USH1D in compound	Schultz, Julie M.; Bhatti, Rashid; Madeo, Anne C.; Turriff, Amy;	JOURNAL OF MEDICAL GENETICS	48	11	767-775	2011	21	21.51	16.53	0.98	1.27	20.09	6.34

How to do it in ESI?

- Matching!

Citation Rates

Percentiles

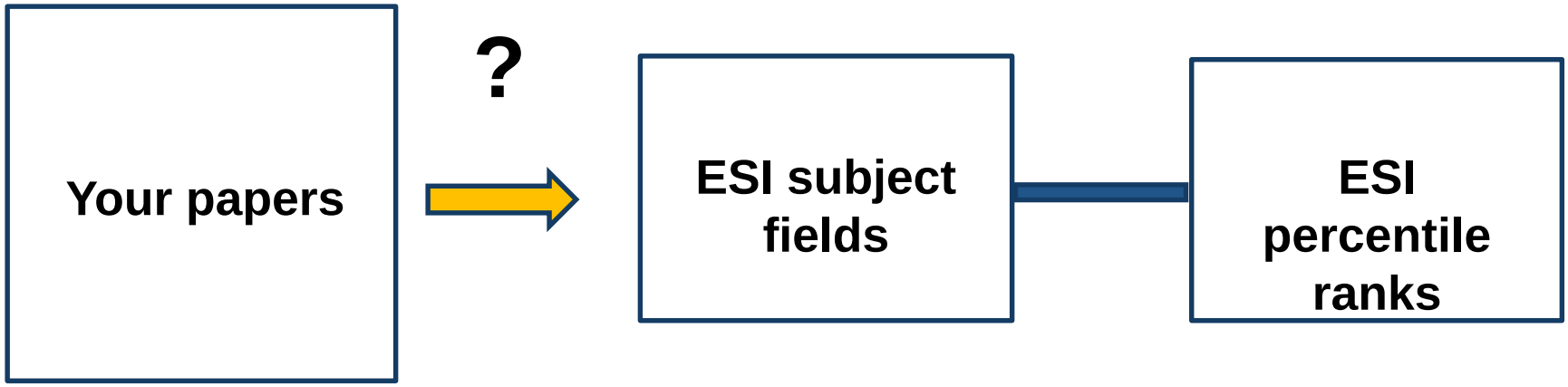
Field Rankings

RESEARCH FIELDS	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ALL FIELDS										
0.01%	1,728	1,493	1,408	1,230	1,153	855	625	483	250	
0.10%	604	549	497	442	378	312	233	162	96	
1.00%	196	176	160	141	121	101	77	55	33	
10.00%	53	48	44	38	34	28	22	16	10	
20.00%	31	29	26	23	21	17	14	10	6	
50.00%	11	10	9	8	7	6	5	4	2	
AGRICULTURAL SCIENCES										
0.01%	1,262	456	431	487	357	292	220	107	86	
0.10%	276	268	233	188	156	126	94	63	35	
1.00%	120	105	95	80	64	57	41	30	18	
10.00%	41	38	34	29	25	21	16	12	7	
20.00%	27	25	22	18	16	13	10	8	5	
50.00%	10	10	8	6	6	5	4	3	2	
BIOLOGY & BIOCHEMISTRY										
0.01%	1,722	1,886	1,726	1,576	1,687	1,202	958	750	362	
0.10%	662	572	547	489	444	317	226	161	109	
1.00%	237	214	195	173	146	117	85	61	36	
10.00%	73	65	57	51	45	37	28	21	12	
20.00%	46	41	37	33	29	24	19	13	8	
50.00%	19	18	15	14	12	10	8	6	4	
CHEMISTRY										
0.01%	1,729	1,473	1,555	1,701	1,537	1,014	712	627	305	
0.10%	548	528	502	510	432	392	274	221	115	
1.00%	189	171	156	147	130	118	96	70	44	
10.00%	52	49	44	41	37	32	26	21	13	
20.00%	32	30	27	25	23	20	16	13	8	
50.00%	11	10	9	9	8	7	6	5	3	
CLINICAL MEDICINE										

ESI limitations

- 11 year period (2006 to 2016)
- ESI has 22 broad research subject areas/fields
- ESI assigns journals to the subject areas/fields
- Most book series and conference proceedings are not indexed by ESI

Workflow



- ESI is based on WOS citations information.
- Unfortunately, ESI subject fields are not included in the WOS metadata.
- Fortunately, ESI has a (secret) journal list that shows the ESI subject fields classification.

It's a matter of matching…

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AU	BA	BE	GP	AF	BF	CA	TI	SO	SE	BS
Eliav, U; Komlosh, M; Basser, PJ; Navon, G				Eliav, Uzi; Komlosh, Michal; Bas			Characteri	NMR IN BIOMEDICINE		
Freidlin, RZ; Kakareka, JW; Pohida, TJ; Kor				Freidlin, R. Z.; Kakareka, J. W.; I			A spin ech	JOURNAL OF MAGNETIC F		
Ozarslan, E; Shepherd, TM; Koay, CG; Blac				Oezarslan, Evren; Shepherd, Ti			Temporal	NEUROIMAGE		
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Shemesh, N; Ozarslan, E; Bar-Shir, A; Bass				Shemesh, Noam; Oezarslan, Ev			Observati	JOURNAL OF MAGNETIC F		
Freidlin, RZ; Ozarslan, E; Assaf, Y; Komlosl				Freidlin, Raisa Z.; Oezarslan, Ev			A multivai	NMR IN BIOMEDICINE		
Ozarslan, E; Koay, CG; Basser, PJ				Oezarslan, Evren; Koay, Cheng			Remarks c	MAGNETIC RESONANCE II		
Barazany, D; Basser, PJ; Assaf, Y				Barazany, Daniel; Basser, Peter			In vivo me	BRAIN		
Shemesh, N; Ozarslan, E; Basser, PJ; Cohe				Shemesh, Noam; Ozarslan, Evr			Measuring	JOURNAL OF MAGNETIC F		
Koay, CG; Ozarslan, E; Basser, PJ				Koay, Cheng Guan; Oezarslan, E			A signal tr	JOURNAL OF MAGNETIC F		
Ozarslan, E; Shemesh, N; Basser, PJ				Ozarslan, Evren; Shemesh, Noa			A general	JOURNAL OF CHEMICAL P		
Basser, PJ; Ozarslan, Johansen Berg, H; Be				Basser, Peter J.; Oezarslan, Evr			Introducti	DIFFUSION MRI: FROM QU		
Roth, BJ; Basser, PJ				Roth, Bradley J.; Basser, Peter			Mechanic	MAGNETIC RESONANCE II		
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LA	DT	DE	ID	AB	C1	RP	EM	RI	OI	FU	FX	CR
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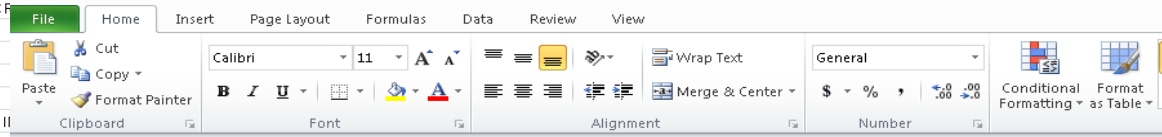


