

# Supplementary Material

2017-08-25

All prices were converted in EUR before the analysis.

The most comprehensive longitudinal per publisher data sets are available from Canada (2014-2016), Chile (2008-2015), Finland (2010-2016), France (2009-2015), Netherlands (2011-2015), and UK (2010-2016). Data for Argentina (2008-2016) is also available but we could not verify the source. In most countries, the data is available only for some of the largest publishers and/or institutions.

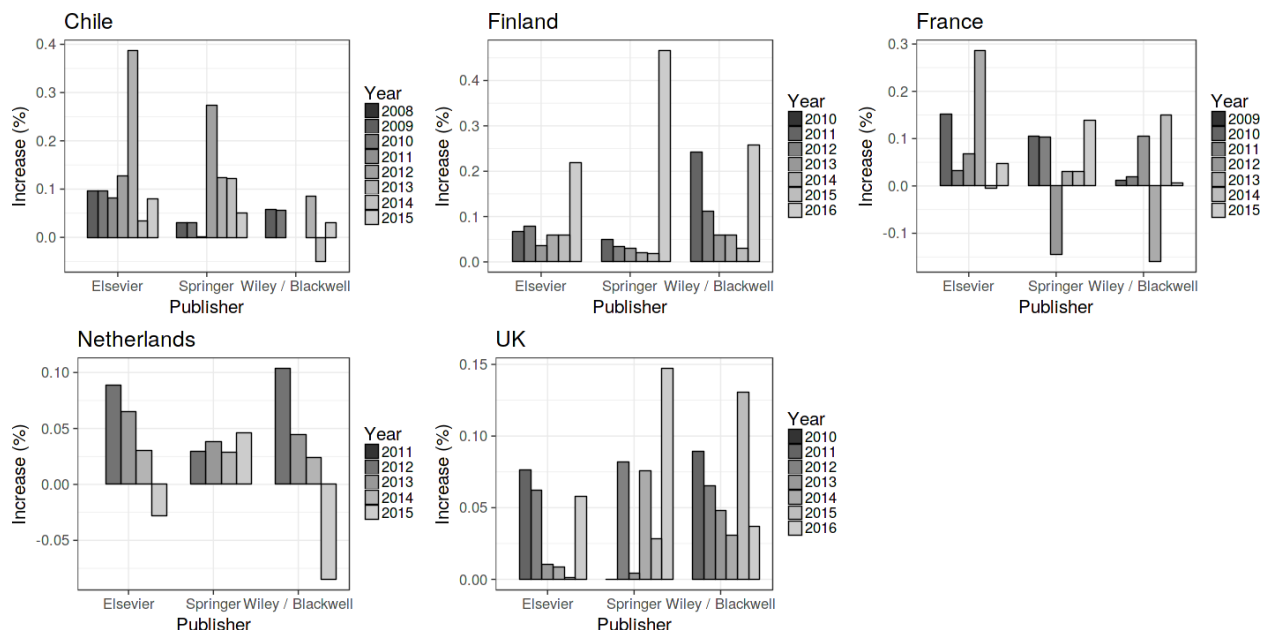
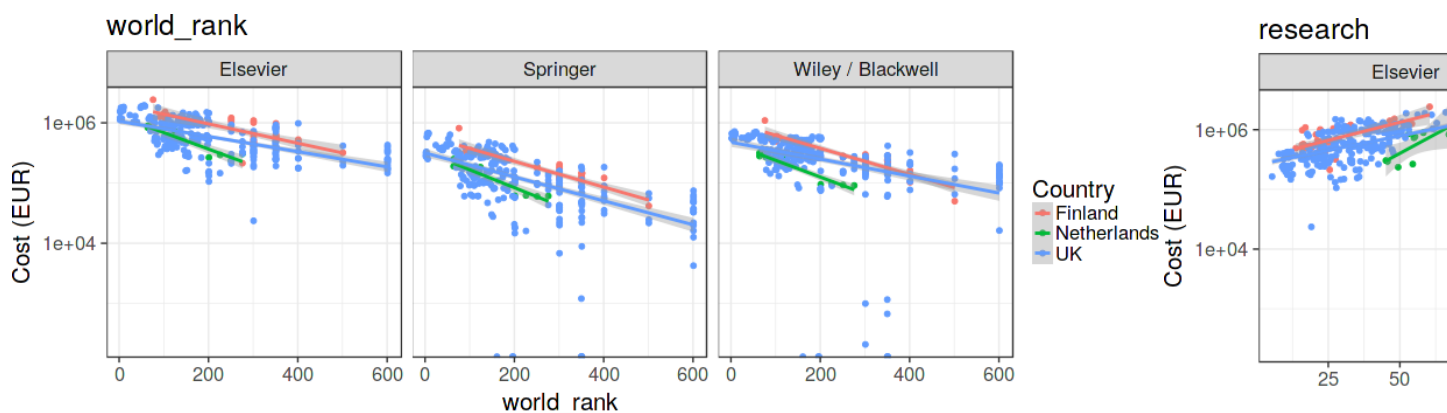


