The Google Scholar Revolution: a big data bibliometric tool

Enrique Orduña-Malea, Alberto Martín-Martín, Juan M. Ayllón,
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UNIVERSITAT POLITÈCNICA DE VALÈNCIA

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ALBERTO MARTÍN-MARTÍN is an FPU (University Professor Training) Research Fellow and PhD Candidate in the field of bibliometrics and scientific communication at the University of Granada. His earlier degrees in Library and Information Science are from the same university, where he graduated with honours. He is currently a member of the EC3 Research Group, where he has collaborated in various research projects, technical reports and journal articles since 2013.

ENRIQUE ORDUÑA-MALEA holds a PhD in Documentation from the Polytechnic University of Valencia, where he currently works as a postdoctoral researcher. He belongs to the EC3 Research Group at UGR and Trademetrics Research Group at UPV. He specialises in web metric methods applied to the processes of creation, diffusion and consumption of content and products on the web, both in academic and industrial environments.
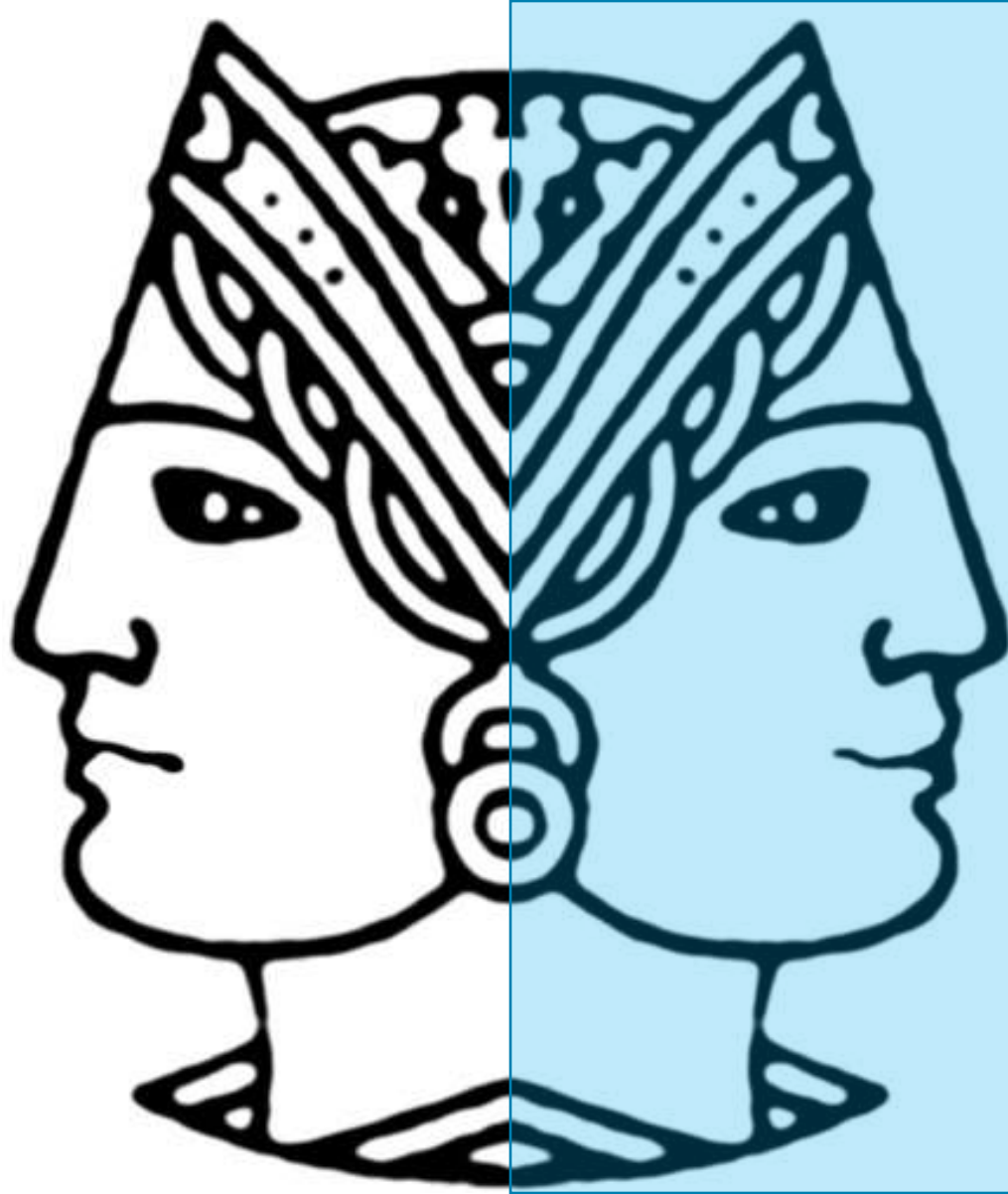
JUAN MANUEL AYLLÓN MILLÁN is an FPI (Predoctoral Research Grant) Research Fellow and a PhD Candidate in the field of bibliometrics and scientific communication at the University of Granada. His earlier degrees in Library and Information Science are from the same university. He is also a member of the EC3 Research Group.
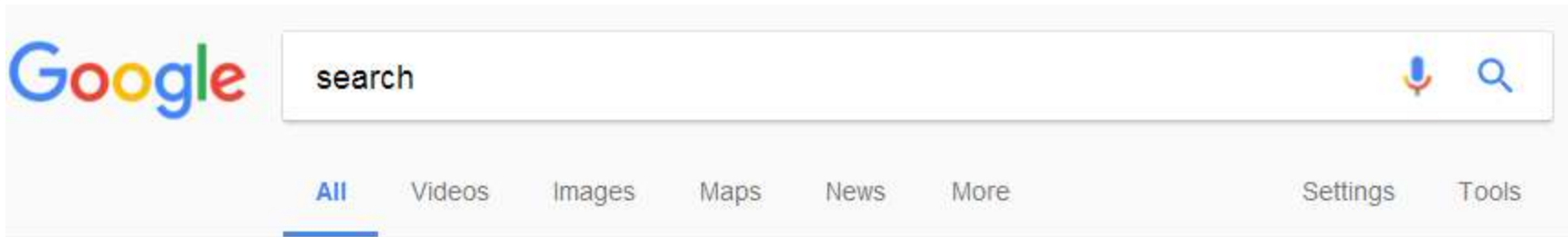
EC3 Research Group – Google Scholar Division

The two faces of Google Scholar
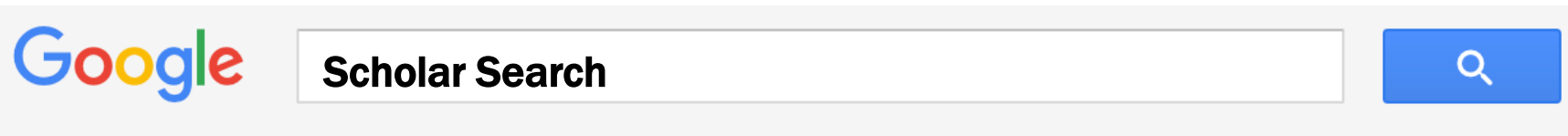

search engine
Bibliographic search tool

Bibliometric tool

The google search familly. Its goal: finding information

Google
académico

Why is it successful? ▼ 🔍

Simple

Easy

Fast

Easy to understand and use

Universal, international, global

Multilingual

Free

Google's incursion in Bibliometrics

2011

2012

My library   My Citations   My updates   Alerts   Metrics   Settings

2004

Articles (✓ include patents)   Case law

Studying it from the bibliometric perspective:
EC3-Scholar Division

V FORO
SOBRE EVALUACIÓN DE LA CALIDAD DE
LA EDUCACIÓN SUPERIOR Y DE LA INVESTIGACIÓN
San Sebastián, 3 de septiembre de 2008

II Seminario EC3 sobre
evaluación y comunicación de la ciencia
Universidad de Granada
Granada, 2 de abril de 2009

¿Qué es y cómo utilizar Google Scholar?

Emilio Delgado López-Cózar
Evaristo Jiménez-Contreras
Facultad de Comunicación y Documentación
Universidad de Granada

EC³
Grupo de investigación
Evaluación de la Ciencia y de la Comunicación Científica
http://ec3.ugr.es/

Google Scholar ¿herramienta de evaluación científica?

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IV Seminario EC3
Altmetrics y Unidades de Bibliometría
Granada 14-15 Marzo de 2013
Plazas disponibles

V Seminario EC3
Indicadores bibliométricos y evaluación científica
11 y 12 de Junio de 2015, Granada

The Google Scholar Family
¿Is it an alternative for the evaluation of science?

¿Evaluar la investigación con Google Scholar?
Yes we can

3
Grupo de Investigación EC3
Evaluación de la Ciencia y de la
Comunicación Científica

Emilio Delgado López-Cózar
Profesor Metodología de la Investigación
Universidad de Granada

3

Emilio Delgado López-Cózar
Catedrático Metodología de la Investigación
Facultad de Comunicación y Documentación
Universidad de Granada

3

Opening the academic Pandora's Box

2008-

Google Scholar

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What have we analyzed?
Intensive, extensive, and obsessive work

Journals   **Authors**   **Publishers**   **Conferences**

JOURNAL SCHOLAR METRICS
ARTS, HUMANITIES AND SOCIAL SCIENCES

H Index Scholar

Publishers Scholar Metrics

BETA

Proceedings Scholar Metrics

Índice H de las revistas científicas españolas según Google Scholar Metrics

Multifaceted model

AUTHORS   DOCUMENTS   JOURNALS   PUBLISHERS   INSTITUTIONS

Library & Information Sciences (Spain)
http://www.biblioteconomia-documentacion-española.infoec3.es

Bibliometrics & Scientometrics (International)
http://www.scholar-mirrors.infoec3.es

AUTHORS

Google scholar

INICIO ACERCA DE METODOLOGÍA FAQ EQUIPO NOTICIAS CONTACTO OTROS PROYECTOS

Inicio

Ciencias Sociales

Ciencias Jurídicas

Ciencias Humanas

Bellas Artes

Google™ Búsqueda personalizada   Buscar ×

Autor:
Ayúdanos

Canales, alertas y suscripción a noticias

Correo electrónico:

Enviar

Ciencias sociales

| Ciencias Sociales | Ciencias Jurídicas | Ciencias Humanas | Arte |

ECONOMÍA	EDUCACIÓN	PSICOLOGÍA	SOCIOLOGÍA
Comercialización e Inv. de Mercados	Didáctica y Organización Escolar	Met. y Ciencias del Comportamiento	Sociología
Fundamentos del Análisis Económico	Didáctica Expresión Corporal	Personalidad, Evaluación y Trat. Psicológico	Trabajo Social y Servicios Sociales
Mét. Cuantitativos Economía Empresa	Didáctica Expresión Musical	Psicobiología	**COMUNICACIÓN**
Organización de Empresas	Didáctica Expresión Plástica	Psicología Básica	Audiovisual y Publicidad
Economía Aplicada	Didáctica Lengua y Literatura	Psicología Evolutiva y de la Educación	Periodismo
Economía Financiera y Contabilidad	Didáctica Matemática	Psicología Social	**DOCUMENTACIÓN**
Economía, Sociología y Política Agraria	Didáctica Ciencias Experimentales		**ANTROPOLOGÍA**
GEOGRAFÍA	Didáctica Ciencias Sociales		**CIENCIA POLÍTICA Y DE LA ADMINISTRACIÓN**
Geografía Física	Educación Física y Deportiva		
Geografía Humana	Métodos de Inv. y Diag. en Educación		
Análisis Geográfico Regional			
Urbanística y Ordenación Territorio	Teoría e Historia de la Educación		

- **Publication data about 49,930 A&H and SS professors working in public Spanish universities was extracted from Google Scholar in 2012**
- **Only authors in the first tercile are displayed**
- **68 discipline rankings (49 in Social Sciences and Law, 39 in Arts and Humanities)**

Lengua Española

| Ciencias Sociales | Ciencias Jurídicas | Ciencias Humanas | Arte |

Indicators

F. Hispánicas

Fecha de actualización: 17-18/09/2012

Buscar:

R ⬍	PROFESOR ⬍	h_index ⬍	g_index ⬍	UNIVERSIDAD ⬍
1	Bosque Muñoz, Ignacio	31	65	UCM
2	Demonte, Violeta	20	49	UAM
3	Alvar Ezquerra, Manuel	19	34	UCM
4	Fuentes Rodríguez, Catalina	17	30	US
5	Rojo Sánchez, Guillermo Antonio	16	34	USC
6	Cano Aguilar, Rafael	16	29	US
7	Moreno Fernández, Francisco	15	33	UAH
8	Portolés Lázaro, José	14	32	UAM
9	Escandell Vidal, María Victoria	13	35	UNED
10	Narbona Jiménez, Antonio	13	25	US

Mostrando desde 1 hasta 10 de 190 registros

◄ Anterior Siguiente ►

Collecting data
Max. number of hits per page
February 2013: from 100 to 20

PUBLISHERS

Publishers Scholar Metrics

BETA

Ciencias Sociales

Ciencias Jurídicas

Ciencias Humanas

Artes

Top 100 editoriales más citadas

Google™ Búsqueda personalizada   **Buscar**   ×

Publishers Scholar Metrics

Grupo de Investigación EC3
Evaluación de la Ciencia y de la
Comunicación Científica

ACERCA DE

Publishers Scholar Metrics es un índice bibliométrico que pretende medir el impacto de las editoriales de monografías científicas a partir del recuento de citas de los libros publicados por los profesores e investigadores de universidades públicas españolas indizados en Google Scholar hasta 2012 en el ámbito de las Humanidades y Ciencias Sociales.