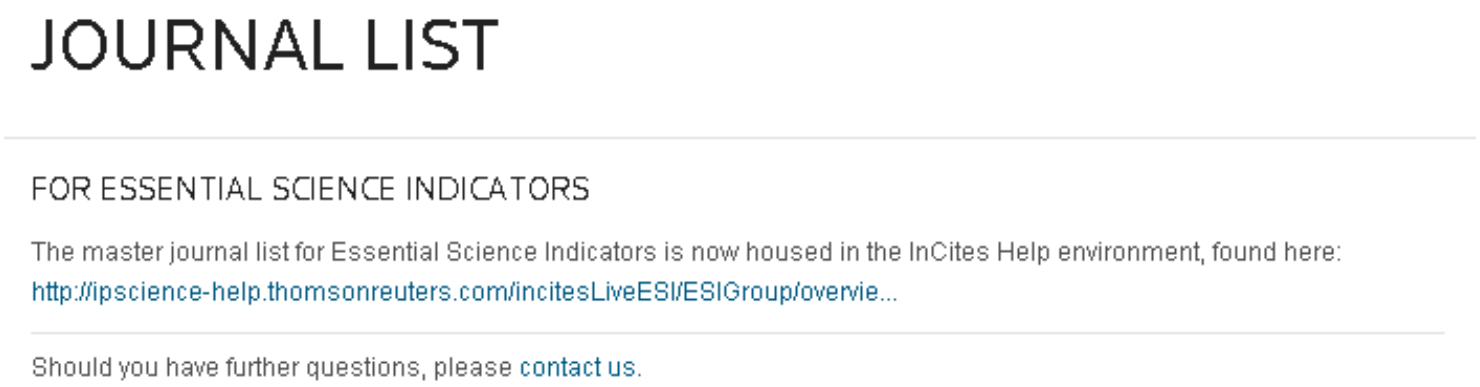
	A	B	C	D	E
1	**Source Title**	**Title29**	**ISSN**	**EISSN**	**Category name**
2	ACTA AGRICULTURAE SCANDINAVICA SECTION B-SOIL AND PLANT	ACTA AGR SCAND SECT	0906-4710	1651-1913	AGRICULTURAL SCIENCES
3	ACTA ALIMENTARIA	ACTA ALIMENT	0139-3006	1588-2535	AGRICULTURAL SCIENCES
4	Acta Scientiarum Polonorum-Hortorum Cultus	ACTA SCI POL-HORTOR	1644-0692		AGRICULTURAL SCIENCES
5	ACTA SCIENTIARUM-AGRONOMY	ACTA SCI-AGRON	1807-8621	1807-8621	AGRICULTURAL SCIENCES
6	Advances in Agronomy	ADV AGRON	0065-2113		AGRICULTURAL SCIENCES
7	Advances in Agronomy, Vol 115				AGRICULTURAL SCIENCES
8	Advances in Agronomy, Vol 116				AGRICULTURAL SCIENCES
9	Advances in Agronomy, Vol 117				AGRICULTURAL SCIENCES
10	Advances in Agronomy, Vol 118				AGRICULTURAL SCIENCES
11	Advances in Agronomy, Vol 119				AGRICULTURAL SCIENCES
12	Advances in Agronomy, Vol 120				AGRICULTURAL SCIENCES
13	Advances in Agronomy, Vol 121				AGRICULTURAL SCIENCES
14	Advances in Agronomy, Vol 122				AGRICULTURAL SCIENCES
15	Advances in Agronomy, Vol 123				AGRICULTURAL SCIENCES
16	Advances in Agronomy, Vol 124				AGRICULTURAL SCIENCES
17	Advances in Agronomy, Vol 125				AGRICULTURAL SCIENCES
18	ADVANCES IN NUTRITIONAL RESEARCH	ADV NUTR RES	0149-9483		AGRICULTURAL SCIENCES
19	Agrarforschung Schweiz	AGRARFORSCHUNG SCH	1663-7852	1663-7909	AGRICULTURAL SCIENCES
20	Agribusiness	AGRIBUSINESS	0742-4477	1520-6297	AGRICULTURAL SCIENCES
21	AGRICULTURAL AND FOOD SCIENCE	AGR FOOD SCI	1459-6067	1795-1895	AGRICULTURAL SCIENCES
22	AGRICULTURAL AND FOREST METEOROLOGY	AGR FOREST METEOROL	0168-1923	1873-2240	AGRICULTURAL SCIENCES
23	AGRICULTURAL HISTORY	AGR HIST	0002-1482	1533-8290	AGRICULTURAL SCIENCES
24	AGRICULTURAL SYSTEMS	AGR SYST	0308-521X	1873-2267	AGRICULTURAL SCIENCES
25	AGRICULTURAL WATER MANAGEMENT	AGR WATER MANAGE	0378-3774	1873-2283	AGRICULTURAL SCIENCES
26	AGRO FOOD INDUSTRY HI-TECH	AGRO FOOD IND HI TEC	1722-6996	2035-4606	AGRICULTURAL SCIENCES
27	AGROCHIMICA	AGROCHIMICA	0002-1857		AGRICULTURAL SCIENCES
28	AGROCIENCIA	AGROCIENCIA	1405-3195		AGRICULTURAL SCIENCES
29	Agroecology and Sustainable Food Systems	AGROECOL SUSTAIN FO	2168-3565	2168-3573	AGRICULTURAL SCIENCES
30	AGROFORESTRY SYSTEMS	AGROFOREST SYST	0167-4366	1572-9680	AGRICULTURAL SCIENCES
31	Agronomy for Sustainable Development	AGRON SUSTAIN DEV	1774-0746	1773-0155	AGRICULTURAL SCIENCES
32	AGRONOMY JOURNAL	AGRON J	0002-1962	1435-0645	AGRICULTURAL SCIENCES
33	ALLELOPATHY JOURNAL	ALLELOPATHY J	0971-4693	0974-1240	AGRICULTURAL SCIENCES
34	AMA-Agricultural Mechanization in Asia Africa and Latin America	AMA-AGRIC MECH ASIA	0084-5841		AGRICULTURAL SCIENCES
35	AMERICAN JOURNAL OF ENOLOGY AND VITICULTURE	AMER J ENOL VITICULT	0002-9254	1943-7749	AGRICULTURAL SCIENCES
36	AMERICAN JOURNAL OF POTATO RESEARCH	AM J POTATO RES	1099-209X	1874-9380	AGRICULTURAL SCIENCES

Matching steps

- Download ESI journal list
- Download metadata from WOS
  - Core Collection
  - Text➔Excel
- Match journal titles of your papers (in WOS) to ESI subject fields
  - VLOOKUP
- Find percentile ranks of you papers based on subject field and publication year

Step 1: Get the file!

- http://sciencewatch.com/info/journal-list



JOURNAL LIST

FOR ESSENTIAL SCIENCE INDICATORS

The master journal list for Essential Science Indicators is now housed in the InCites Help environment, found here:
http://ipscience-help.thomsonreuters.com/incitesLiveESI/ESIGroup/overvie...

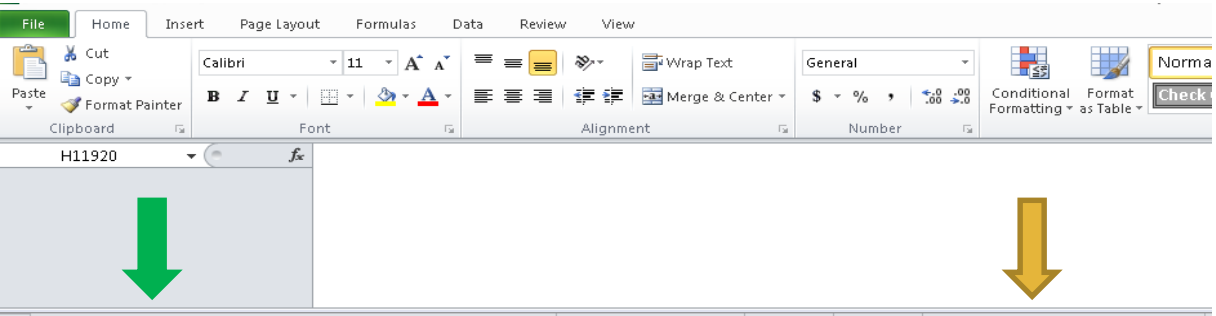
Should you have further questions, please contact us.

