

Citations

Michael E
Dewey

Outline

Intro
Cantor

My citation
counts

Dist of cits
Analysis
Model results
Residuals

Summary

What do citations tell us?

Michael E Dewey

Institute of Psychiatry, London

London, June 2010

1 Introduction

- Cantor example

2 My citation counts

- Distribution of citations
- Analysis
- Model results
- Residuals

3 Summary

- A citation occurs when an article in a citing journal refers to another publication
- Journals acquire impact factors
- Authors can:
 - track scientific productivity. A scientist has index h if h of his or her N_p papers have at least h citations each, and the other $(N_p - h)$ papers have at most h citations each,
 - identify their scientific followers
- Bias in the use of scientific evidence can be investigated

Cantor example from 1874

ISI Web of Knowledge [v.4.8] - Web of Science Cited Reference Search Step 2 - Mozilla

File Edit View History Bookmarks Tools Help

http://apps.isiknowledge.com/summary.do?proc

CITED REFERENCE INDEX
References: 1 - 8 of 8

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Select Page Select All* Clear All
Finish Search

Select	Cited Author	Cited Work [SHOW EXPANDED TITLES]	Year	Volume	Page	Article ID	Citing Articles **	View Record
<input type="checkbox"/>	CANTOR G	CRELLES J MATH	1874	77	258		9	
<input type="checkbox"/>	CANTOR G	CRELLES J MATH	1874	77	260		1	
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Done

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Über eine Eigenschaft des Inbegriffes aller reellen algebraischen Zahlen *Journal für die reine and angewandte Mathematik* 77 (1874) 258–262

Citations

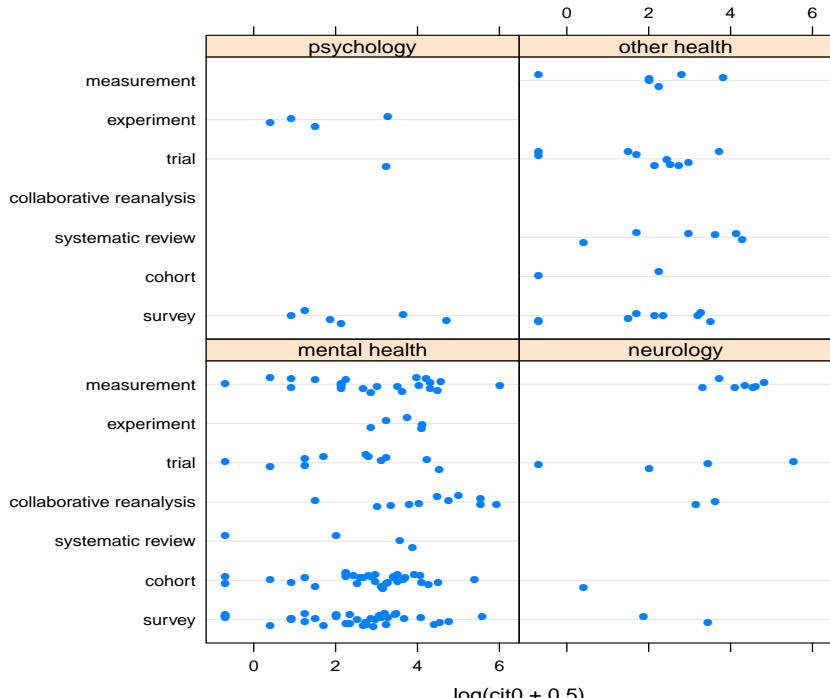
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The top ten

jnl	Freq
Epilepsy Res	4
Int J Epidemiol	4
Brit Medical J	5
Acta Psychiat Scand	6
Brit J Gen Pract	6
Age Ageing	7
Psychol Med	9
Brit J Psychiat	22
Int J Geriatr Psychiat	22

- Number of articles from each journal, there is also one in the predecessor of Brit J Gen Pract

- | | | | | | | | | |
|----|----|---|---|---|---|---|---|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 9 | 22 |
| 46 | 15 | 9 | 2 | 1 | 2 | 1 | 1 | 2 |

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- Exclude
 - Notes, correspondence
 - Computing, peer review, methodology
 - Papers published in 2010
- Journal impact factors taken for 2008
 - Total citations made in 2008 anywhere to papers published in that journal in 2006 and 2007
 - Divided by total number of articles published in that journal in 2006 and 2007

- Citations up to May 2010

10%	20%	30%	40%	50%	60%	70%	80%	90%
1.00	4.00	7.00	10.80	17.00	24.00	32.90	51.80	88.30

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Impact factors — the top ten

jnls	if08
Brit J Psychiat	5.08
Amer J Epidemiol	5.45
Int J Epidemiol	5.84
Stroke	6.50
Schizophrenia B	6.59
Neurology	7.04
Annals Neurology	9.94
PLoS Med	12.19
Brit Medical J	12.83
Lancet	28.41

- Journals change their names, merge, split
- Unofficial sources of impact factors

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Effect table

	Coeff	se	Multiplier	clb	cub
neurology	0.315	0.287	1.370	0.781	2.406
psychology	-0.372	0.329	0.689	0.362	1.314
other health	-0.553	0.248	0.575	0.354	0.935
cohort	0.143	0.225	1.154	0.742	1.793
systematic review	0.460	0.371	1.584	0.766	3.275
collaborative reanalysis	0.959	0.318	2.609	1.399	4.866
trial	0.299	0.259	1.349	0.811	2.241
experiment	-0.116	0.357	0.890	0.443	1.792
measurement	0.318	0.228	1.374	0.879	2.149
lag	-0.072	0.033	0.931	0.873	0.992
log(lag)	1.535	0.282	4.641	2.668	8.074
if08	0.101	0.030	1.106	1.043	1.173

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- Data clearly not Poisson — over-dispersed
- Model counts using negative binomial model with log link
- Some evidence of zero inflation using model with logit link and impact factor as covariate
- Modelling time since publication using splines does not improve fit
- Data extracted from a BibTex bibliographic database using R and modelling also done in R using `zeroinfl` from package `pscl`
- Could model using quantile regression if behaviour at one end of the distribution was primary interest

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Which papers stand out?

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The stars

jnl	tag	year	type	field	cit0	if08	res
Psychol Med	copeland86a	1986	meas	m h	409	4.72	6.29
Psychsom Med	mykletun07	2007	cohort	m h	50	3.46	5.19
Brit J Psychiat	copeland87b	1987	surv	m h	264	5.08	5.17
Pers Individ Diff	terryshort95	1995	surv	psy	111	1.60	4.73
Brit J Psychiat	copeland92a	1992	cohort	m h	220	5.08	3.53
Epilepsia	smith93	1993	trial	neur	254	3.73	2.80

The also rans

jnl	tag	year	type	field	cit0	if08	res
Int J Geriatr Psychiat	dewey04	2004	s r	m h	0	2.13	-1.04
Int Psychogeriatrics	copeland91b	1991	meas	m h	1	2.10	-1.03
Brit J Psychiat	blay02	2002	trial	m h	1	5.08	-1.02
Brit J Addiction	wilson88	1988	surv	m h	2	4.24	-1.00
H Soc Care Commun	boneham94	1994	surv	m h	1	1.05	-0.99
Int J Geriatr Psychiat	blay07	2007	surv	m h	0	2.13	-0.98

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- Your mileage may vary
- Modelling aids interpretation
- Human intervention required to obtain full list

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