Documentos recuperados (1.020.985)

Documentos citados (280.462)

Muestra documentos analizados (78.123)

Muestra de documentos válidos (61.454)

Total libros identificados (26.628)

Muestra libros altamente citados (7.203)

Sample of highly cited books (top 3%) published by ~49k A&H and SS professors working in public Spanish universities

Data collected from Google Scholar in 2012 (n ~ 7203)

68 discipline rankings
(49 in Social Sciences and Law,
39 in Arts and Humanities)

Publishers Scholar Metrics

Sociología

Indicators: Nº of books, and sum of citations (relative to highest element in the ranking)

Buscar:

R	Editorial	Libros	Citas	Índice global
1	Alianza	100.00	100.00	100.00
2	Siglo XXI de España	95.65	64.77	61.95
3	Centro de Investigaciones Sociológicas (CIS)	95.65	58.82	56.26
4	Ministerio de Sanidad	69.57	48.49	33.73
5	Ariel	47.83	48.38	23.14
6	Ministerio de Trabajo	52.17	37.99	19.82
7	Síntesis	21.74	74.50	16.20
8	Anthropos	34.78	36.85	12.82
9	Trotta	30.43	38.17	11.62
10	Taurus	26.09	37.33	9.74

Mostrando desde 1 hasta 10 de 105 registros

JOURNALS

Índice H de las Revistas Científicas Españolas según Google Scholar Metrics

Juan Manuel Ayllón[1], Alberto Martín-Martín[1], Enrique Orduña-Malea[2], Rafael Ruiz Pérez[1], Emilio Delgado López-Cózar[1]

Las revistas científicas españolas según Google Scholar Metrics	2007-2011
Índice H de las revistas científicas españolas según Google Scholar Metrics	2008-2012
Índice H de las revistas científicas españolas según Google Scholar Metrics	2009-2013
Índice H de las revistas científicas españolas según Google Scholar Metrics	2010-2014
Índice H de las revistas científicas españolas según Google Scholar Metrics	2011-2015

CIENCIA Y TECNOLOGÍA	
Ciencias agrarias	3
Ciencias de la Tierra	3
Ciencias biológicas	4
Ingenierías	4
Matemáticas	5
Física	6
Química	6
Multidisciplinar	6
CIENCIAS DE LA SALUD	7

ARTE Y HUMANIDADES	
Filosofía	23
Lingüística	23
Filología Clásica	24
Filologías Modernas	24
Filologías Hispánicas	24
Estudios hebreos, islámicos y orientales	25
Historia	26
Arte	27
Multidisciplinar	28

CIENCIAS SOCIALES	
Economía y Empresa	11
Derecho	12
Sociología	15
Ciencia Política y de la Administración	16
Educación	16
Psicología	18
Ciencias del Deporte	19
Antropología	20
Comunicación	20
Documentación	21
Geografía	21
Urbanismo	22

Índice H de las Revistas Científicas Españolas según Google Scholar Metrics (2009-2013)

Juan Manuel Ayllón[1], Alberto Martín-Martín[1], Enrique Orduña-Malea[2], Rafael Ruiz Pérez[1], Emilio Delgado López-Cózar[1]

ECONOMÍA Y EMPRESA

	REVISTAS	H Index	Mediana H
1	Revista de economía aplicada	12	17
2	Información Comercial Española: Revista de economía	11	13
3	Hacienda pública española	10	16
4	Revista de Historia Económica	9	29
5	CIRIEC. España: Revista de economía pública, social y cooperativa	9	15
5	Cuadernos de Turismo	9	15
6	Economía industrial	9	13
7	Estudios de economía aplicada	9	11
8	Harvard Deusto business review	8	21
9	Papeles de economía española	8	12
10	Investigaciones regionales	8	10
10	Universia Business Review	8	10
11	Ekonomiaz: Revista vasca de economía	7	12
12	Cuadernos de Economía y Dirección de la Empresa	7	11
12	Revista de Economía Mundial	7	11
13	Cuadernos de Economía	7	10
14	Applied Econometrics and International Development	7	9
14	Intangible Capital	7	9
15	Revista española de financiación y contabilidad	6	9
16	Revesco. Revista de Estudios Cooperativos	6	8
17	Boletín económico de ICE: Información Comercial Española	6	7
17	Revista europea de dirección y economía de la empresa	6	7
18	Revista española de estudios agrosociales y pesqueros	6	6
19	Revista de economía crítica	5	14
20	Cuadernos económicos de ICE	5	13
21	Distribución y consumo	5	12
22	Revista de estudios regionales	5	11
23	Revista de historia industrial	5	9
24	Dirección y Organización	5	8
25	Economistas	5	6
26	Cuadernos de Información económica	4	7

Indicators

H5 Index
H5 Median

Spanish Journals
± 2.500

Google Scholar Metrics

1299

JCR
114

SJR-Scopus

506

Search a journal

SUBJECT CATEGORY RANKINGS

COUNTRY RANKINGS

WORLD -> AFRICA EUROPE AMERICAS ASIA OCEANIA
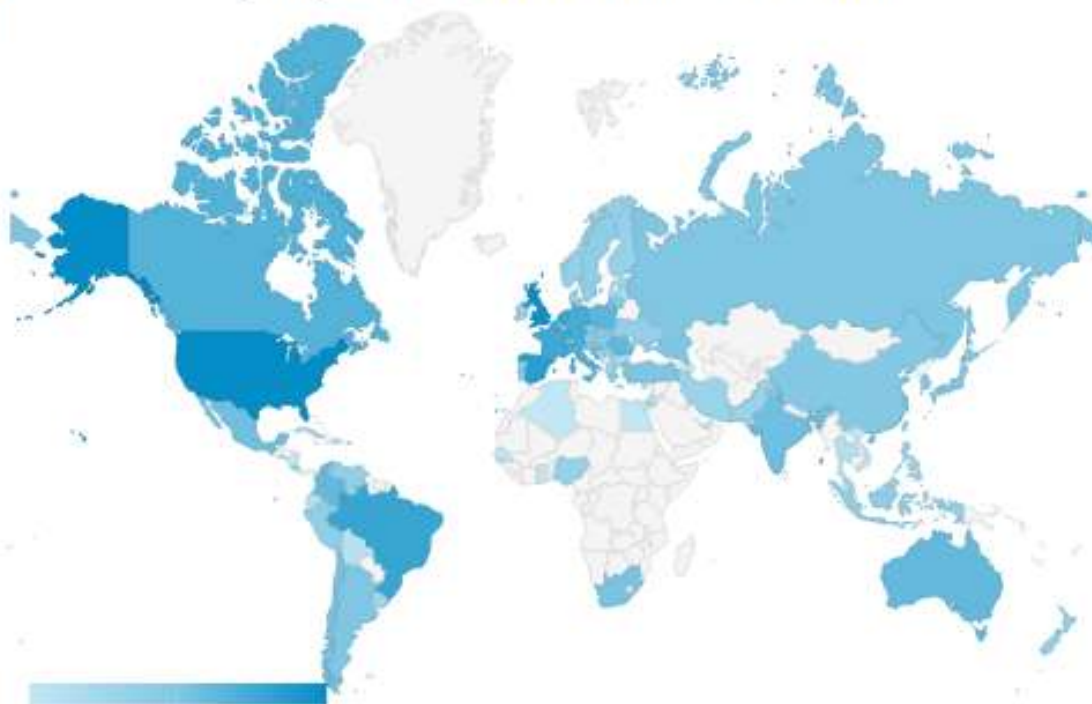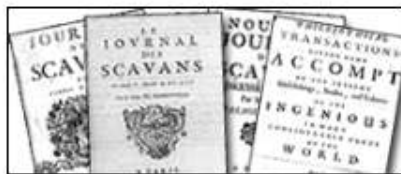
SOCIAL SCIENCES

ANTHROPOLOGY	(298)
COMMUNICATION	(320)
BUSINESS, ECONOMICS & MANAGEMENT	(1761)
EDUCATION	(1126)
GEOGRAPHY & URBAN STUDIES	(548)
LAW	(920)
LIBRARY & INFORMATION SCIENCE	(277)
POLITICAL SCIENCE, ADMINISTRATION & INTERNATIONAL RELATIONS	(1074)
PSYCHOLOGY	(1032)
SOCIOLOGY	(1007)
MULTIDISCIPLINARY	(202)
SOCIAL WORK	(132)
SPORT SCIENCES	(213)

ARTS & HUMANITIES

?

Search a journal

LIBRARY & INFORMATION SCIENCE

Displaying core journals 1-20 of 223. Sorted by H5-Index, decreasingly.　☐ Check to display related journals as well　　Filter by country ▾　　Find a journal in this ranking

Rank	Country	Journal name	Totals				Without journal self-citations		
			Quartile	H5-Index	H5-Median	H Citations	H5-Index	H Citations	%
1	🇺🇸	Journal of the American Society for Information Science and Technology	Q1	54	82	5708	52	5427	↻
2	🇬🇧	International Journal of Information Management	Q1	48	75	5181	46	4999	↻
3	🇭🇺	Scientometrics	Q1	46	58	3790	40	3292	↻
4	🇬🇧	Government Information Quarterly	Q1	42	70	3892	39	3543	↻
5	🇳🇱	Journal of Informetrics	Q1	39	57	3097	36	2726	↻
6	🇬🇧	European Journal of Information Systems	Q1	35	49	2147	35	2144	↻
7	🇬🇧	Information Processing & Management	Q1	29	38	1225	29	1209	↻
8	🇬🇧	Journal of Information Science	Q1	26	39	1607	26	1567	↻
9	🇬🇧	The Journal of Academic Librarianship	Q1	26	37	1150	25	1113	↻
10	🇬🇧	Journal of Documentation	Q1	26	36	1057	24	1003	↻
11	🇬🇧	Library & Information Science Research	Q1	26	34	1143	25	1100	↻
12	🇬🇧	Journal of Information Technology	Q1	25	47	1688	24	1641	↻
12	🇬🇧	Online Information Review	Q1	25	47	1212	25	1150	↻
14	🇺🇸	College & Research Libraries	Q1	25	38	1157	24	1127	↻
15	🇺🇸	The Information Society	Q1	24	35	1165	23	1132	↻
16	🇬🇧	The Electronic Library	Q1	21	30	747	19	692	↻
17	🇺🇸	Proceedings of the American Society for Information Science and Technology	Q1	21	29	1012	19	960	↻
18	🇪🇸	El Profesional de la Información	Q1	21	28	672	19	611	↻
18	🇺🇸	Journal of Library Administration	Q1	21	28	635	20	618	↻
20	🇬🇧	Library Management	Q1	20	28	586	20	575	↻

First | Previous | Next | Last

JOURNAL SCHOLAR METRICS

ARTS, HUMANITIES, AND SOCIAL SCIENCES

Search a journal

SPAIN 🇪🇸

Displaying journals 1-20 of 866. Sorted by H5-index, decreasingly.

Filter by subject ▾   Find a journal in this list

Journal name	Totals			Without journal self-citations		
	H5-Index	H5-Median	H Citations	H5-Index	H Citations	%
Psicothema	34	46	1674	32	1578	○
Revista de Educación (españa)	23	30	955	23	947	○
Comunicar	22	41	1022	21	971	○
International Journal of Clinical and Health Psychology	22	33	840	21	711	○
El Profesional de la Información	21	28	672	19	611	○
Anales de Psicología	21	26	619	18	537	○
Revista Interuniversitaria de Formación del Profesorado	17	29	603	17	592	○
Rusc. Universities and Knowledge Society Journal	17	25	518	15	483	○
International Journal of Psychology and Psychological Therapy	17	22	700	15	661	○
Revista de Psicología del Deporte	17	21	395	15	335	○
Papeles del Psicólogo	16	31	687	13	625	○
Nómadas. Revista Crítica de Ciencias Sociales y Jurídicas	16	27	559	16	547	○
Intervención Psicosocial	16	27	463	16	431	○
Revista de Psicodidáctica/journal of Psychodidactics	16	23	454	15	441	○
Electronic Journal of Research in Educational Psychology	16	21	390	14	353	○
Revista Española de Documentación Científica	15	21	329	13	289	○
Adicciones	15	20	385	14	357	○
Journal of Industrial Engineering and Management	14	25	498	14	485	○
Enseñanza de las Ciencias: Revista de Investigación y Experiencias Didácticas	14	20	330	13	321	○
Revista Eureka sobre Enseñanza y Divulgación de las Ciencias	14	19	305	13	253	○

Search a journal

Problemy Ekorozwoju: Studia Filozoficzno-sozologiczne

IMPACT INDICATORS

Period	Totals			Withouth journal self citations		
	H5-Index	H5-Median	H Citations	H5-Index	H Citations	%
2010-2014	15	22	355	14	306	

SUBJECT CATEGORIES AND RANKINGS

Subject Category	Ranking	Position	Quartile
⊙ Geography & Urban Studies	Only core journals	121st (of 397)	Q2
	All journals	181st (of 538)	Q2

INDEXED IN

Source	Category / Status
SCImago Journal Rank	**Geography, Planning and Development**
	Management, Monitoring, Policy and Law
	Renewable Energy, Sustainability and the Environment
Ulrich's Periodicals Directory	Environmental Studies
Web of Science Core Collection	Environmental Studies

Indicators

	H Index of documents published in the last 5 years	**Median of citation counts for articles published in last 5 years**	**Sum of citations for articles above h5-index threshold**			
	Total			**Without journal self-citations**		
Quartile	**H5-Index**	**H5-Median**	**H Citations**	**H5-Index**	**H Citations**	**%**
Q1	56	80	6272	53	5833	◔

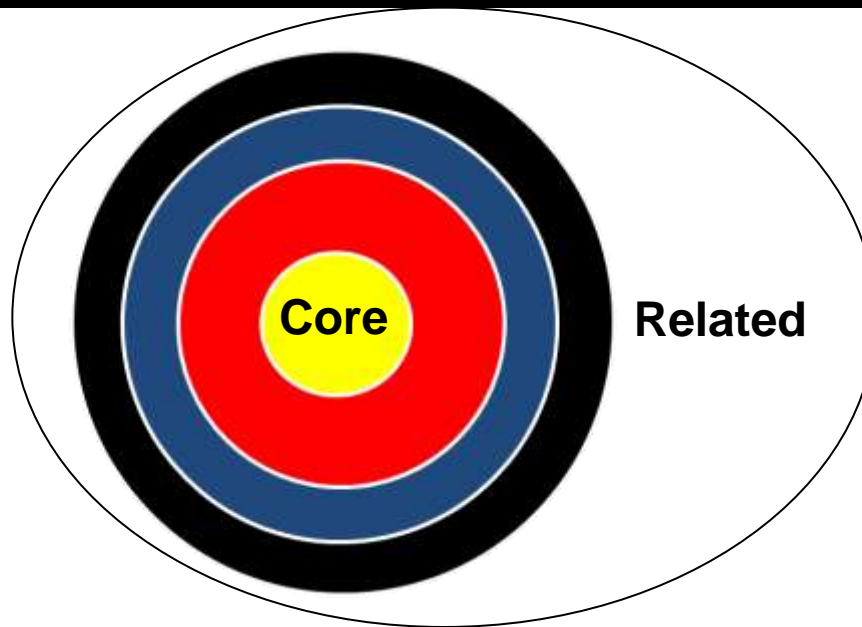**Extracted directly from Google Scholar Metrics**