- http://ipscience-help.thomsonreuters.com/incitesLiveESI/ESIGroup/overviewESI/esiJournalsList.html

Journals List

The complete list of journals contained in ESI can be downloaded as a .xls file here (application/vnd.openxmlformats-officedocument.spreadsheetml.sheet, 816.2 kB, info).

VOILA!

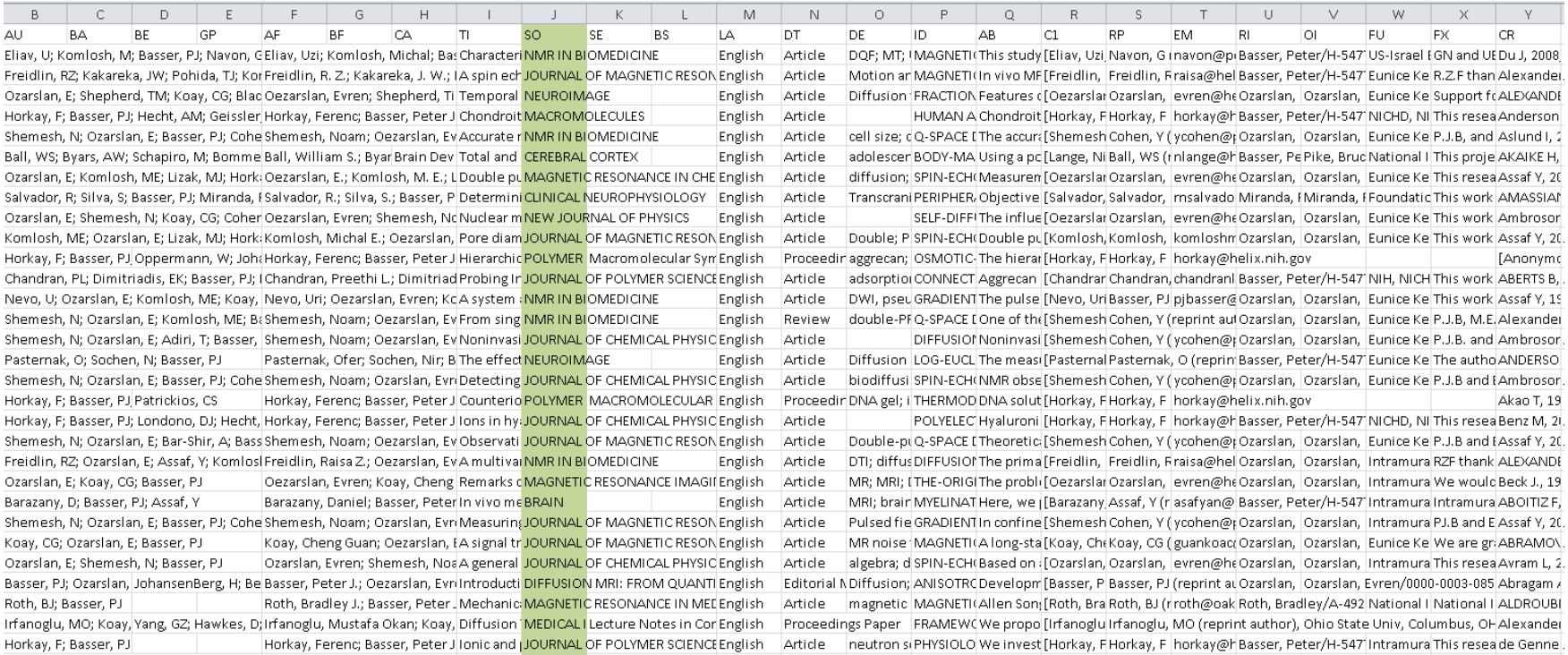


	A	B	C	D	E
1	**Source Title**	**Title29**	**ISSN**	**EISSN**	**Category name**
2	ACTA AGRICULTURAE SCANDINAVICA SECTION B-SOIL AND PLANT	ACTA AGR SCAND SECT	0906-4710	1651-1913	AGRICULTURAL SCIENCES
3	ACTA ALIMENTARIA	ACTA ALIMENT	0139-3006	1588-2535	AGRICULTURAL SCIENCES
4	Acta Scientiarum Polonorum-Hortorum Cultus	ACTA SCI POL-HORTOR	1644-0692		AGRICULTURAL SCIENCES
5	ACTA SCIENTIARUM-AGRONOMY	ACTA SCI-AGRON	1807-8621	1807-8621	AGRICULTURAL SCIENCES
6	Advances in Agronomy	ADV AGRON	0065-2113		AGRICULTURAL SCIENCES
7	Advances in Agronomy, Vol 115				AGRICULTURAL SCIENCES
8	Advances in Agronomy, Vol 116				AGRICULTURAL SCIENCES
9	Advances in Agronomy, Vol 117				AGRICULTURAL SCIENCES
10	Advances in Agronomy, Vol 118				AGRICULTURAL SCIENCES
11	Advances in Agronomy, Vol 119				AGRICULTURAL SCIENCES
12	Advances in Agronomy, Vol 120				AGRICULTURAL SCIENCES
13	Advances in Agronomy, Vol 121				AGRICULTURAL SCIENCES
14	Advances in Agronomy, Vol 122				AGRICULTURAL SCIENCES
15	Advances in Agronomy, Vol 123				AGRICULTURAL SCIENCES
16	Advances in Agronomy, Vol 124				AGRICULTURAL SCIENCES
17	Advances in Agronomy, Vol 125				AGRICULTURAL SCIENCES
18	ADVANCES IN NUTRITIONAL RESEARCH	ADV NUTR RES	0149-9483		AGRICULTURAL SCIENCES
19	Agrarforschung Schweiz	AGRARFORSCHUNG SCH	1663-7852	1663-7909	AGRICULTURAL SCIENCES
20	Agribusiness	AGRIBUSINESS	0742-4477	1520-6297	AGRICULTURAL SCIENCES
21	AGRICULTURAL AND FOOD SCIENCE	AGR FOOD SCI	1459-6067	1795-1895	AGRICULTURAL SCIENCES
22	AGRICULTURAL AND FOREST METEOROLOGY	AGR FOREST METEOROL	0168-1923	1873-2240	AGRICULTURAL SCIENCES
23	AGRICULTURAL HISTORY	AGR HIST	0002-1482	1533-8290	AGRICULTURAL SCIENCES
24	AGRICULTURAL SYSTEMS	AGR SYST	0308-521X	1873-2267	AGRICULTURAL SCIENCES
25	AGRICULTURAL WATER MANAGEMENT	AGR WATER MANAGE	0378-3774	1873-2283	AGRICULTURAL SCIENCES
26	AGRO FOOD INDUSTRY HI-TECH	AGRO FOOD IND HI TEC	1722-6996	2035-4606	AGRICULTURAL SCIENCES
27	AGROCHIMICA	AGROCHIMICA	0002-1857		AGRICULTURAL SCIENCES
28	AGROCIENCIA	AGROCIENCIA	1405-3195		AGRICULTURAL SCIENCES
29	Agroecology and Sustainable Food Systems	AGROECOL SUSTAIN FO	2168-3565	2168-3573	AGRICULTURAL SCIENCES
30	AGROFORESTRY SYSTEMS	AGROFOREST SYST	0167-4366	1572-9680	AGRICULTURAL SCIENCES
31	Agronomy for Sustainable Development	AGRON SUSTAIN DEV	1774-0746	1773-0155	AGRICULTURAL SCIENCES
32	AGRONOMY JOURNAL	AGRON J	0002-1962	1435-0645	AGRICULTURAL SCIENCES
33	ALLELOPATHY JOURNAL	ALLELOPATHY J	0971-4693	0974-1240	AGRICULTURAL SCIENCES
34	AMA-Agricultural Mechanization in Asia Africa and Latin America	AMA-AGRIC MECH ASIA	0084-5841		AGRICULTURAL SCIENCES
35	AMERICAN JOURNAL OF ENOLOGY AND VITICULTURE	AMER J ENOL VITICULT	0002-9254	1943-7749	AGRICULTURAL SCIENCES
36	AMERICAN JOURNAL OF POTATO RESEARCH	AM J POTATO RES	1099-209X	1874-9380	AGRICULTURAL SCIENCES