Figure 1: Annual cost increase for Elsevier, Wiley/Blackwell and Springer. In some data sets, the number of included institutions varies notably by year (for instance in Finland 2016 there is notable increase of listed publishers and organizations in the data set 57 vs. 71 organizations 2015-2016; and 200 vs. 258 publishers). However, the observations remain qualitatively similar also when the analysis is limited only to those publishers that have data available for the complete time span..



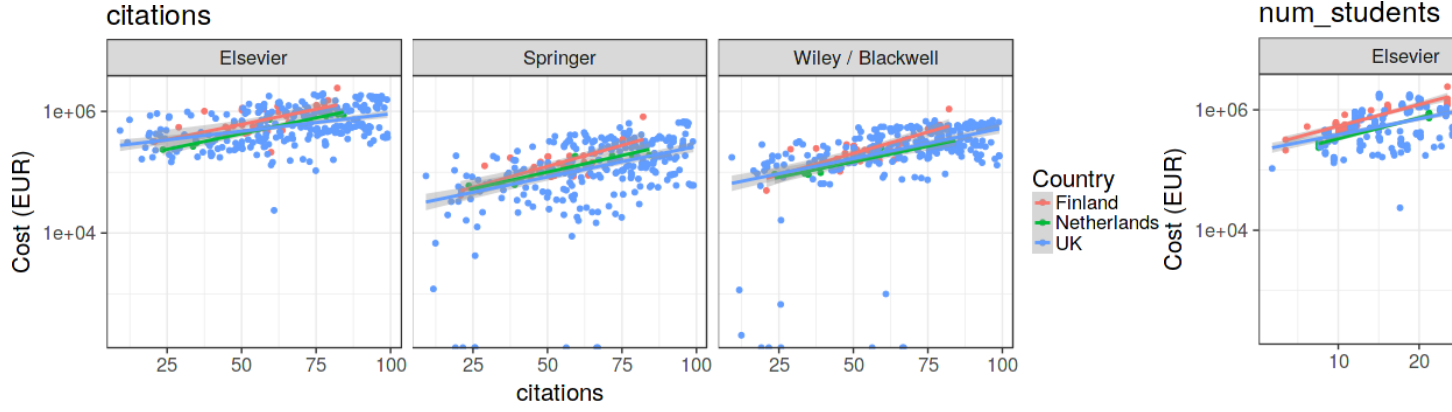


Figure 2: University ranking (Times ranking) variables versus subscription costs with selected publishers.