Computed using the article and citation data available in Google Scholar Metrics

Classification

Core   **Related**

Coverage
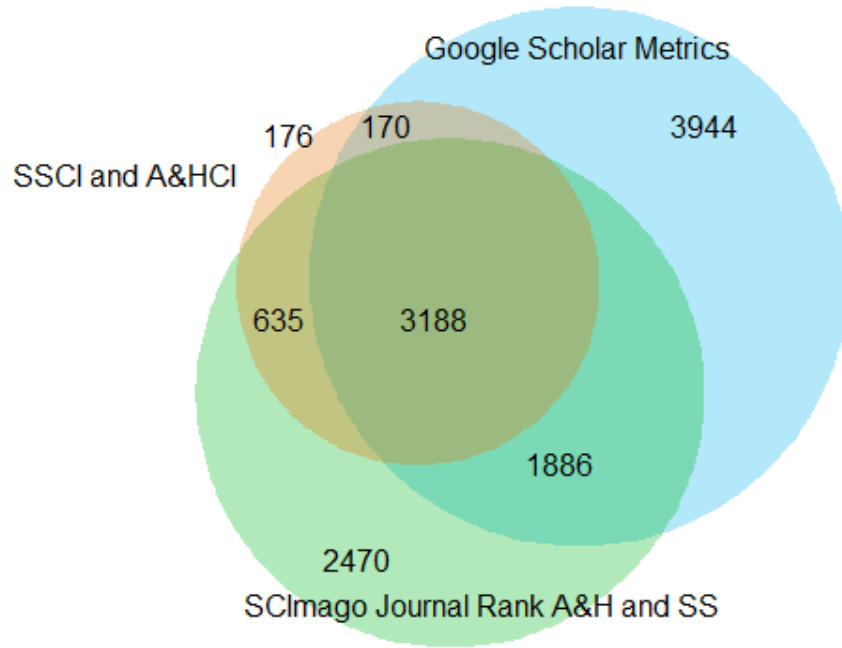
IMPORTANT: *Google Scholar Metrics* only covers journals that are indexed in *Google Scholar*, have published **at least 100 articles in the last 5-year period, and have received at least 1 citation**
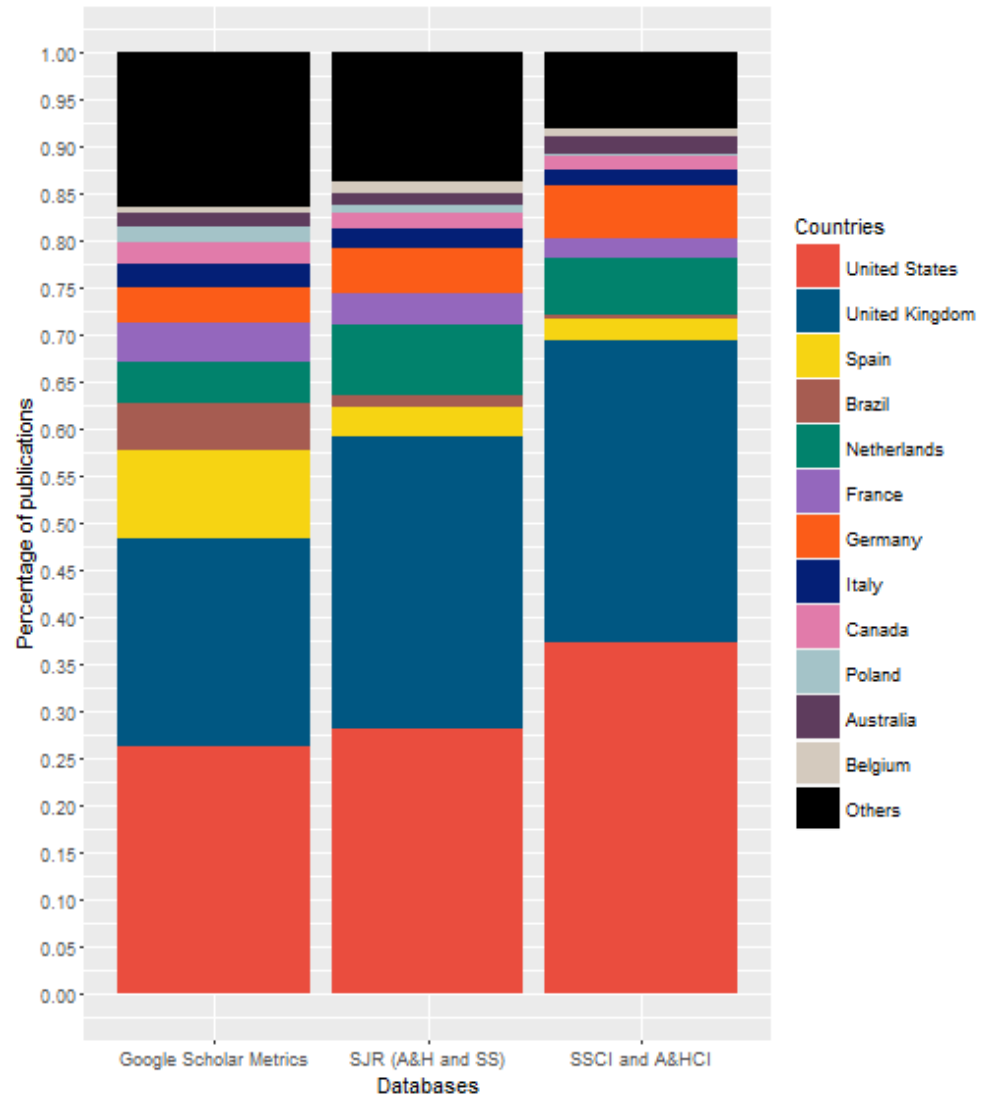
PROCEEDINGS

Proceedings Scholar Metrics:
H Index of proceedings on Computer Science, Electrical & Electronic Engineering, and Communications according to Google Scholar Metrics (2011-2015)

Alberto Martín-Martín[1], Juan Manuel Ayllón[1], Enrique Orduña-Malea[2],
Emilio Delgado López-Cózar[1]

Proceedings Scholar Metrics	2009-2013
Proceedings Scholar Metrics	2010-2014
Proceedings Scholar Metrics	2011-2015

Rank	Quartile	Proceedings	H5-index	H5-median
1	Q1	IEEE Conference on Computer Vision and Pattern Recognition, CVPR	140	214
2	Q1	IEEE International Conference on Computer Vision, ICCV	92	143
3	Q1	Proceedings of the IEEE	85	138
4	Q1	Neural Information Processing Systems (NIPS)	83	132
5	Q1	Computer Human Interaction (CHI)	83	122
6	Q1	Joint Conference of the IEEE Computer and Communications Societies (INFOCOM)	80	125
7	Q1	International Conference on Machine Learning (ICML)	76	130
8	Q1	European Conference on Computer Vision	76	117
9	Q1	International World Wide Web Conferences (WWW)	74	111
10	Q1	Meeting of the Association for Computational Linguistics (ACL)	70	112

Multifaceted model

AUTHORS DOCUMENTS JOURNALS PUBLISHERS INSTITUTIONS

Google Scholar **Citations**

ResearchGate

RESEARCHER**ID**

MENDELEY

Data sources

La Biblioteconomía y Documentación española según Google Scholar Citations

INICIO / ACERCA DE / METODOLOGÍA / EQUIPO / OTROS PROYECTOS

Grupo de Investigación EC3
Evaluación de la Ciencia y de la Comunicación Científica

AUTORES DOCUMENTOS REVISTAS EDITORIALES INSTITUCIONES

Mostrando autores 1-25 de 336. Ordenados por citas (últimos 5 años), descendentemente.

Busque un autor

| Nombre | Institución | Últimos 5 años | | Totales | | Web of Science | | | ResearchGate | |
		Citas	Índice H	Citas	Índice H	Docs.	Citas	Índice H	RG Score	Impact Points
Félix de Moya Anegón	CSIC	2933	26	4722	34	117	998	16	35,3	162,0
Ismael Rafols	CSIC/UPV/SPRU	2029	21	2509	24	39	1141	17	26,8	74,7
Emilio Delgado López-Cózar	UGR	1585	20	1933	23	53	318	9	30,8	174,1
Rafael Aleixandre-Benavent	CSIC/UV	1239	15	2064	21	93	289	10	33,6	148,3
Victor Herrero-Solana	UGR	1224	15	2357	23	28	210	6	24,1	38,9
Isidro F. Aguillo	CSIC	1212	16	1919	23	62	381	11	29,7	123,4
Daniel Torres-Salinas	UGR	1086	16	1165	20	46	165	8	-	-
Evaristo Jimenez-Contreras	UGR	1063	16	1466	21	48	338	9	-	-
Zaida Chinchilla-Rodríguez	CSIC	937	15	1491	21	31	190	7	33,2	56,6
Vicente Pablo Guerrero Bote	UNEX	893	16	1291	21	38	389	12	26,7	64,8
Benjamín Vargas-Quesada	UGR	837	14	1427	19	29	206	7	27,9	62,6
José Luis Ortega	CSIC	804	14	1052	15	42	277	9	26,0	62,0
Rodrigo Costas	CWTS	777	16	891	16	29	325	10	23,7	49,0
José Antonio Cordón García	USAL	774	14	1075	16	16	14	2	14,5	7,8
Yusef Hassan Montero	SCImago Lab	692	13	1168	16	6	24	3	-	-
Rafael Ruiz-Perez	UGR	625	12	770	14	20	151	6	22,3	101,0
Lluís Codina	UPF	622	13	1403	20	27	41	4	16,4	13,6
Ernest Abadal	UB	542	12	943	16	24	47	3	15,2	12,2
María Pinto Molina	UGR	533	13	1125	18	49	181	8	25,9	48,3
Julio Alonso Arevalo	USAL	529	13	676	15	9	5	1	10,3	2,3
Elena Corera-Álvarez	CSIC	517	11	876	12	8	119	4	21,5	21,8
José-Antonio Gómez-Hernández	UM	497	11	1003	17	7	5	1	4,4	0,7
Adolfo Alonso-Arroyo	UV	484	12	589	14	40	118	6	30,8	108,2
Elias Sanz-Casado	UC3M	479	10	958	15	38	80	5	22,9	38,2
José Antonio Merlo Vega	USAL	437	11	959	17	6	9	2	7,4	4,3

Primera | Anterior | Siguiente | Última

Fecha de actualización: 27/02/2015

Autores con perfil en ResearchGate pero no en Google Scholar Citations

LIS researchers in Spain
336 authors in GSC
68 not in GSC

Other sources
ResearcherID (WoS)
ResearchGate

Indicators
Sum of citations
H Index
Nº of documents
RG Score
Impact Points

Aggregating data
Highly cited docs (HCD),
% of HCD by journal, book publisher, and institution

The «Mirrors» approach

http://79silver.deviantart.com/art/Reflection-211516497

There are many platforms that reflect (mirror) scientific activity on the Web. An inclusive study of the impact of scientific activity must contemplate as many of them as possible.

Scholar Mirrors

Bibliometrics, Scientometrics, Informetrics, Webometrics, and Altmetrics
in Google Scholar Citations, ResearcherID, Researchgate, Mendeley, and Twitter

Scholar Mirrors

Bibliometrics, Scientometrics, Informetrics, Webometrics, and Altmetrics
in Google Scholar Citations, ResearcherID, Researchgate, Mendeley, and Twitter

AUTHORS   **DOCUMENTS**   **JOURNALS**   **PUBLISHERS**

Word cloud of the keywords used by the researchers with a public Google Scholar Citations profile analysed in this product. Size indicates frequency of use in our sample

Bibliometric potential of Google Scholar
We have proved

Yes, we can ✓

What do we know about Google Scholar?
Its strengths and weaknesses

BIBLIOGRAPHY

2015 | 2014 | 2013 | 2012 | 2011 | 2010 | 2009 | 2008 | 2007 | 2006 | 2

2015 [Go back]

Bornmann, L., Thor, A., Marx, W., Schier, H. (2015): The application of bibliometrics to research evaluation in the humanities and social sciences: an exploratory study using normalized Google Scholar data for the publications of a research institute. figshare. DOI: http://dx.doi.org/10.6084/m9.figshare.1293588. In the classical core areas of natural and life sciences, bibliometric methods have become an integral part of research evaluation. In the humanities and social sciences, these methods for the assessment of research performance are (so far) less common. The current study takes a concrete example in an attempt to evaluate a research institute from the area of social sciences and humanities with the help of data from Google Scholar (GS). In order to use GS for a bibliometric study, we have developed procedures for the normalisation of citation impact, building on the procedures of classical bibliometrics. In order to test the convergent validity of the normalized citation

It's the most used academic search engine

Google scholar's Digest

TWEETS 226 FOLLOWERS 619

Google Scholar Digest @GScholarDigest · Jan 3
Google Scholar is the most used platform to search scientific information and set up alerts according to
101innovations.wordpress.com

Google Scholar Digest @GScholarDigest · 23 Dec 2016
"Google Scholar holds a virtual monopoly for finding scholarly content. In all countries bar China, GS is very much the tool of first choice"

Google Scholar Digest @GScholarDigest · 31 May 2016
Search Engines: The Google-Google Scholar's empire
digitalcommons.unl.edu/cgi/viewconten...

En 2015... En 2016...
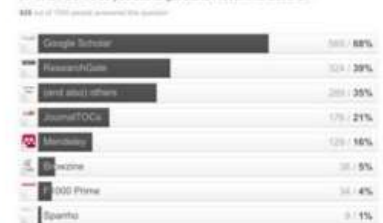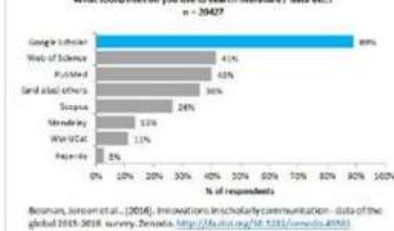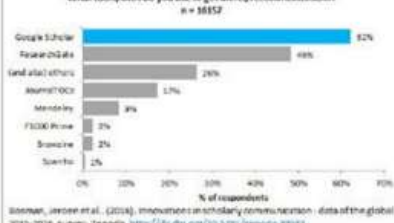
If you use search engines to find journal articles, how often do you use each of the following? Variations by country in academic sector.
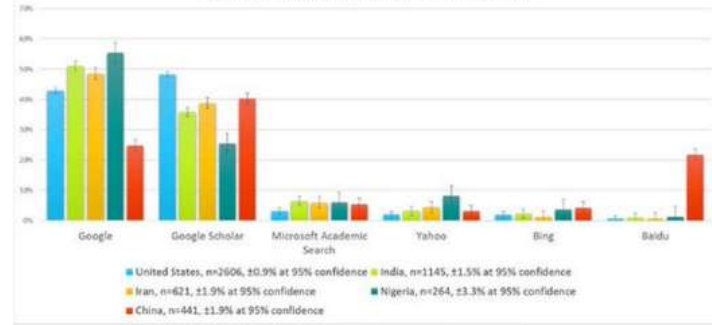
(n=40439) (october-november 2015)

Gardner, T & Inger, S (2016). How Readers Discover Content in Scholarly Publications. Abingdon, Renew Training. ISBN 978-0-9573920-4-5

38

Why do we call it a big data bibliometric tool?