11,427 Journals!

Step 2: Metadata from WOS

- Download the metadata from WOS



B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
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Salvador, R; Silva, S; Basser, PJ; Miranda, I				Salvador, R.; Silva, S.; Basser, P			Determini	CLINICAL	NEUROPHYSIOLOGY		English	Article	Transcrani	PERIPHER/	Objective	[Salvador,	Salvador,	rnsalvado	Miranda, I	Miranda, I	Foundatic	This work	AMASSIAN
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- Copy and paste the ESI journal list to a different sheet, for instance, Sheet 2.

Step 3: VLOOKUP

- VLOOKUP(cell,range,return value,FALSE)
  - Cell: what to look up? (the cells of your journal titles)
  - Range: where to look up? (the ESI journal list)
  - Return value: what to return if there is a match? (Return the subject field)
  - FALSE: exact match (I want exactly the same journal titles.)

=VLOOKUP(J2,Sheet2!$A$2:$F$11428,6,FALSE)

VLOOKUP

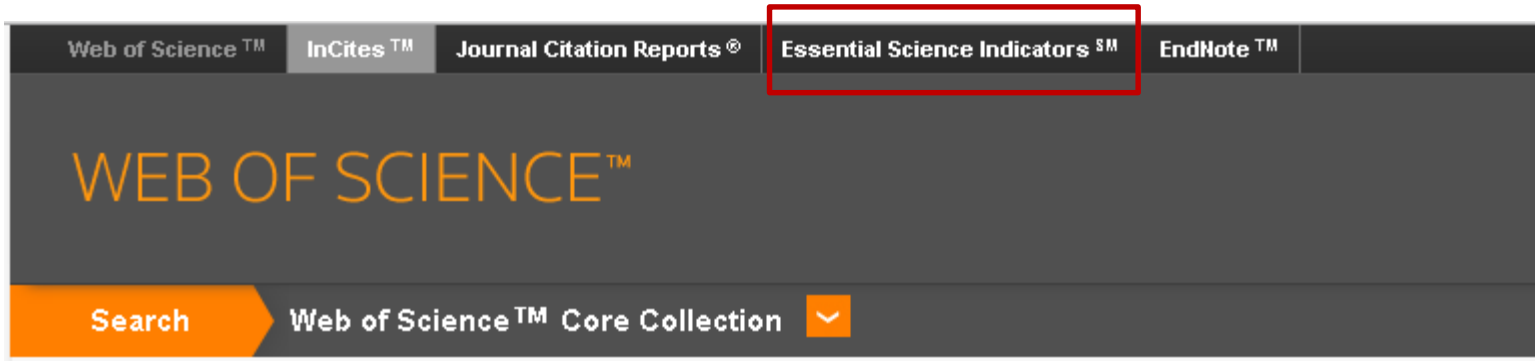
- Sheet 1: publication metadata
- Sheet 2: ESI journal list
- Insert one blank column, anywhere in Sheet 1, for instance, Column B
- In Cell B2, type the following

=VLOOKUP(J2,Sheet2!$A$2:$F$11428,6,FALSE)

- Hit “Enter” and you will get either a subject or #N/A
- Check #N/A items for spelling (and, &, space, etc.)
- Check journal merge or update

Final step—Find the percentile ranks in ESI

Step 4: Finding the percentile



- ESI➔ Field Baselines➔ Percentiles

ESI percentile table

Citation Rates

Percentiles

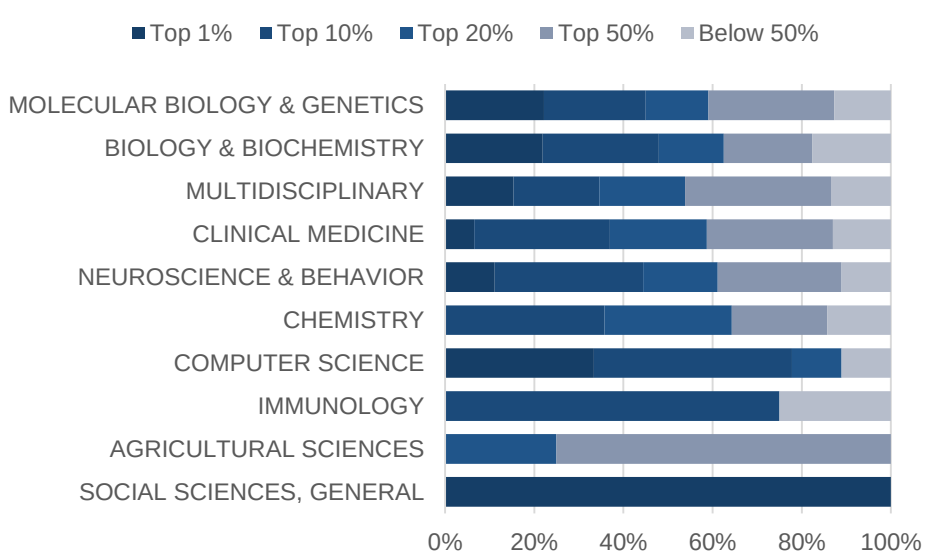
Field Rankings

RESEARCH FIELDS	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ALL FIELDS										
0.01%	1,728	1,493	1,408	1,230	1,153	855	625	483	250	
0.10%	604	549	497	442	378	312	233	162	96	
1.00%	196	176	160	141	121	101	77	55	33	
10.00%	53	48	44	38	34	28	22	16	10	
20.00%	31	29	26	23	21	17	14	10	6	
50.00%	11	10	9	8	7	6	5	4	2	
AGRICULTURAL SCIENCES										
0.01%	1,262	456	431	487	357	292	220	107	86	
0.10%	276	268	233	188	156	126	94	63	35	
1.00%	120	105	95	80	64	57	41	30	18	
10.00%	41	38	34	29	25	21	16	12	7	
20.00%	27	25	22	18	16	13	10	8	5	
50.00%	10	10	8	6	6	5	4	3	2	
BIOLOGY & BIOCHEMISTRY										
0.01%	1,722	1,886	1,726	1,576	1,687	1,202	958	750	362	
0.10%	662	572	547	489	444	317	226	161	109	
1.00%	237	214	195	173	146	117	85	61	36	
10.00%	73	65	57	51	45	37	28	21	12	
20.00%	46	41	37	33	29	24	19	13	8	
50.00%	19	18	15	14	12	10	8	6	4	
CHEMISTRY										
0.01%	1,729	1,473	1,555	1,701	1,537	1,014	712	627	305	
0.10%	548	528	502	510	432	392	274	221	115	
1.00%	189	171	156	147	130	118	96	70	44	
10.00%	52	49	44	41	37	32	26	21	13	
20.00%	32	30	27	25	23	20	16	13	8	
50.00%	11	10	9	9	8	7	6	5	3	
CLINICAL MEDICINE										