Variable	Country	Publisher	correlation	slope	padj
world_rank	Finland	Elsevier	-0.57738167673964	0.00	0.00
world_rank	Finland	Springer	-0.676083594544069	0.00	0.00
world_rank	Finland	Wiley / Blackwell	-0.732960138880905	0.00	0.00
world_rank	Netherlands	Elsevier	-0.853563956930838	0.00	0.00
world_rank	Netherlands	Springer	-0.93724669780641	0.00	0.00
world_rank	Netherlands	Wiley / Blackwell	-0.953983245981524	0.00	0.00
world_rank	UK	Elsevier	-0.649698649094827	0.00	0.00
world_rank	UK	Springer	-0.694414181556696	0.00	0.00
world_rank	UK	Wiley / Blackwell	-0.681633965832394	0.00	0.00
research	Finland	Elsevier	0.499129052170934	0.01	0.00
research	Finland	Springer	0.507059339358995	0.02	0.00
research	Finland	Wiley / Blackwell	0.541347361511353	0.01	0.00
research	Netherlands	Elsevier	0.616666666666667	0.03	1.43
research	Netherlands	Springer	0.7	0.03	1.15
research	Netherlands	Wiley / Blackwell	0.733333333333333	0.03	1.09
research	UK	Elsevier	0.713702645074882	0.01	0.00
research	UK	Springer	0.745387165396528	0.02	0.00
research	UK	Wiley / Blackwell	0.719647412299567	0.01	0.00
citations	Finland	Elsevier	0.55338649302164	0.01	0.01
citations	Finland	Springer	0.640588772284605	0.01	0.00
citations	Finland	Wiley / Blackwell	0.614779718821454	0.01	0.00
citations	Netherlands	Elsevier	0.966666666666667	0.01	0.00
citations	Netherlands	Springer	0.966666666666667	0.01	0.00
citations	Netherlands	Wiley / Blackwell	0.933333333333333	0.01	0.00
citations	UK	Elsevier	0.445538903109112	0.01	0.00
citations	UK	Springer	0.46928077452499	0.02	0.00
citations	UK	Wiley / Blackwell	0.557883905867982	0.02	0.00
num_students	Finland	Elsevier	0.852293775812234	0.04	0.00
num_students	Finland	Springer	0.909443551060583	0.04	0.00
num_students	Finland	Wiley / Blackwell	0.914540186069889	0.04	0.00
num_students	Netherlands	Elsevier	0.866025403784439	0.03	0.00
num_students	Netherlands	Springer	0.866025403784439	0.04	0.00
num_students	Netherlands	Wiley / Blackwell	0.866025403784439	0.03	0.00
num_students	UK	Elsevier	0.575650490865022	0.03	0.00
num_students	UK	Springer	0.559381945742138	0.04	0.00
num_students	UK	Wiley / Blackwell	0.613790580087192	0.04	0.00

Table 1: University ranking (Times ranking) variables versus subscription costs with selected publishers. Spearman correlation, linear model slope and Bonferroni-adjusted p-value.

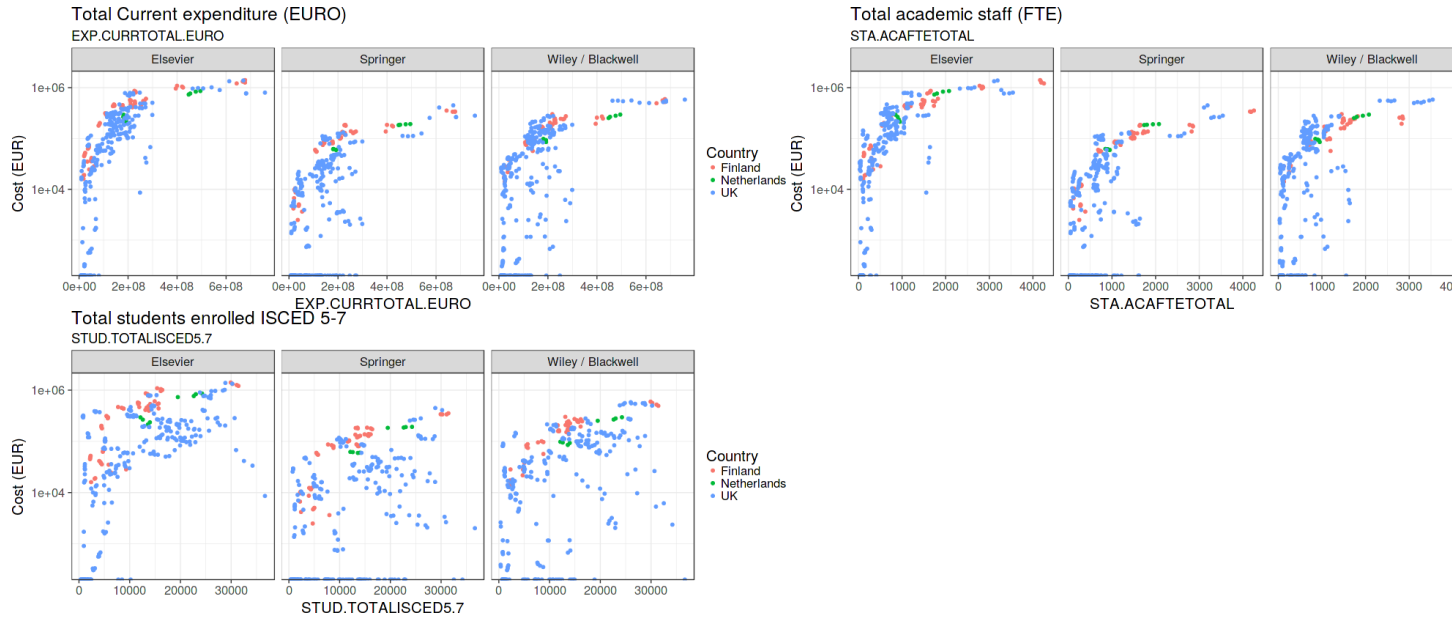


Figure 3: University scoring (ETER) variables versus subscription costs with selected publishers.