Big <u>Data</u>

Source COVERAGE

All documents

Geographic COVERAGE

All countries

Linguistic COVERAGE

All languages

SIZE
Largest bibliographic database in the world

Discipline COVERAGE

All of them

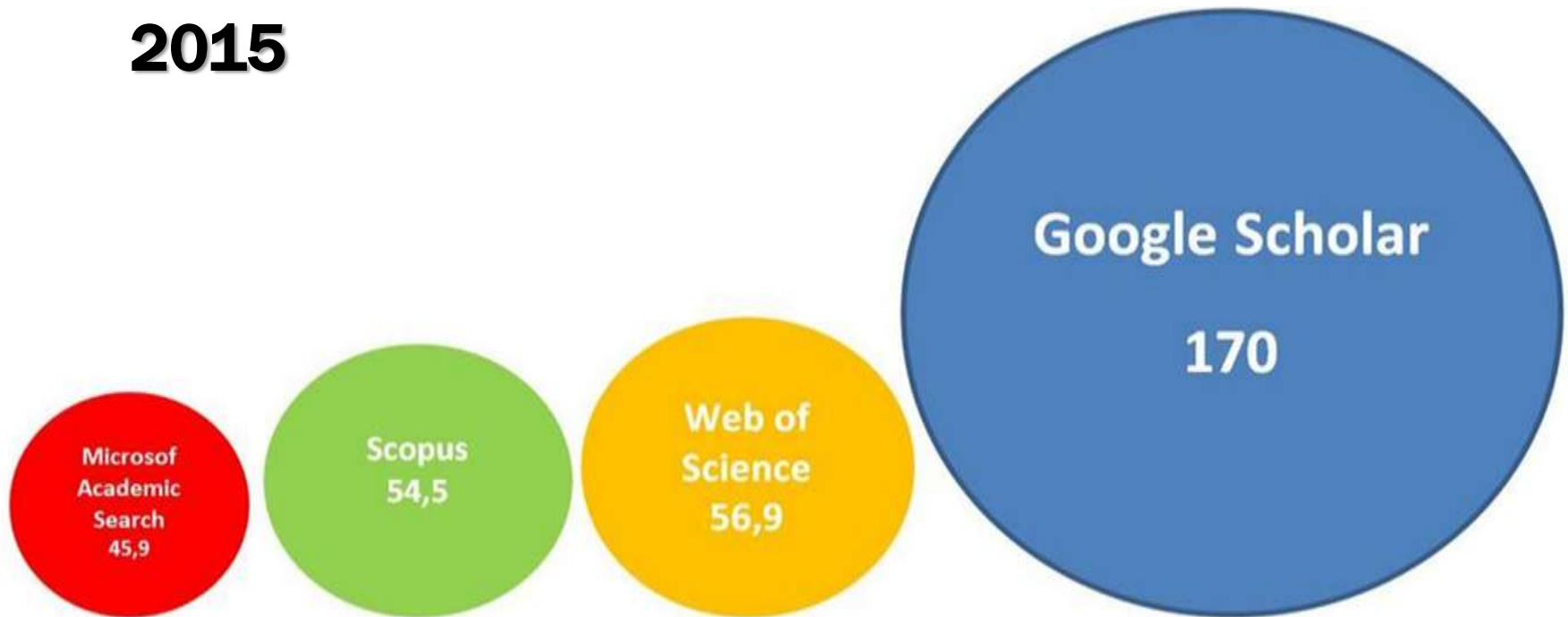**GROWTH**

Faster than WoS and Scopus

FAST TRACK CITATIONS

Newly published documents indexed in a matter of days

Big Data

The search engine with the largest coverage
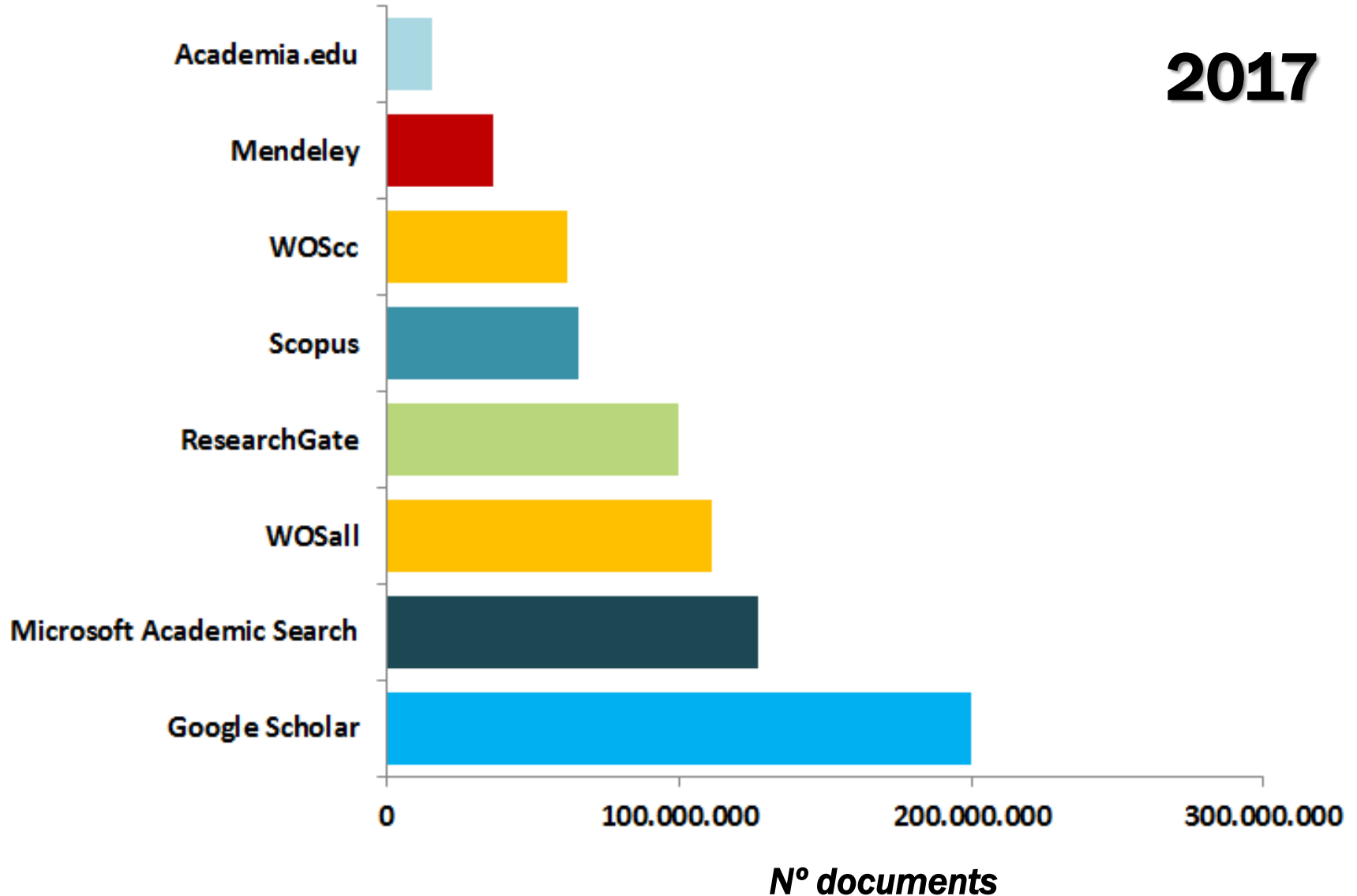# Size matters

2015

Orduña-Malea, E., Ayllón, J. M., Martín-Martín, A., Delgado López-Cózar, E.. (2014). About the size of Google Scholar: playing the numbers. arXiv preprint arXiv:1407.6239. *EC3 Working Papers 18*

Orduna-Malea, E., Ayllón, J. M., Martín-Martín, A., Delgado López-Cózar, E. Methods for estimating the size of Google Scholar. *Scientometrics* 104 (3), 931-949

The search engine with the largest coverage
Size matters

2017

Academia.edu
Mendeley
WOScc
Scopus
ResearchGate
WOSall
Microsoft Academic Search
Google Scholar

0   100.000.000   200.000.000   300.000.000

Nº documents

Proportion of articles and citations in Google Scholar

2017
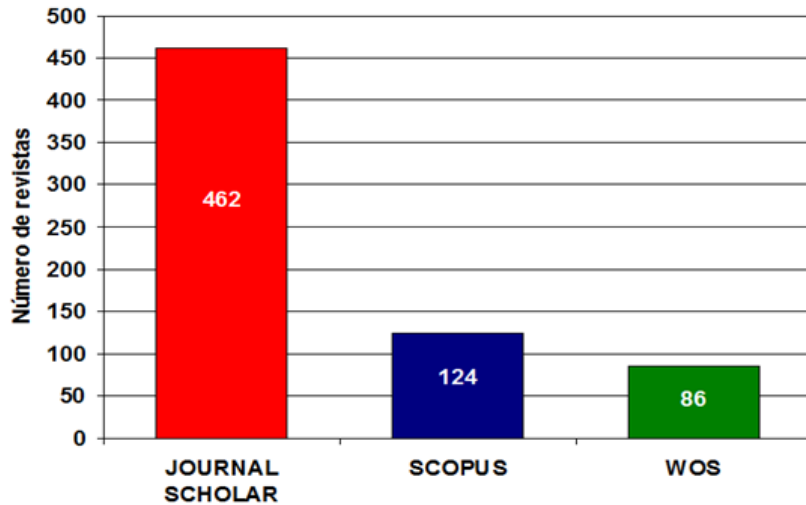
Citations;
62.120.534;
30%

Articles;
144.131.884;
70%

Library & Information Science (2011)

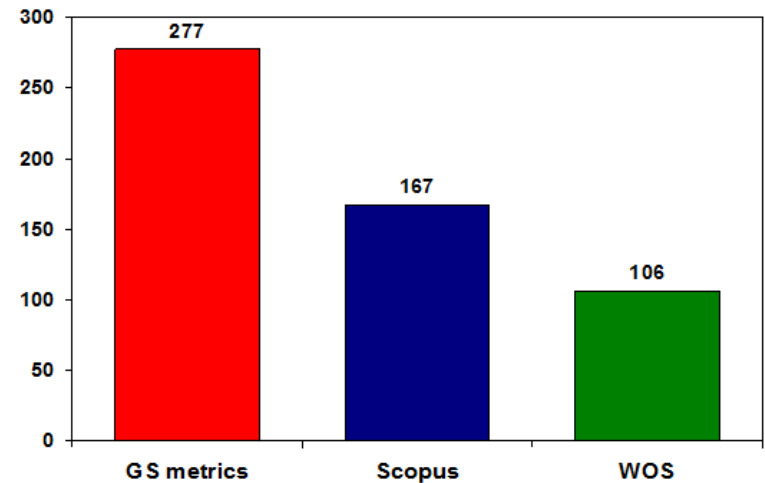Delgado López-Cózar, E.; Orduña Malea, E.; Marcos Cartagena, D.; Jiménez Contreras, E.; Ruiz Pérez, R. (2012). JOURNAL SCHOLAR: Una alternativa internacional, gratuita y de libre acceso para medir el impacto de las revistas de Arte, Humanidades y Ciencias Sociales. EC3 Working Papers 5: 12 de mayo de 2012

Communications Journals (2012)

Delgado López-Cózar, E.; Repiso Caballero, R. Delgado, E. (2013). The Impact of Scientific Journals of Communication: Comparing Google Scholar Metrics, Web of Science and Scopus. Comunicar, 21(41), 45-52.

Larger coverage, larger citation graph

Analysis of **most documents with a DOI published in 2009 and 2014 covered by Web of Science** (~2.5 million documents)

International

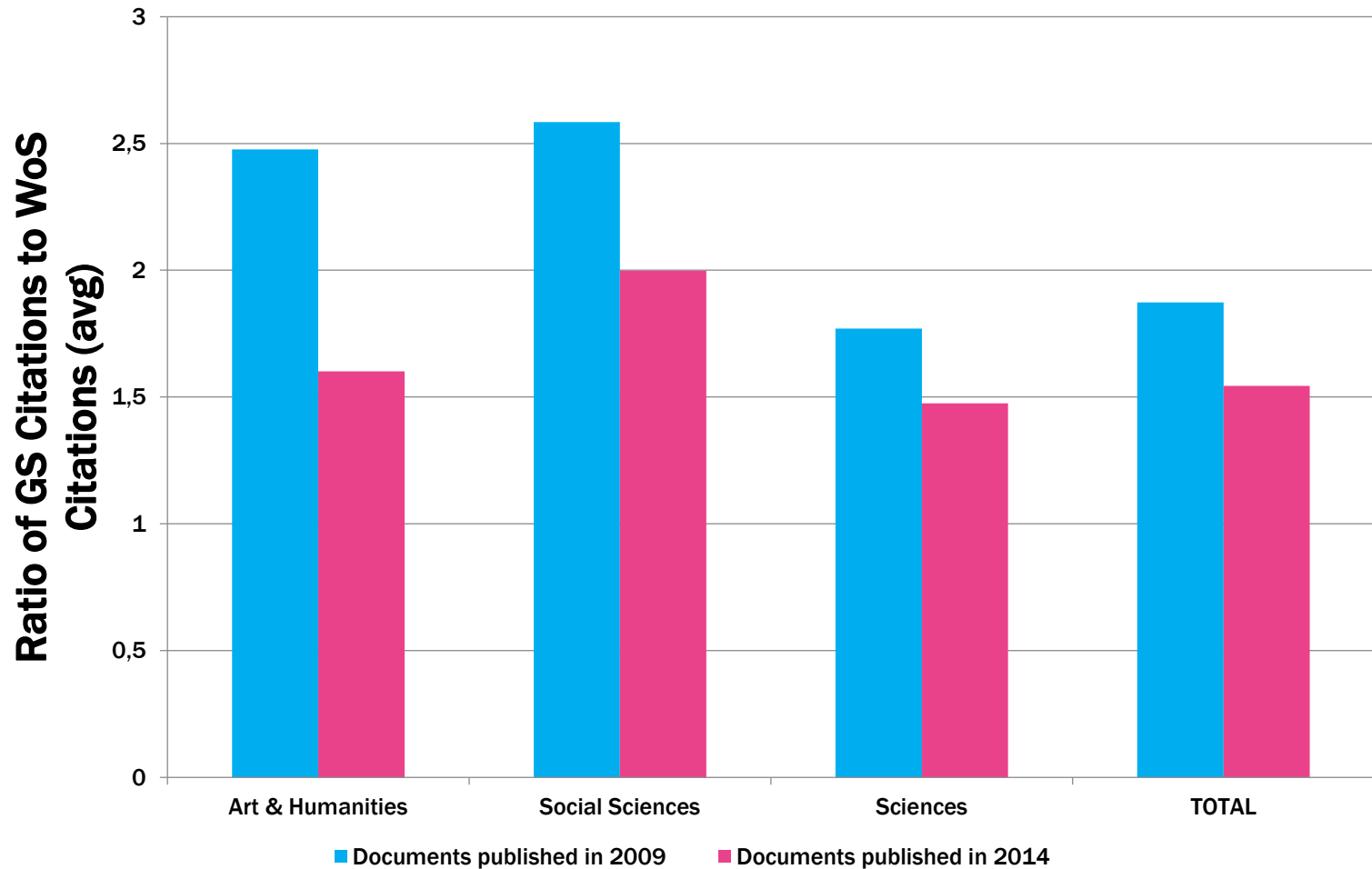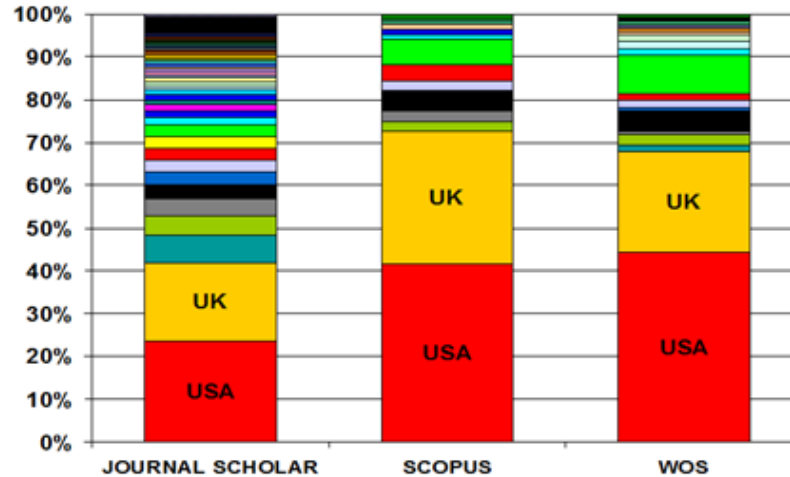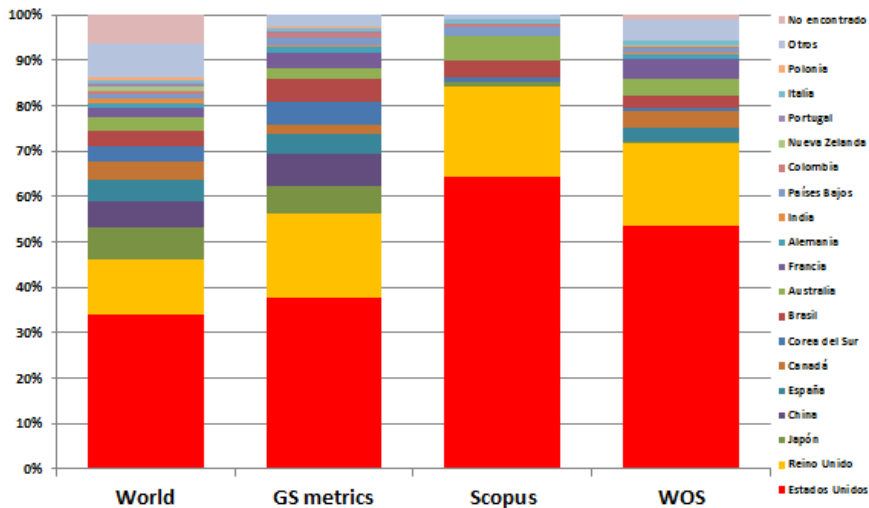**Journals Information & Library Science (2011)**