Results

NIH Library
Office of Research Services

	A	B	C	D	E	F	G	H	I	J	K	L
1	ID	AU	AF	TI	SO	DT	ESI	TC	PY	PPT	UT	PM
2	384	Zempleni,	Zempleni,	Repressio	JOURNAL	Article	AGRICULTURAL SCIE	12	2009	Top 50%	WOS:0002	19812216
3	334	Bao, BL; R	Bao, Baolc	Biotin Reg	JOURNAL	Article	AGRICULTURAL SCIE	14	2010	Top 20%	WOS:0002	20592104
4	353	Mall, GK; (	Mall, Gaga	Biotin Rec	JOURNAL	Article	AGRICULTURAL SCIE	9	2010	Top 50%	WOS:0002	20357078
5	52	Eng, WK; (	Eng, Wei k	Identificat	BRITISH JC	Article	AGRICULTURAL SCIE	3	2013	Top 50%	WOS:0003	23302490
6	408	Deng, J; Sh	Deng,							Top 1%	WOS:0002	19330000
7	402	Smith, ZD;	Smith,							Top 10%	WOS:0002	19442738
8	406	Koide, S; S	Koide,							Top 10%	WOS:0002	19298050
9	399	Koide, S	Koide,							Top 10%	WOS:0002	19477632
10	409	Zhang, K; (	Zhang							Top 20%	WOS:0002	19113941
11	400	Varley, KE	Varley							Top 20%	WOS:0002	19494183
12	403	Chen, Y; Z	Chen,							Top 50%	WOS:0002	19368407
13	398	Koide, S	Koide,							Top 50%	WOS:0002	19700302
14	391	Lin, HJL; Z	Lin, Hu							Top 50%	WOS:0002	19162126
15	393	Smart, SK;	Smart,							Top 50%	WOS:0002	19621382
16	382	Huang, J; I	Huang							Below 50%	WOS:0002	19928925
17	385	He, YF; Ba	He, Yu							Below 50%	WOS:0002	19834888
18	395	Gao, TY; C	Gao, T							Below 50%	WOS:0002	19434754
19	326	Bernstein,	Bernst							Top 1%	WOS:0002	20944595
20	329	Harris, RA	Harris,							Top 1%	WOS:0002	20852635
21	330	Bock, C; To	Bock,							Top 1%	WOS:0002	20852634
22	328	Meissner,	Meissner,	Epigenetic	NATURE B	Review	BIOLOGY & BIOCHEI	164	2010	Top 1%	WOS:0002	20944600
23	378	Horton, JR	Horton, Jo	Enzymatic	NATURE S	Article	BIOLOGY & BIOCHEI	128	2010	Top 1%	WOS:0002	20023638
24	373	Gu, H; Boc	Gu, Hongc	Genome-s	NATURE M	Article	BIOLOGY & BIOCHEI	121	2010	Top 1%	WOS:0002	20062050
25	342	Yount, JS;	Yount, Jac	Palmitoyl	NATURE C	Article	BIOLOGY & BIOCHEI	114	2010	Top 1%	WOS:0002	20601941
26	337	Dhayalan,	Dhayalan,	The Dnmt	JOURNAL	Article	BIOLOGY & BIOCHEI	110	2010	Top 10%	WOS:0002	20547484
27	359	Cheng, XD	Cheng, Xia	Coordinat	BIOCHEMI	Article	BIOLOGY & BIOCHEI	106	2010	Top 10%	WOS:0002	20210320
28	343	Adli, M; Zh	Adli, Mazh	Genome-v	NATURE M	Article	BIOLOGY & BIOCHEI	66	2010	Top 10%	WOS:0002	20622861
29	312	Yap, KL; Zh	Yap, Kyoki	Keeping it	CRITICAL F	Review	BIOLOGY & BIOCHEI	49	2010	Top 10%	WOS:0002	20923397
30	315	Yang, YY; (	Yang, Yu-Y	Comparat	CHEMISTR	Article	BIOLOGY & BIOCHEI	39	2010	Top 10%	WOS:0002	21095571
31	376	Poleshko,	Poleshko,	Identificat	JOURNAL	Article	BIOLOGY & BIOCHEI	27	2010	Top 20%	WOS:0002	19880521
32	344	Wigle, TJ;	Wigle, Tim	Accessing	CHEMISTR	Article	BIOLOGY & BIOCHEI	24	2010	Top 20%	WOS:0002	20659682
33	379	Quinn, AM	Quinn, Am	A homoge	NUCLEIC A	Article	BIOLOGY & BIOCHEI	24	2010	Top 20%	WOS:0002	19897549



Exercise

Let’s try the VLOOKUP function.

National Institutes of Health
Office of Management

Network analysis with Sci2 and Gephi

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christopher.belter@nih.gov

Office of Research Services
National Institutes of Health
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Obtaining and Learning Sci2

Download: https://sci2.cns.iu.edu/

Documentation:
https://sci2.cns.iu.edu/user/documentation.php

User manual:
http://sci2.wiki.cns.iu.edu/

Obtaining and Learning Gephi

Download: https://gephi.org/

Quick start tutorials:
https://gephi.org/users/quick-start/

Other tutorials:
http://www.slideshare.net/gephi/presentations

About networks

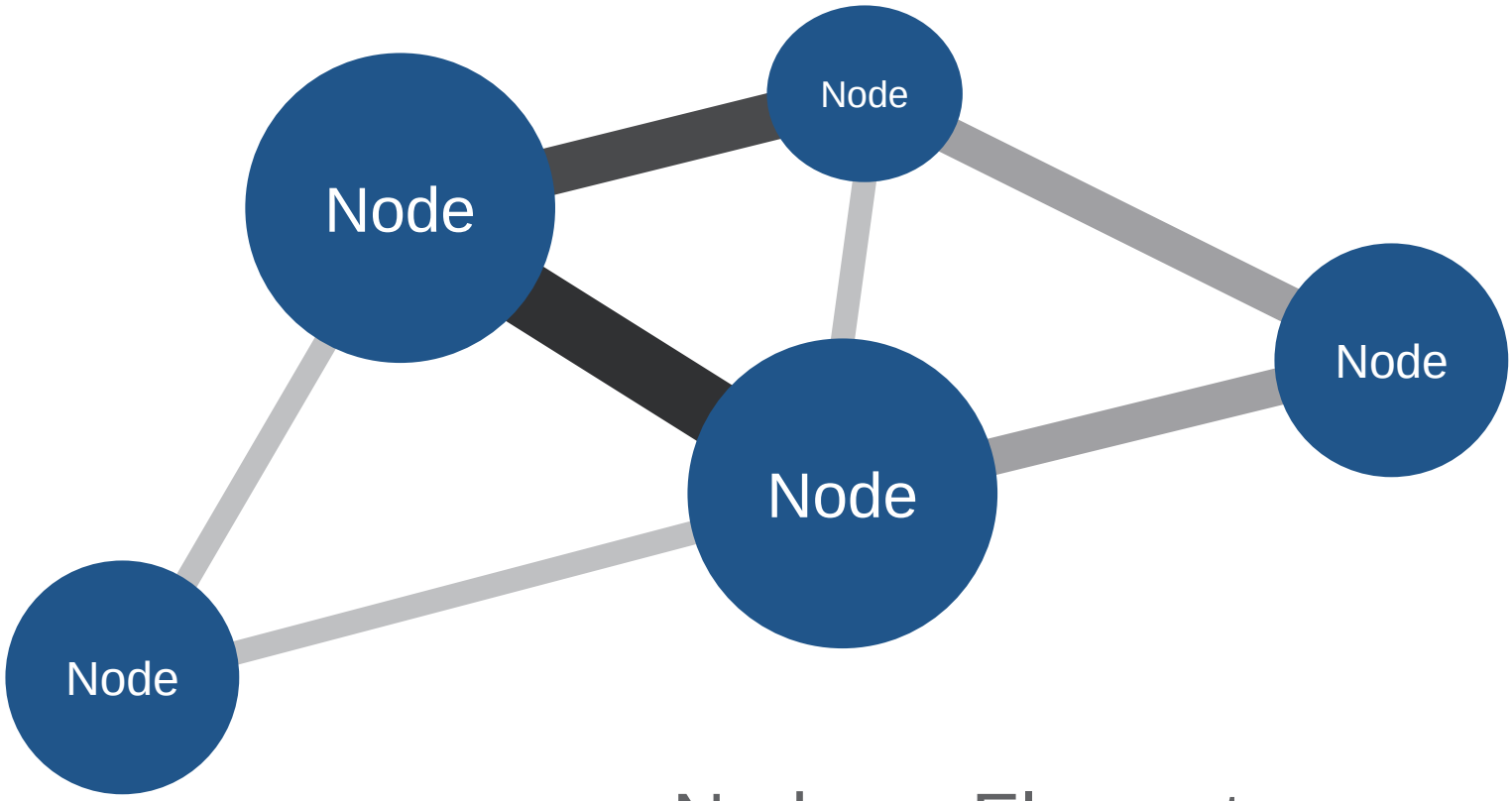
Definition

A network is a set of relationships between things

Parts of a Network

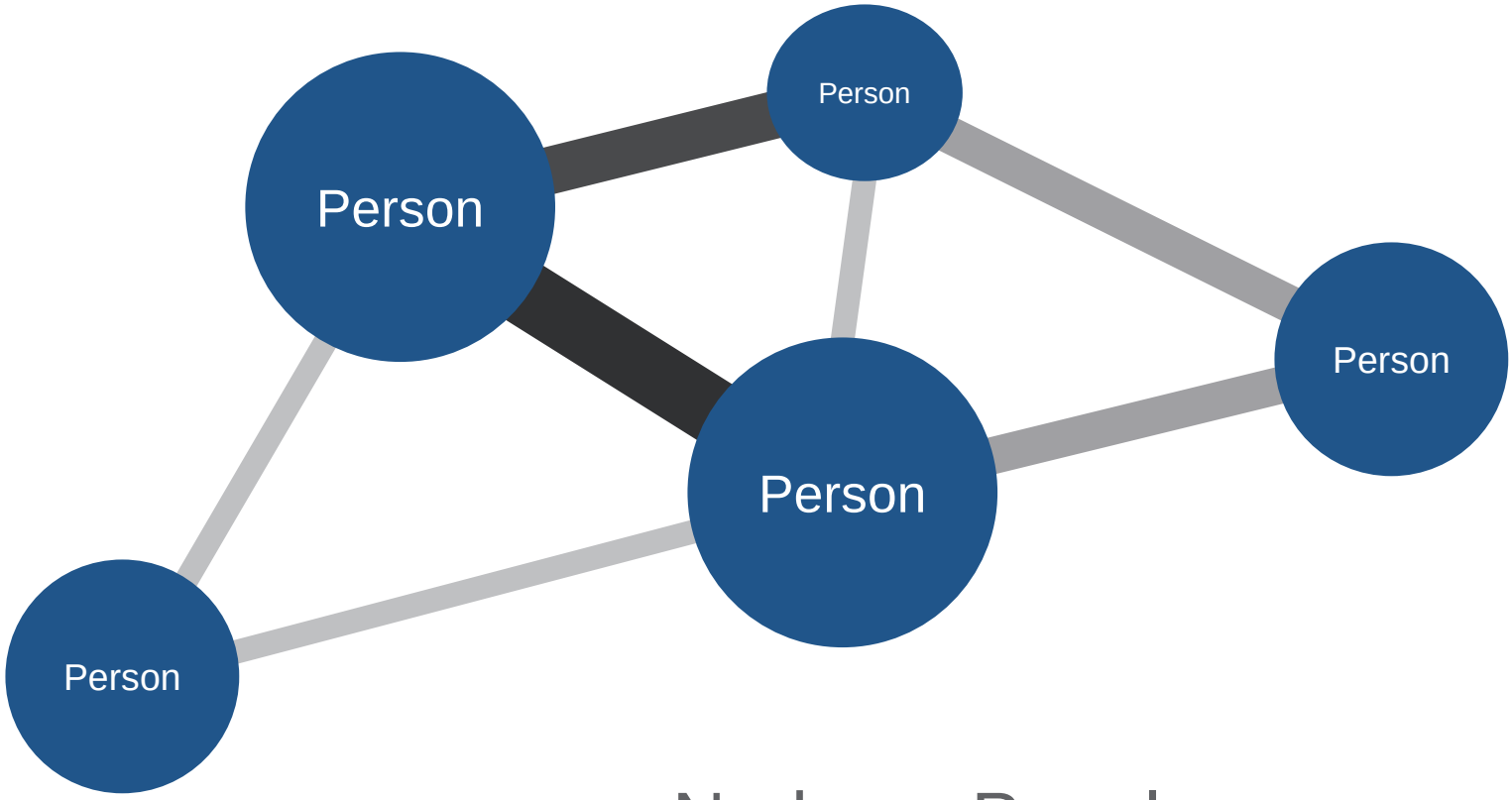
- Nodes
  - Elements of the network
  - Can have attributes
- Edges
  - Connections between nodes
  - Can be directed or undirected
  - Can be weighted or unweighted