Delgado López-Cózar, E.; Orduña Malea, E.; Marcos Cartagena, D.; Jiménez Contreras, E.; Ruiz Pérez, R. (2012). JOURNAL SCHOLAR: Una alternativa internacional, gratuita y de libre acceso para medir el impacto de las revistas de Arte, Humanidades y Ciencias Sociales. EC5 Working Papers 5: 12 de mayo de 2012

Nursing Journals (2012)

Legend: No encontrado, Otros, Polonia, Italia, Portugal, Nueva Zelanda, Colombia, Países Bajos, India, Alemania, Francia, Australia, Brasil, Corea del Sur, Canadá, España, China, Japón, Reino Unido, Estados Unidos

Communications Journals (2012)

Legend: Otros, Rusia, Rumanía, Portugal, India, Francia, Canadá, Italia, Países Bajos, Australia, Alemania, España, Brasil, China, Reino Unido, USA
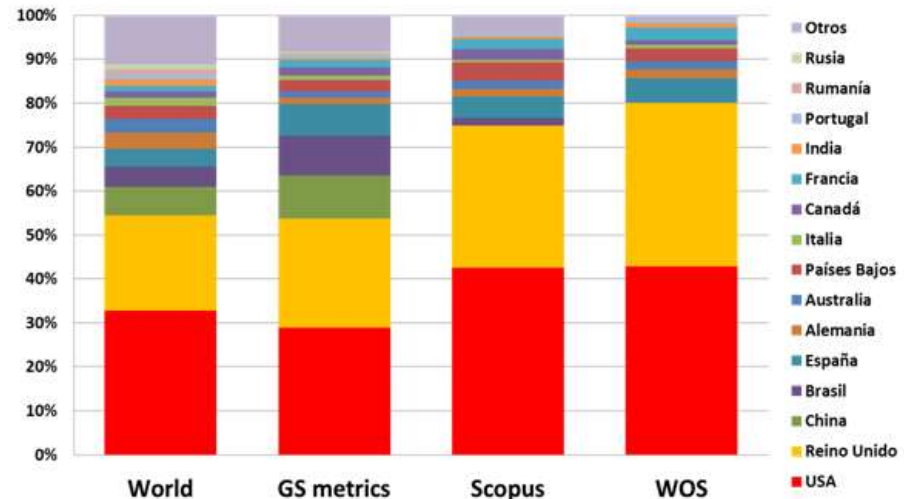
Proportion of documents covered by Google Scholar by language over the years

46
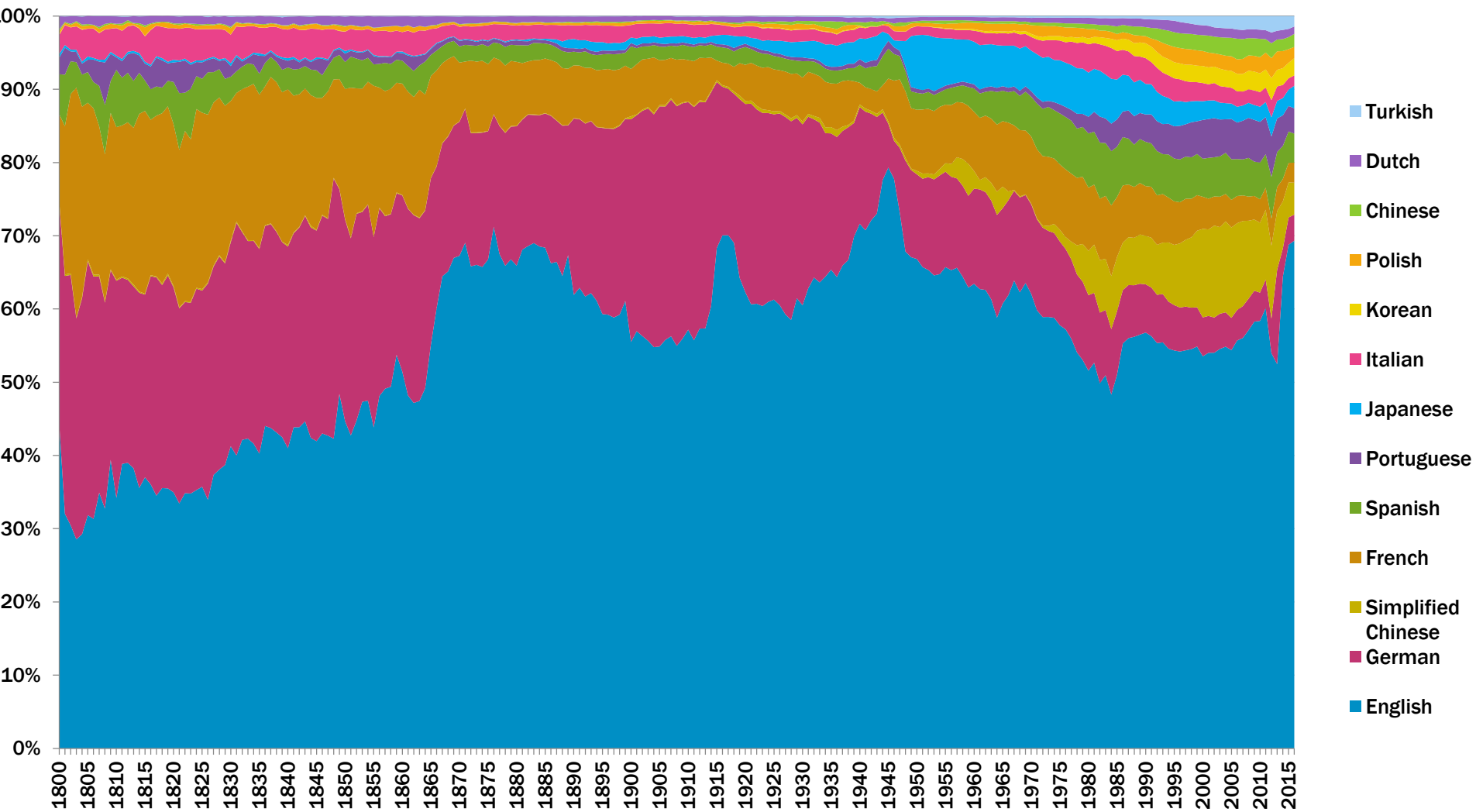
Multilingual
Documents covered by Google Scholar, Web of Science & Scopus by 13 languages (1800-2016)

Legend:
- Other
- Turkish
- Dutch
- Polish
- Korean
- Italian
- Japanese
- Portuguese
- Spanish
- French
- German
- Chinese
- English

X-axis: Web of Science, Scopus, Google Scholar
Y-axis: 0% to 100%

Multilingual
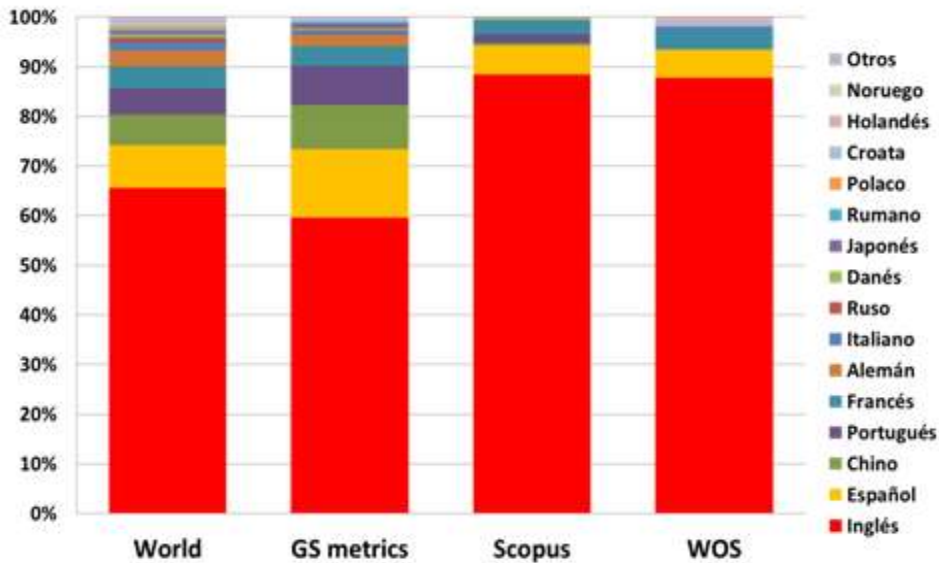
Delgado López-Cózar, E.; Repiso Caballero, R. El impacto de las revistas de Comunicación:
comparando Google Scholar Metrics, Web of Science y Scopus. Comunicar, en prensa

48

Covers all document typologies

Chart legend (WOS - SCOPUS / Google Scholar):
- Journal Articles
- Conference proceedings
- Dissertations, Master's Theses
- books
- Reports
- Otros

Meho, L. I., & Yang, K. (2007). Impact of data sources on citation counts and rankings of LIS faculty: Web of Science versus Scopus and Google Scholar.Journal of the American society for information science and technology, 58(13), 2105-2125.
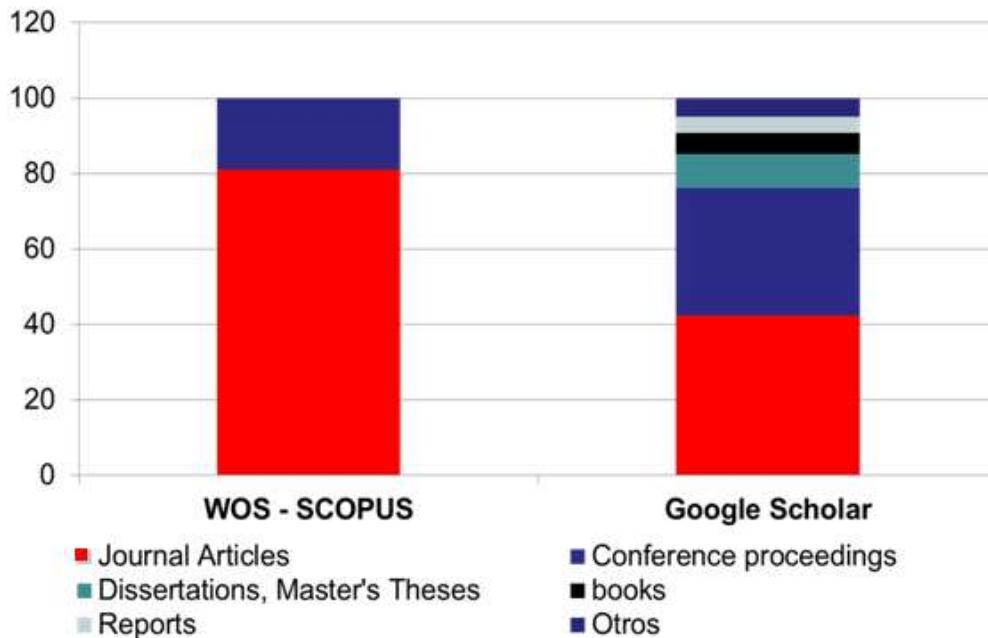
Google Scholar Digest @GScholarDigest · 13 Jun 2016
Google Scholar, followed by Microsoft Academic, are the platforms that offer a more varied range of doc types

Chart legend:
- mainstrean journals
- secondary journals
- book chapters
- conference papers
- white papers (website)
- books
- newsletter articles
- company report
- journal ranking
- software program
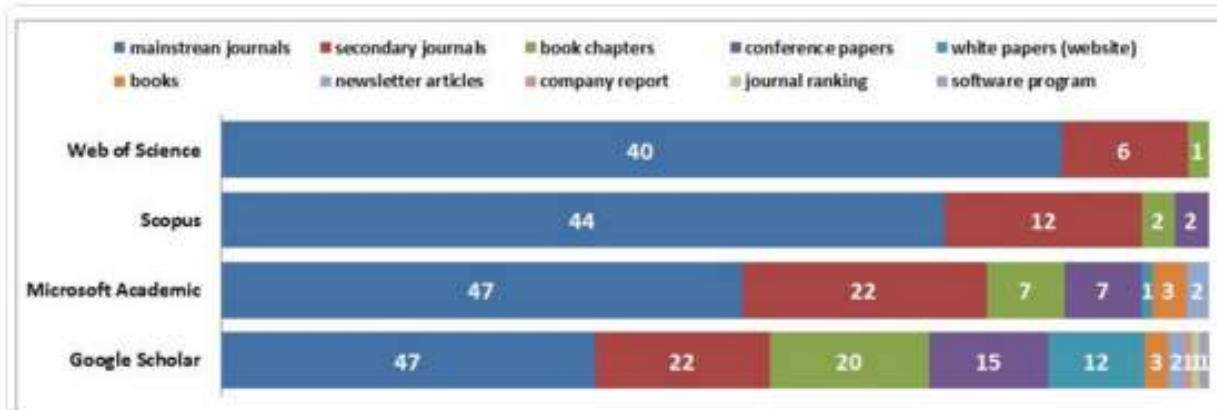
Microsoft Academic (Search): a Phoenix arisen from the ashes?
Anne-Wil Harzing, Scientometrics (in press)

https://goo.gl/yci6oo

Google Scholar offers a different vision of scientific production

GoogleScholar Digest @GScholarDigest · Jan 16
Top 10 most-cited English documents in Google Scholar (1950-2016)

| Documents	N° citations
American Psychiatric Association. (1952). *Diagnostic and statistical manual: mental disorders*	258,608
Sambrook J, Fritsch EF, Maniatis T. (1982). *Molecular cloning: a laboratory manual*	250,754
Laemmli UK. (1970). *Cleavage of structural proteins during the assembly of the head of bacteriophage T*	236,659
Bradford MM. (1976). *A rapid and sensitive method for the quantitation of microgram quantities of protein using the principle of protein dye binding*	216,043
Lowry OH et al. (1951). *Protein measurement with the Folin phenol reagent*	198,171
Yin RK. (1984). *Case study research: design and methods*	139,410
Press WH. (1986). *Numerical recipes: the art of scientific computing*	120,631
Kuhn TS. (1962). *The structure of scientific revolutions*	91,109
Abramowitz M, Stegun IA. (1964). *Handbook of mathematical functions: with formulas, graphs, and mathematical tables*	90,020
Zar JH. (1974). *Biostatistical analysis*	81,137

GoogleScholar Digest @GScholarDigest

Top 10 most-cited Spanish documents in Google Scholar (1950-2016)

Documents	N° citations
Hernández R, Fernández C, Baptista P. (2006). *Metodología de la investigación*	32,555
Freire P. (1997). *Pedagogía de la autonomía: saberes necesarios para la práctica educativa*	27,848
Freire P. (1970). *Pedagogía del oprimido*	24,971
Csikszentmihalyi M. (1990). *Fluir: una psicología de la felicidad*	24,044
Foucault M. (1978). *Microfísica del poder*	20,894
Deming WE. (1989). *Calidad, productividad y competitividad: la salida de la crisis*	18,938
Weber M. (1944). *Economía y sociedad*	16,792
Castells M. (2004). *La era de la información: economía, sociedad y cultura*	15,233
Real Academia Española. *Diccionario de la Lengua Española*	13,725
Foucault M. (1970). *La arqueología del saber*	13,179

Web of Science documents (2009/2014) found in Google Scholar

not found in
GS
4%
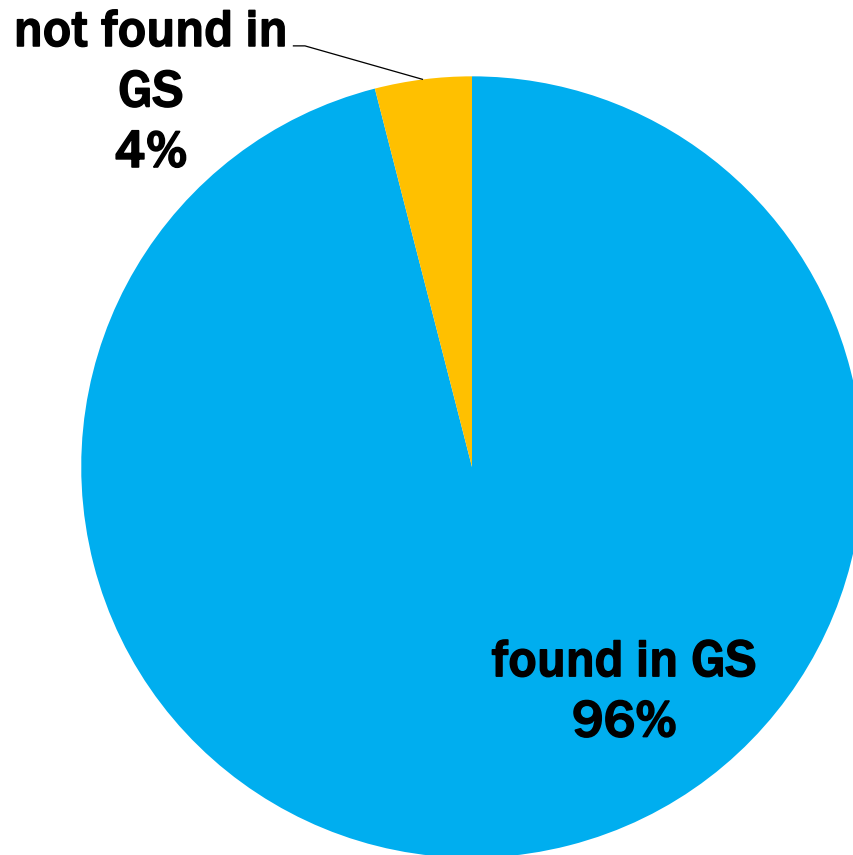
found in GS
96%

96% of the searched WoS documents were found in GS. 98% if we only consider journal articles. The rest might have been found as well if alternative search strategies had been used.

Highly cited documents in Google Scholar (1950-2013)
Half of them are not in WoS
The ones who are in WoS: very high citation correlation

$$y = 0.9021x - 302.8$$
$$R^2 = 0.8953$$

Not in WoS 49%

In WoS 51%

WoS_Citations

GS_Citations

Martín-Martín, A., Orduña-Malea, E., Ayllón, J. M., Delgado López-Cózar, E. (2014). Does Google Scholar contain all highly cited documents (1950-2013)?. arXiv preprint arXiv:1410.8464.
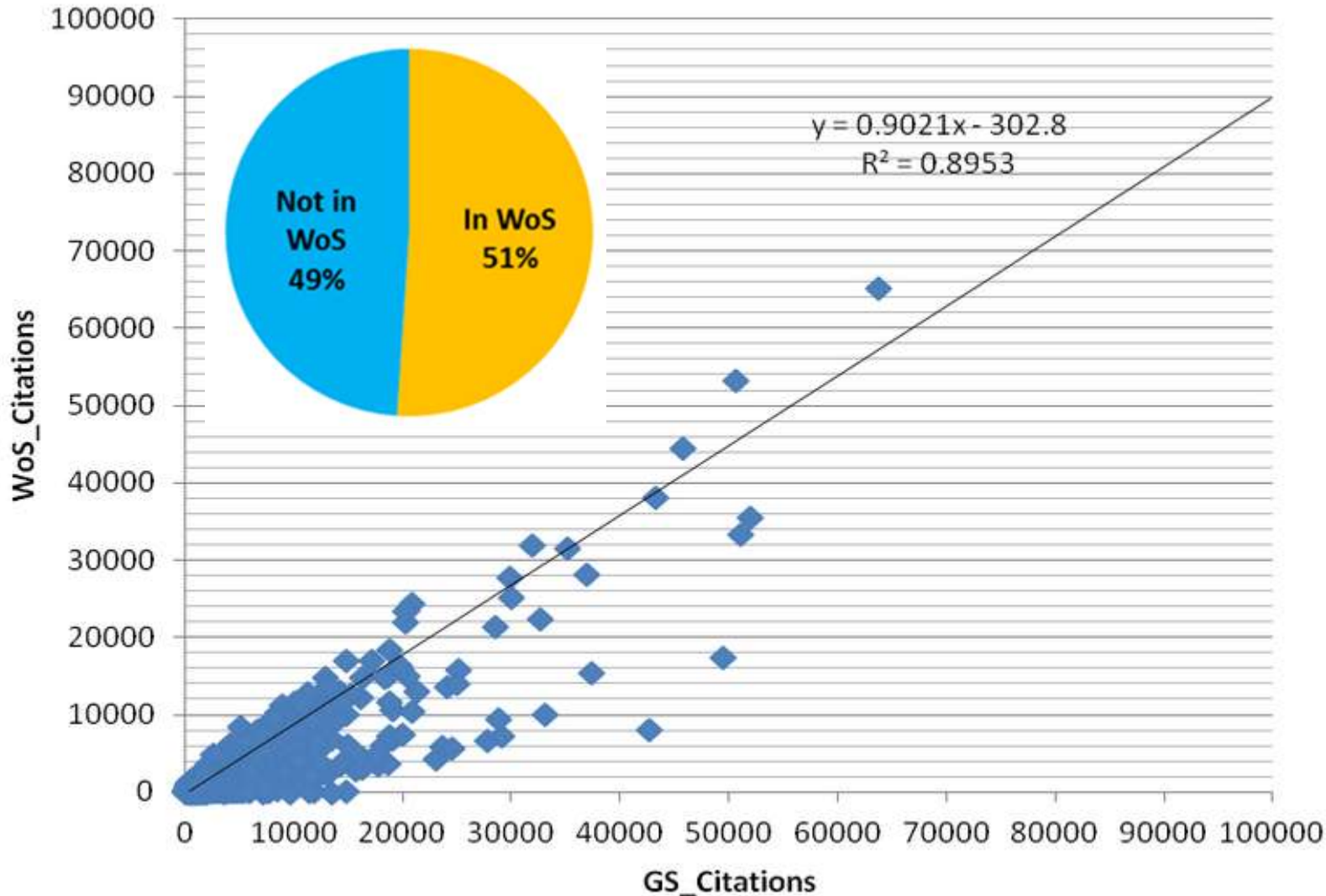
Confirmation

PRELIMINARY RESULTS:
Analysis of **most documents with a DOI published in 2009 covered by Web of Science** (~1 million documents)
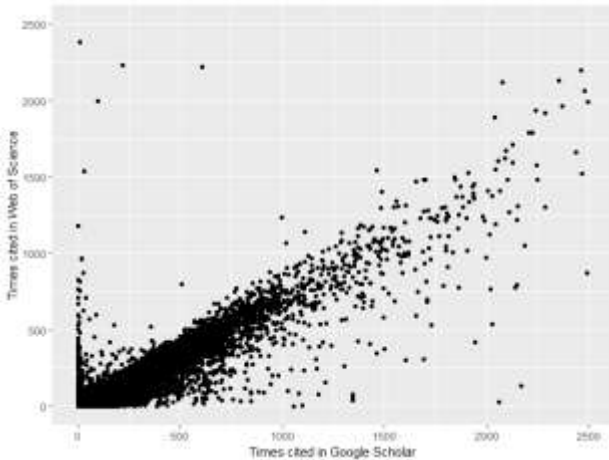
Sciences | **Social Sciences** | **Art & Humanities**
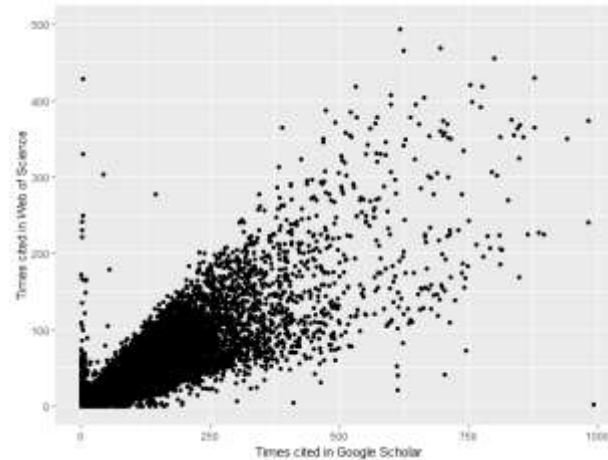
Citation Index	N	spearman.cor	p.value	prop.cited.gs	prop.cited.wos	ratio of gs_cit to wos_cit (avg)
Sciences	863801	0,94	0,00	0,97	0,95	1,68
Social Sciences	109232	0,90	0,00	0,97	0,94	2,58
Art & Humanities	13487	0,83	0,00	0,84	0,69	2,52

Logical when you see their sources
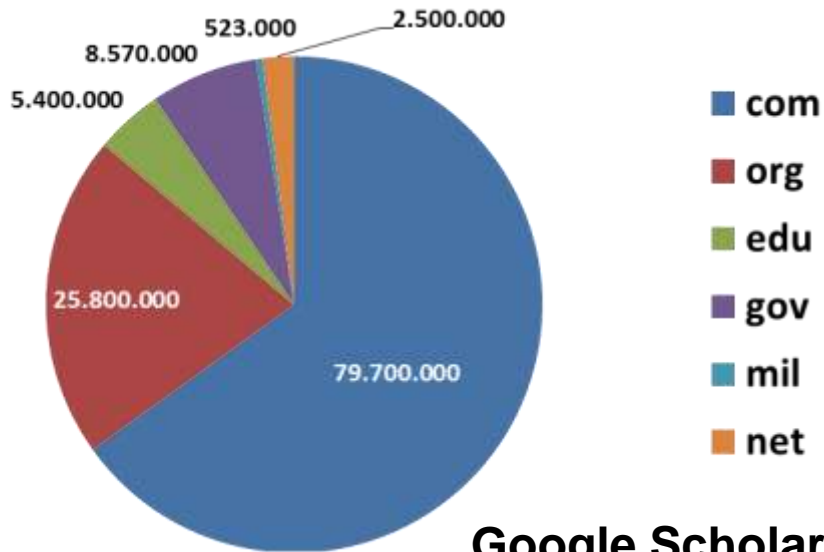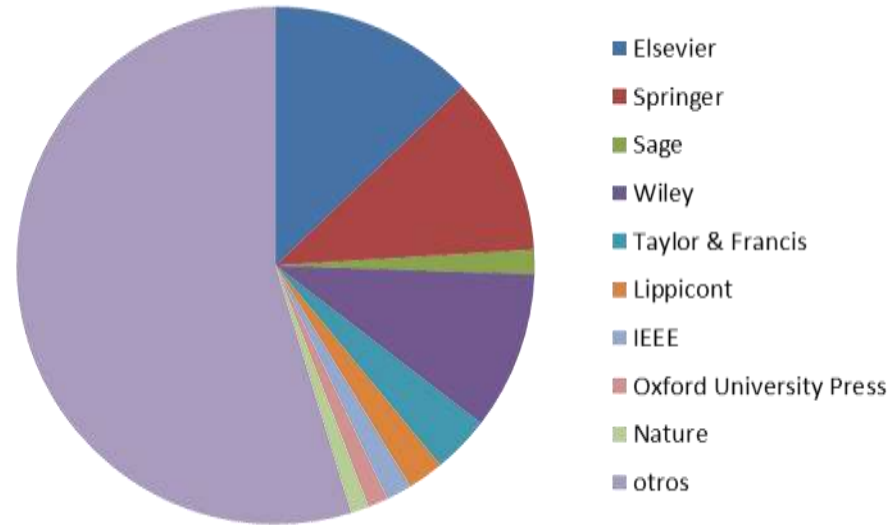
Google Scholar

books.google.com	14.000.000

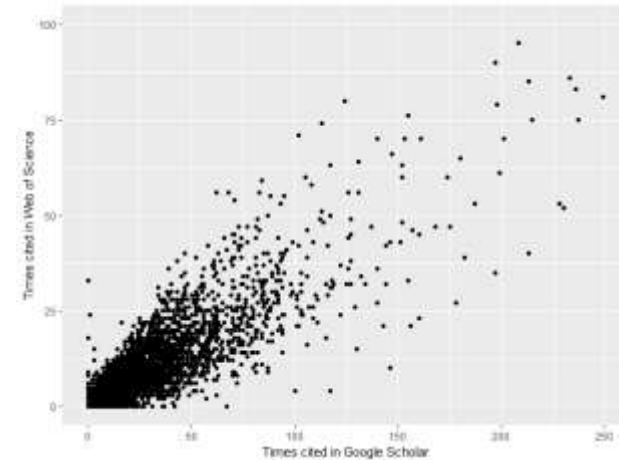|			
elsevier.com	7.200.000	ieee.org	2.990.000
wiley.com	4,590,000	jstor.org	2.210.000
springer	3.290.000	acs.org	987.000
taylor and francis	1.440.000	cambridge.org	893.000
lww.com	1.030.000	oxfordjournals.org	872.000
sagepub.com	781.000	acm.org	472.000
nature.com	428.000	iop.org	462000
bmj.com	370.000	aip.org	451.000
Routledge	293.000	arxiv.org	355.000
karger.com	188.000	pnas.org	101.000
degruyter.com	196.000	ams.org	98.000
biomedcentral.com	121.000	sciencemag.org	62.600
liebertpub.com	90.900	nber.org	26.900
emerald	167.000		