Basic network



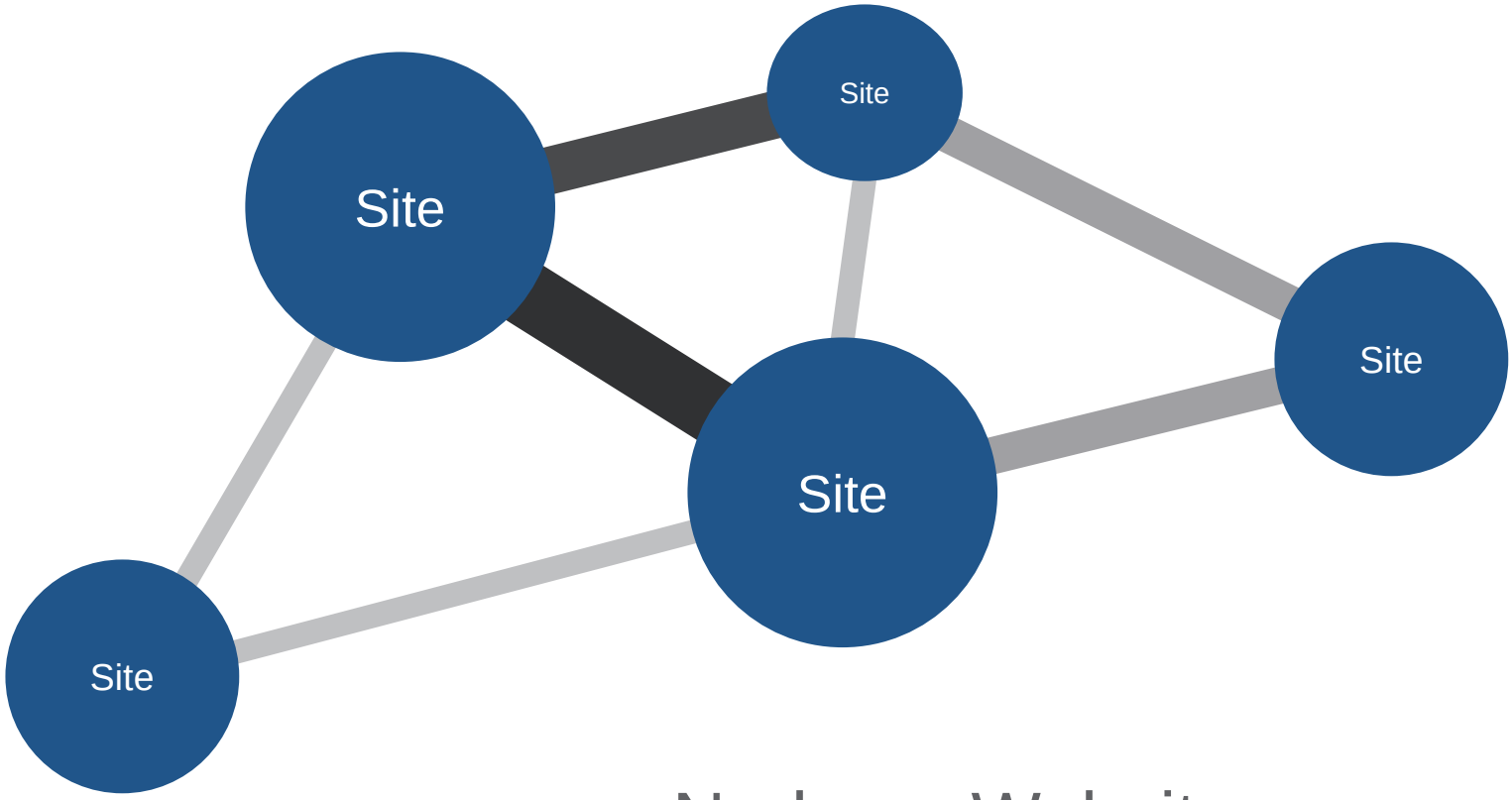
Nodes = Elements
Edges = Relationships

Social network



Nodes = People
Edges = Friendships

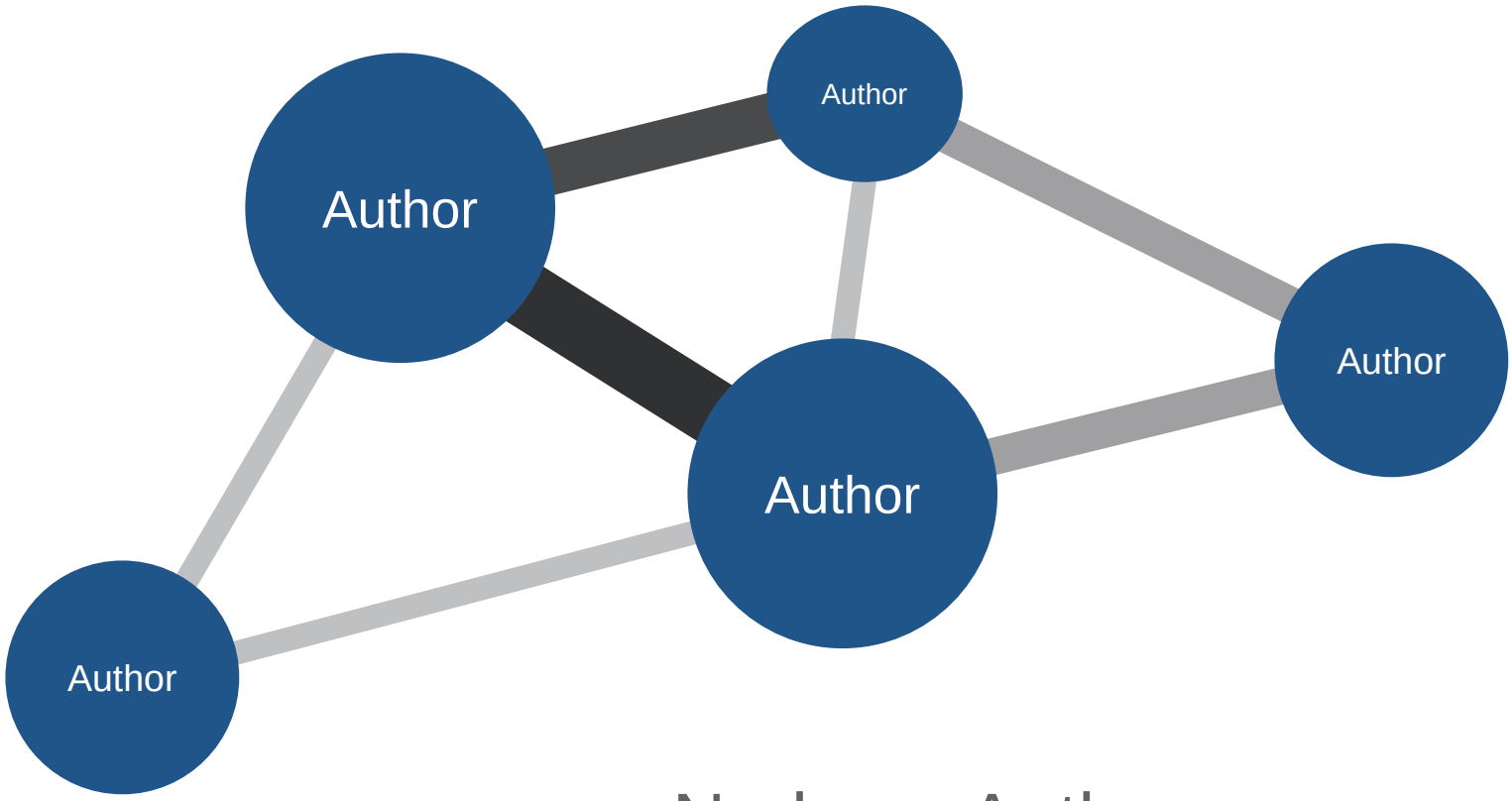
Website network



Nodes = Websites
Edges = Hyperlinks

Co-author networks

Co-author network



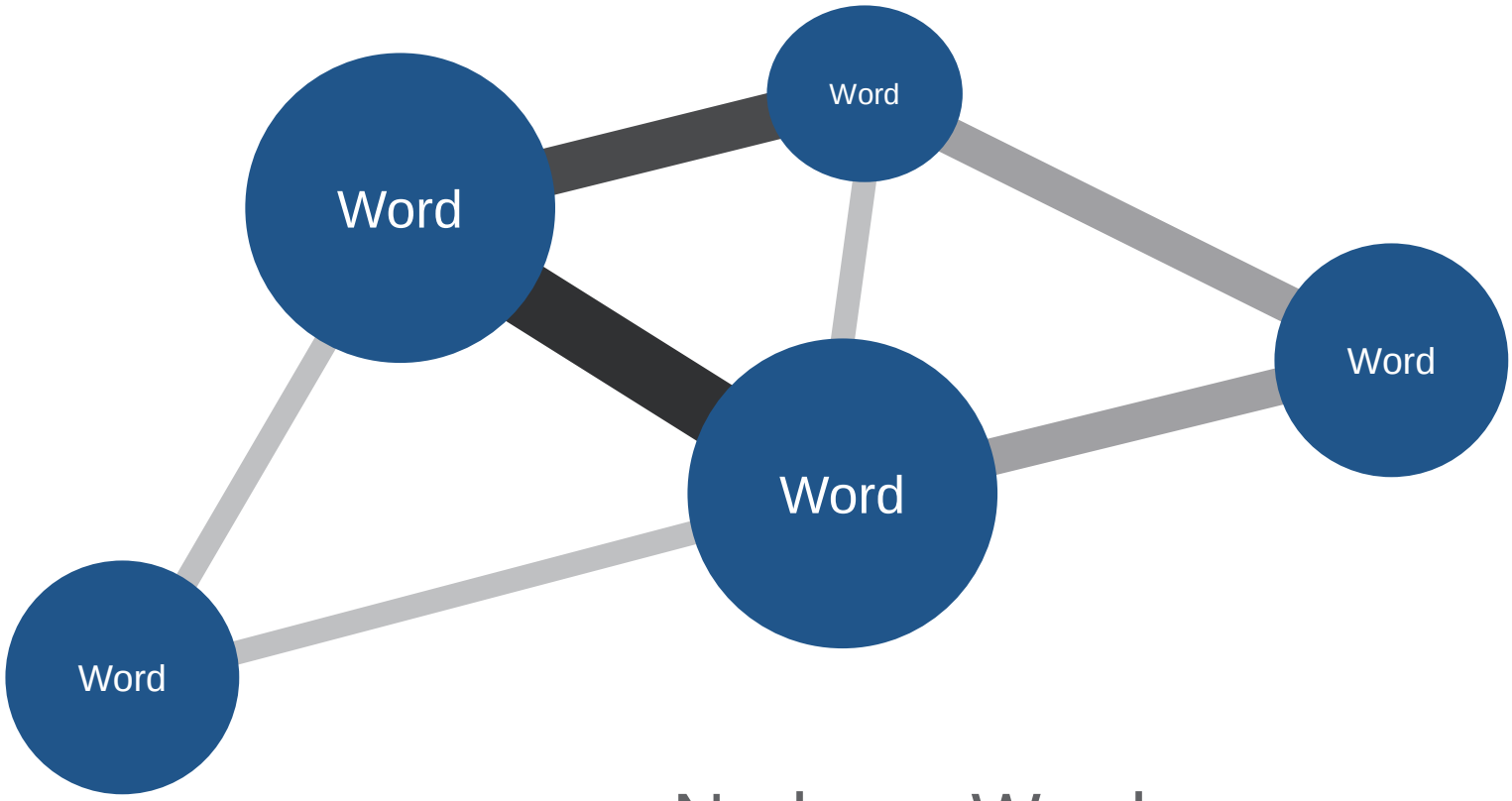
Nodes = Authors
Edges = Co-authorships

Creating them

1. Clean data
2. Load data
3. Create the network
4. Prune the network
5. Visualize

Word co-occurrence networks

Word co-occurrence network



Nodes = Words
Edges = Co-occurrences

Pros and Cons

Pros

- Easy to make
- Easy to understand
- Broadly accurate

Cons