Web of Science

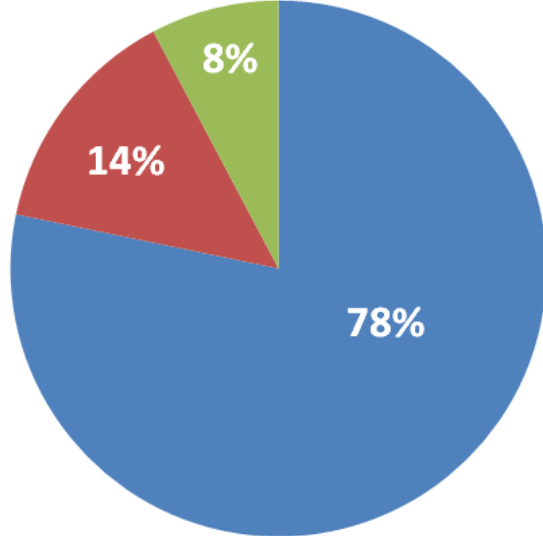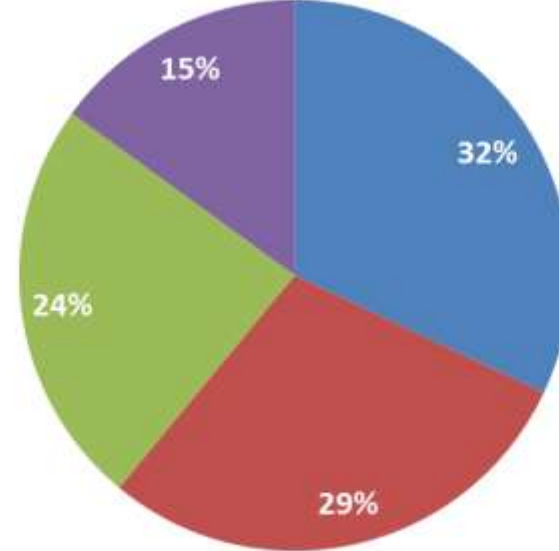**Scopus 2009**
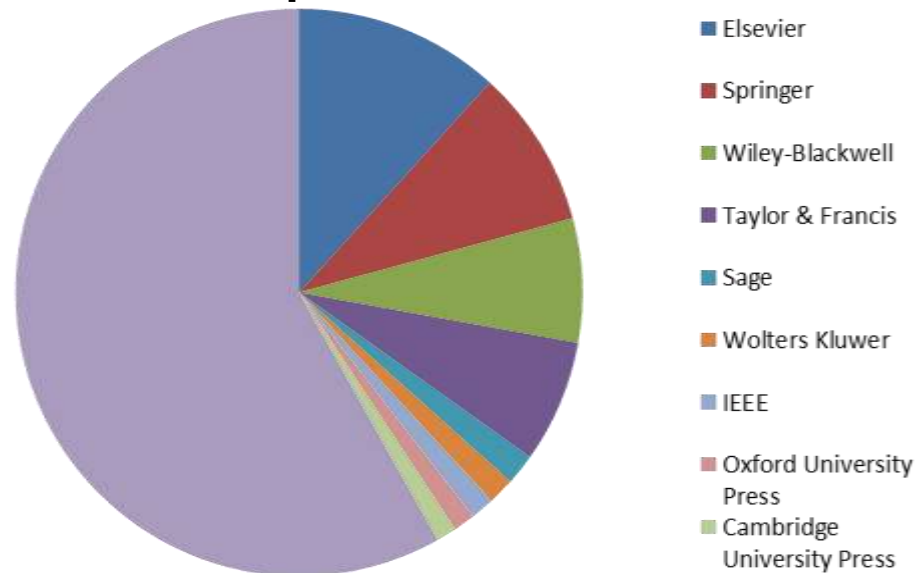
It has a better coverage of areas like Humanities, Social Sciences, Engineering...

Web of Science

- 78% Science & Technology
- 14% Social Sciences
- 8% Arts & Humanities

Scopus

- 32% Health Sciences
- 29% Physical Sciences
- 24% Social Sciences
- 15% Life Sciences

GS measures scientific impact and more
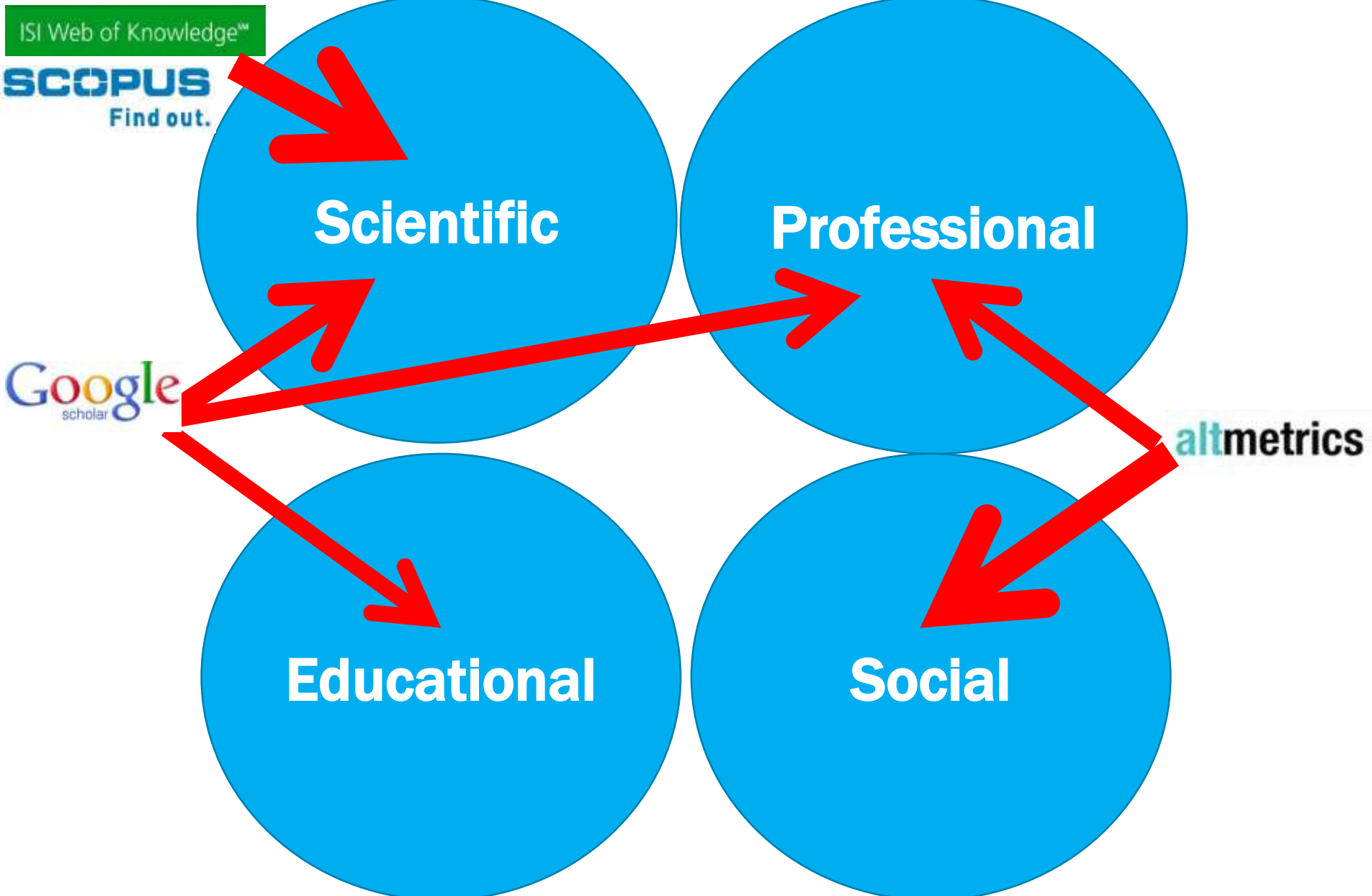
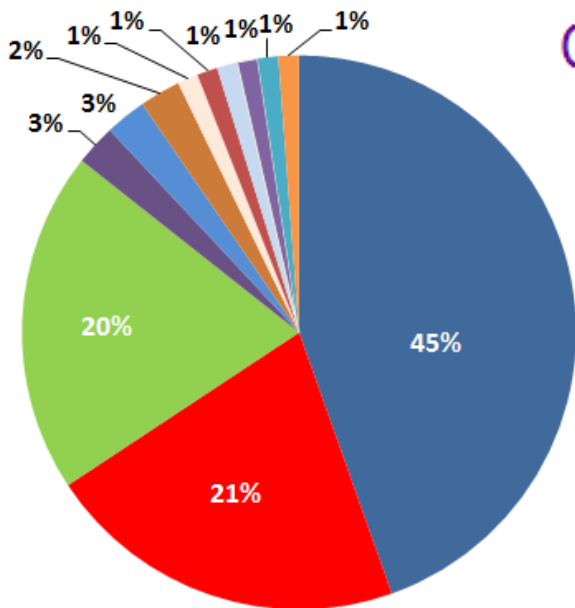# What impact does it measure?

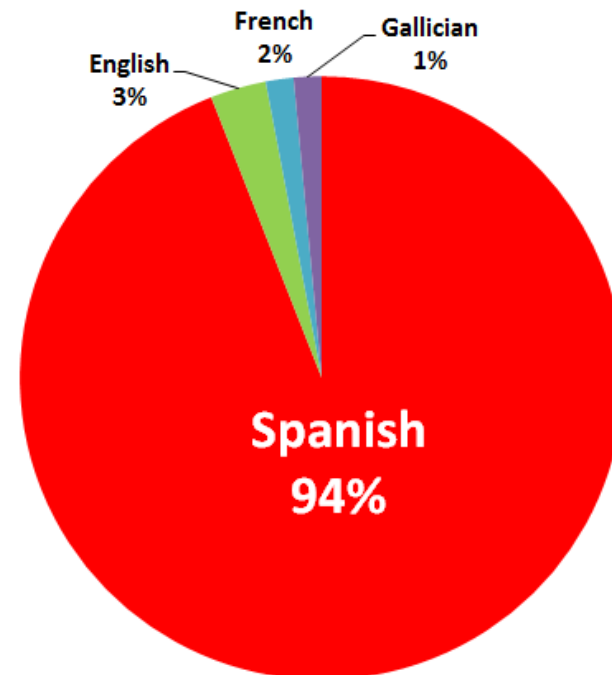**AUTORES** **DOCUMENTOS** **REVISTAS** **EDITORIALES** **INSTITUCIONES**

Mostrando autores 1-25 de 336. Ordenados por citas (últimos 5 años), descendentemente.

Busque un autor

Nombre	Institución	Últimos 5 años		Totales		Web of Science			ResearchGate	
		Citas	Índice H	Citas	Índice H	Docs.	Citas	Índice H	RG Score	Impact Points
Félix de Moya Anegón	CSIC	2933	26	4722	34	117	998	16	35,3	162,0
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José Antonio Merlo Vega	USAL	437	11	959	17	6	9	2	7,4	4,3

Primera | Anterior | Siguiente | Última

Fecha de actualización: 27/02/2015

A professional journal in Google Scholar

Google **Mi biblioteca**

Scholar — About 728 results (**0.03** sec)

Articles — Publication: **Mi biblioteca**

Cited by

45% Journals
21% Proceeding, Worshop, meeting
20% Thesis (undergraduate, master, doctoral)
3%
3%
2%
1% 1% 1% 1% 1% 1%

- Journals
- Proceeding, Worshop, meeting
- Thesis (undergraduate, master, doctoral)
- Reports
- Preprints
- Syllabus
- Yearbook
- Bibliography
- Conferencia
- Book

Spanish 94%
English 3%
French 2%
Gallician 1%

We question ourselves
Drawbacks Google Scholar

Lack of transparency

There isn't a public master list of the sources Google Scholar indexes (publishers, repositories, catalogues, bibliographic databases and repertoires, aggregators, journals...)

There is no accurate method to estimate the size of Google Scholar

Only(!) returns 1000 results for any given query

Is this really a bibliographic problem?
Who is interesed in bibliographic searches of that size?

Page 50 of 42,200 results (**0.21** sec)

‹ Goooooooooogle

Previous   41 42 43 44 45 46 47 48 49 **50**

Similarly, even if a document has received more than 1000 citations, only the first 1000 can be displayed when clicking the "Cited by" link

We have no control over the results we get

**Are the relevant results for my needs among those 1000 results?**

Usually yes... thanks to the ranking algorithm they use

Google Scholar Digest @GScholarDigest · Jan 4

Nº citations & preferred language are the main criteria used by Google Scholar to rank documents in keyword-free year queries

Martin-Martin, A., Orduna-Malea, E., Harzing, A W., Delgado López-Cózar, E. (2017). Can we use Google Scholar to identify highly-cited documents? *Journal of Informetrics*, 11(1), 152-163.
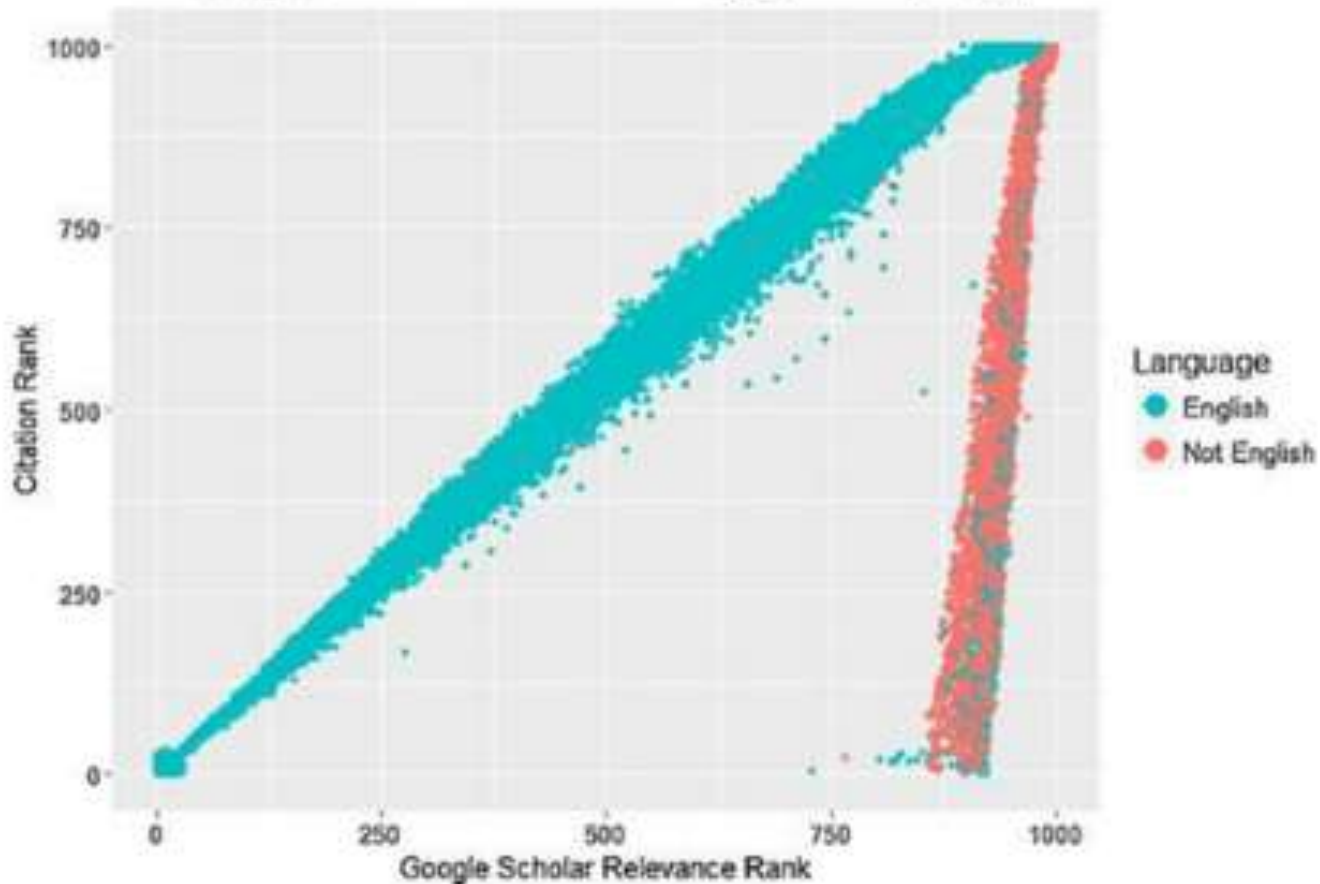
There is no native method to easily extract bibliographic data massively. Only one by one.

Honest begging: signals of need, quality, and/or hunger?
J Wright - Behavioral Ecology, 2011 - ISBE
... **Altmetrics** is now available for articles published in Behavioral Ecology! ...
Cited by 3   Related articles   All 6 versions   Import into BibTeX   Cite   Save

There is no API. What can we use for large downloads?

A scraper

Limited filtering and sorting options (year and relevance)

Weaknesses

The advanced search form is limited to four search dimensions: keywords, authors, source of publication (journal, conference...), and year of publication

WEB OF SCIENCE™

Find articles

with **all** of the words	
with the **exact phrase**	
with **at least one** of the words	
without the words	
where my words occur	● anywhere in the article
	○ in the title of the article
Return articles **authored** by	
	e.g., "PJ Hayes" or McCarthy
Return articles **published** in	
	e.g., J Biol Chem or Nature
Return articles **dated** between	—
	e.g., 1996

Topic

- Topic
- Title
- Author
- Author Identifiers
- Group Author
- Editor
- Publication Name
- DOI
- Organization-Enhanced
- Conference
- Language
- Document Type
- Funding Agency
- Grant Number

Weaknesses

No quality control of sources indexed. Peer-reviewed documents coexist with documents that haven't gone through that process.

**Is that really
a problem?**
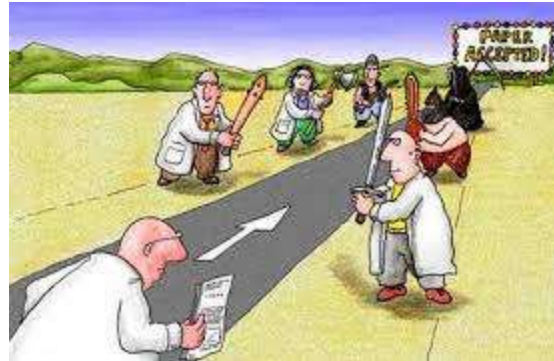
**It shows
richness rather
than a flaw**

But... Google Scholar also shows which documents are covered by the Web of Science, and which of them are available from your library. YOUR CHOICE...

Prevalence and consequences of male-to-female and female-to-male intimate partner violence as measured by the National **Violence Against Women** Survey
P Tjaden, N Thoennes - **Violence against women**, 2000 - vaw.sagepub.com
Abstract Using data from a telephone survey of 8,000 US men and 8,000 US women, this study compares the prevalence and consequences of violence perpetrated against men and women by marital and opposite-sex cohabiting partners. The study found that married/ **...**
Cited by 859   Related articles   All 6 versions   Import into BibTeX   Save   More

[PDF] from sagepub.com
Acceso BUO

Conflict and control gender symmetry and asymmetry in **domestic violence**
MP Johnson - **Violence against women**, 2006 - vaw.sagepub.com
Abstract Four types of individual partner violence are identified based on the dyadic control context of the violence. In intimate terrorism, the individual is violent and controlling, the partner is not. In violent resistance, the individual is violent but not controlling; the partner **...**
Cited by 562   Related articles   All 12 versions   Web of Science: 209   Import into BibTeX   Save   More

[PDF] from sagepub.com
Acceso BUO

"Gender Symmetry" in **Domestic Violence** A Substantive and Methodological Research Review
MS Kimmel - **Violence against women**, 2002 - vaw.sagepub.com
Abstract Despite numerous studies that report the preponderance of **domestic violence** is perpetrated by men against women, other empirical studies suggest that rates of **domestic**

[PDF] from sagepub.com
Acceso BUO

Weaknesses

It doesn't offer information regarding

- Institutional affiliation of the authors of the documents is available (institution, country)
- The language in which documents are written
- The typology of each document is not clear (book, journal article, conference communication, thesis, report...). Only books are marked as such, usually when they have been found on Google Books
- Not all documents have an abstract
- The author-supplied keywords are not available
- The list of cited references in each article is not available either

Greatest danger: manipulation

Delgado López-Cózar, E., Robinson-García, N., Torres-Salinas, D. (2014). The Google Scholar experiment: How to index false papers and manipulate bibliometric indicators. Journal of the Association for Information Science and Technology, 65(3), 446-454.

Errors in the data Enough quality?

[CITATION] y Jiménez-Contreras, E.(2006)
E Delgado López-Cózar, R Ruiz-Pérez - La Edición de Revistas Científicas Directrices, ...
Cited by 2   Related articles   Import into BibTeX   Saved   More

[CITATION] Emilio
LC DELGADO - La investigación en Biblioteconomía y Documentación. ..., 2002
Cited by 2   Related articles   Import into BibTeX   Saved   More

**Large units of analysis: no problem
Individuals: check data first**

Even with «dirty» data, it measures more and better

Errors must be interpreted differently

Put your emphasis in clusters...

Error rate
± 10%

| 110 |
| 100 | 20 |
| 90 |

| 11000 |
| 10000 | 2000 |
| 9000 |

The Googledependency

◄ Goooooooooogle ►

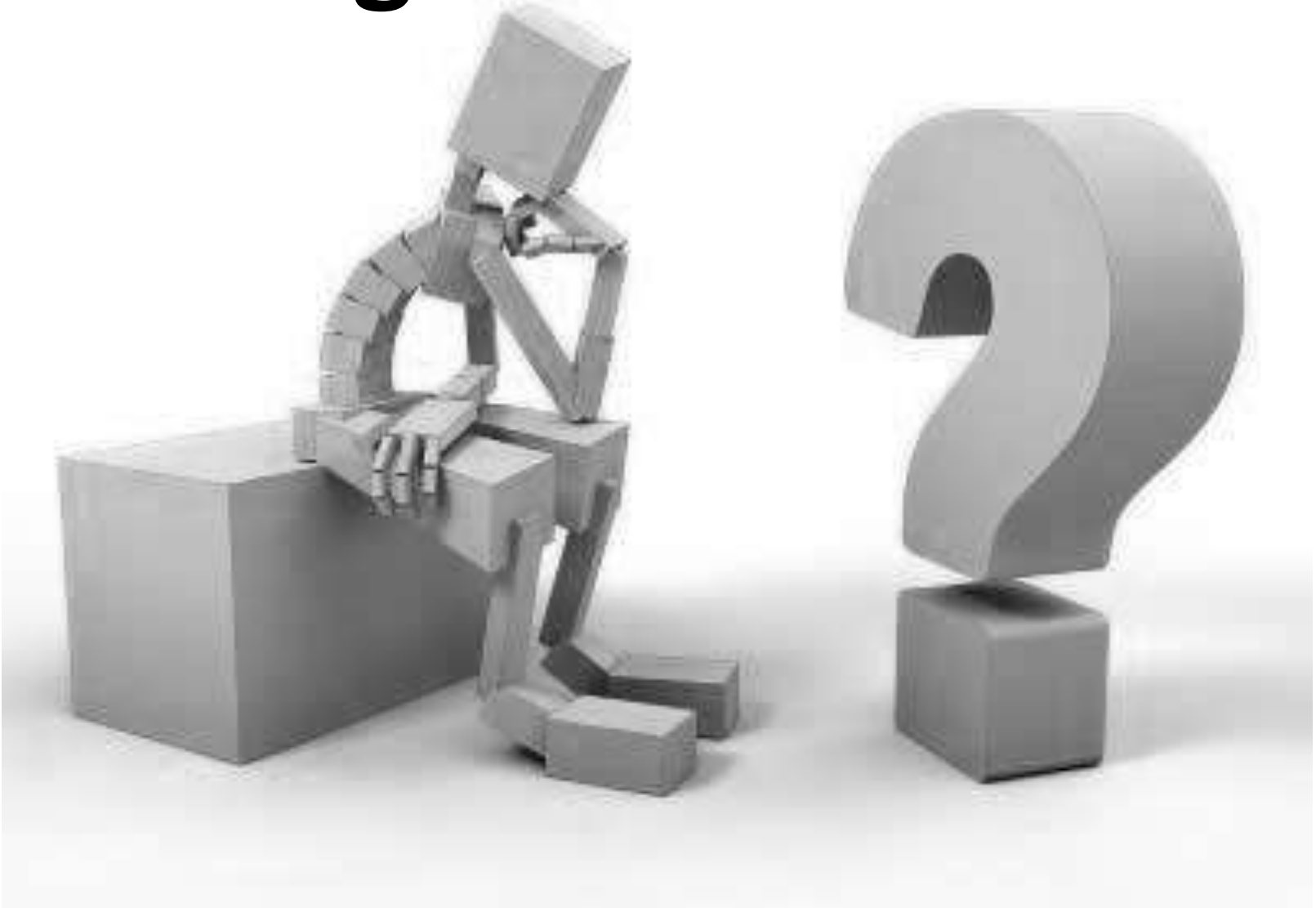Anterior   91 92 93 94 95 96 97 **98** 99 100   Siguiente

Académico   Página 100 de 24.700 resultados (**0,22** s)

Drawbacks:
Google Scholar Metrics

COVERAGE
The exact number of source covered in this product is unknown, because a list of the journals and other sources covered in it has never been made public. Our estimations lead us to believe that this figure is probably higher than **40,000**. Over **9000** journals have been found only in the **Arts, Humanities, and Social Sciences**.
The journal selection criteria (which include having published at least 100 articles in the last five-year period, and having received at least one citation for those articles) are rather arbitrary, and leave out many journals for which articles can be found in Google Scholar
The product doesn't provide the total number of articles published in each of the journals, or the total number of citations received by the journals in the analyzed timeframe
The product doesn't display all the documents published in a given source, especially those that have received 0 citations. It only displays those with a citation count higher or equal to the h5-index. This would allow researchers to verify the accuracy of the information provided by the product. This data is of course available from GS.
The product doesn't provide other basic and descriptive bibliometric indicators: self-citation rates, impact over time (immediacy index), or to normalize results (citation average)
It is not possible to select different time frames for the calculation of indicators. The significant disparities in publishing processes and citation habits among areas (publishing speed, pace of obsolescence) would benefit from the possibility to customize the time frame according to the particularities of any given subject area.
The criteria that has been followed for the creation of the classification scheme (areas and disciplines), and the rules and procedures followed when assigning publications to these areas and disciplines hasn't been disclosed.

SEARCH AND RESULTS INTERFACE
The search functionality only allows searching by publication title. Moreover, a maximum of 20 sources are displayed for any search, those with the highest h5-index.
Only journals published in English are classified in categories and subcategories, and only 20 of those journals are displayed in each subcategory. Publications in other languages are not ranked by subject category, but there are a number of language ranks that contain the top 100 journals with a higher h5-index (for journals published in Chinese, Portuguese, Spanish, German, Russian, French, Japanese, Korean, Polish, Ukrainian, and Indonesian).
The interface doesn't give access to previous versions of Google Scholar Metrics (2007-2011, 2008-2012, 2009-2013, 2010-2014), which would be interesting to assess the evolution of publications over time.
QUALITY OF THE DATA
Journal names are not normalized
DATA REUSE AND EXPORTING CAPABILITIES
This product doesn't offer any way to export data

Drawbacks:
Google Scholar Citations

COVERAGE
The current collection of public profiles is not necessarily an accurate reflection of all the authors that work for any of the scientific institutions present in GSC **1.200.000 profiles public   ¿how many private? Unknown**
GSC offers normalized list of researchers working at specific institutions, but only researchers that have both entered their affiliation and verified their profile using their institutional email are included in these lists. When authors are included in these lists, a link appears in their institutional information, linking to the list of researchers working in the appropriate institution. However, this feature suffers from various problems: • Some institutions are not covered by this feature • Some institutions are not properly normalized • Some authors are not included in the list of the institution they work for • This system doesn't consider all the institutions authors may have worked at throughout their academic career, it only takes into account the institution they entered at the time they created their profile or when they last updated the data

QUALITY OF THE DATA
Authors are completely free to set up their profile how they like, without any kind of external bibliographic control. This means that authors may add any publications to their profile, regardless of whether they actually authored it or not. It also means that authors can edit documents and remove them at any moment
Authors who set up their profile to be automatically updated should check and clean it regularly. Otherwise, some false matches might get in.
The lack of control in the terms used as areas of interest sometimes have adverse effects: using different terms to refer to the same concept (synonyms, singular versus plural, gender differences, typos). This freedom also means some users enter inadequate terms, disused terms, or even invented terms.
The list of coauthors is not always available, or complete.
Although the system provides an easy system to merge duplicate documents, authors don't always take the time to do this and therefore, duplicates also exist in this platform.
There is certain control over the names of the institutional affiliations, although it is not perfect.
GSC doesn't rely in any kind of controlled vocabulary for author names, journals, publishers, institutions… that facilitates the identification of the different name variants for these entities.
These limitations make it difficult to carry out large scale studies using GSC data, since the data would have to go through important cleaning and normalization processes prior to the analysis.
DATA REUSE AND EXPORTING CAPABILITIES
Natively, there are no exporting capabilities, except for one's own profile.

Potential errors in Google Scholar Citations profiles after a major update in the database

- Inclusion of documents not written by the owner
- Deletion of documents written by the owner
- Duplicates
- Merger of documents which are not the same
- Documents that no longer point to an external resource, or point to an incorrect one.

Jose Maria López Piñero

Universidad de Valencia
History of Medicine, Science Studies, Bibliometrics, Scientometrics
Verified email at ugr.es *

1933 - 2010

Title 1–20		Cited by	Year
Probability and Statistics MH DeGroot, MJ Schervish Addison Wesley.	(Document not written by the owner of the profile)	3649	2012

Ciencia y técnica en la sociedad española de los siglos XVI y XVII

Google Scholar Citations:
Laissez faire laissez passer

Mariano Barbacid
CNIO
Verified email at cnio.es
Cited by 47654
Molecular Oncology

David Posada
Professor of Genetics, University of Vigo, Spain
Verified email at uvigo.es
Cited by 46913
phylogenomics   evolutionary genomics   phylogenetics   molecular evolution   bioinformatics

Luis Serrano
Profesor de cine, Imagen y Sonido
Verified email at eiso.es
Cited by 40110
Cine   Televisión   Nuevas tecnologías   Imagen y Sonido

Be wary of CUT / COPY – BUTTON / COMAND bibliometric products

Don't mix apples and oranges

A final consideration...

To what end are we measuring scientific activity?

Spreading light where there was darkness

Thank you very much!