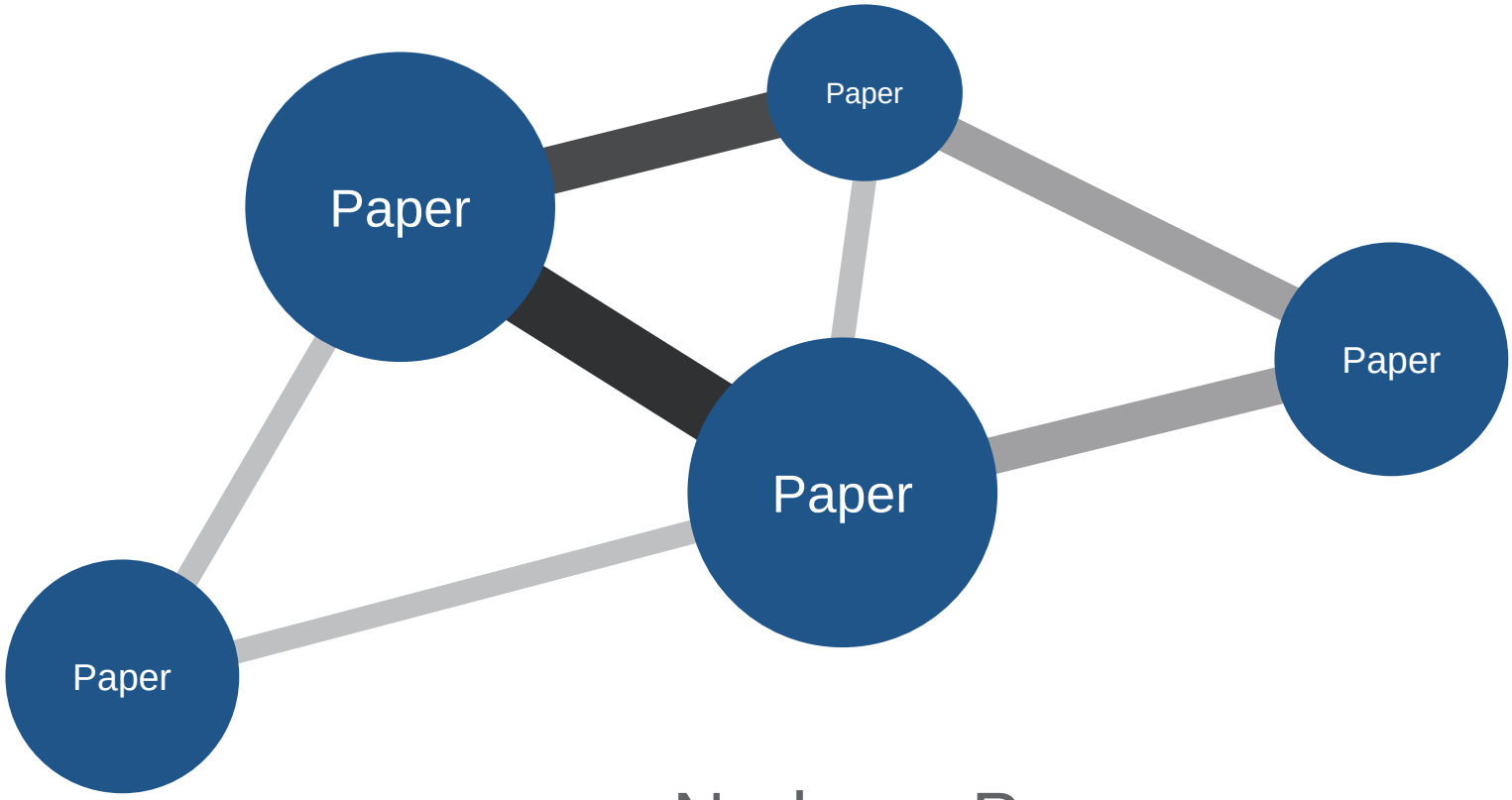
- Synonyms and homonyms
- Very dense
- Low granularity

Creating them

1. Load data
2. Transform word data
3. Create the network
4. Prune the network
5. Visualize

Bibliographic coupling networks

Bibliographic coupling network



Nodes = Papers
Edges = Shared references

Pros and Cons

Pros

- Higher granularity
- Paper-topic assignments
- Self-organization

Cons

- More difficult to create
- More difficult to understand
- Paper loss

Creating them

1. Load data
2. Create paper citation network
3. Create bibliographic coupling network
4. Prune network, if necessary
5. Visualize

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