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	Variable	Country	Publisher	correlation	slope	padj
1	EXP.CURRTOTAL.EURO	Finland	Elsevier	0.94	2.66066447316531e-9	1.47435745865173e-11
2	EXP.CURRTOTAL.EURO	Finland	Springer	0.96	2.77011456378531e-9	1.41254659569824e-10
3	EXP.CURRTOTAL.EURO	Finland	Wiley / Blackwell	0.96	2.01457612984432e-9	1.16391018870564e-10
4	EXP.CURRTOTAL.EURO	Netherlands	Elsevier	0.79	1.77383548870655e-9	0.000228198358630154
5	EXP.CURRTOTAL.EURO	Netherlands	Springer	0.79	1.72546792362362e-9	0.0000042673682274489
6	EXP.CURRTOTAL.EURO	Netherlands	Wiley / Blackwell	0.79	1.66051945515301e-9	0.00000632688372959515
7	EXP.CURRTOTAL.EURO	UK	Elsevier	0.87	9.87519009022943e-9	2.5337974350214e-23
8	EXP.CURRTOTAL.EURO	UK	Springer	0.62	8.52599365922721e-9	1.67859852913996e-15
9	EXP.CURRTOTAL.EURO	UK	Wiley / Blackwell	0.66	7.37100588524744e-9	2.72514772071862e-13
10	STA.ACAFTETOTAL	Finland	Elsevier	0.94	0.000425784897884282	7.8804946746998e-13
11	STA.ACAFTETOTAL	Finland	Springer	0.96	0.000441841479987986	1.11451857856792e-11
12	STA.ACAFTETOTAL	Finland	Wiley / Blackwell	0.91	0.00031871792096899	4.14454155789664e-11
13	STA.ACAFTETOTAL	Netherlands	Elsevier	0.76	0.000496049580370258	0.00112337179333929
14	STA.ACAFTETOTAL	Netherlands	Springer	0.76	0.000481797344114647	0.000284639447168374
15	STA.ACAFTETOTAL	Netherlands	Wiley / Blackwell	0.76	0.000465413568818927	0.000148907585041119
16	STA.ACAFTETOTAL	UK	Elsevier	0.84	0.00182595752349837	1.58191420474494e-20
17	STA.ACAFTETOTAL	UK	Springer	0.62	0.00160066650148687	3.0556996607718e-14
18	STA.ACAFTETOTAL	UK	Wiley / Blackwell	0.66	0.00139299544178026	2.07251870581022e-12
19	STUD.TOTALISCED5.7	Finland	Elsevier	0.87	0.0000615830617370974	5.4371576974352e-11
20	STUD.TOTALISCED5.7	Finland	Springer	0.89	0.0000660236238463497	6.49611442403114e-11
21	STUD.TOTALISCED5.7	Finland	Wiley / Blackwell	0.91	0.0000503283692426918	3.81128206783232e-13
22	STUD.TOTALISCED5.7	Netherlands	Elsevier	0.79	0.0000501025702885288	0.00771545538803256
23	STUD.TOTALISCED5.7	Netherlands	Springer	0.79	0.0000487813007762284	0.0034756007457561
24	STUD.TOTALISCED5.7	Netherlands	Wiley / Blackwell	0.79	0.0000472695715985364	0.0020503699395543
25	STUD.TOTALISCED5.7	UK	Elsevier	0.71	0.000149132356338416	2.88341229628894e-30
26	STUD.TOTALISCED5.7	UK	Springer	0.49	0.000101345547911887	2.14010184448337e-11
27	STUD.TOTALISCED5.7	UK	Wiley / Blackwell	0.58	0.0000995949354553095	5.05105174063728e-13

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Table 2: ETER variables versus subscription costs with selected publishers. Spearman correlation, linear model slope and Bonferroni-adjusted p-value.

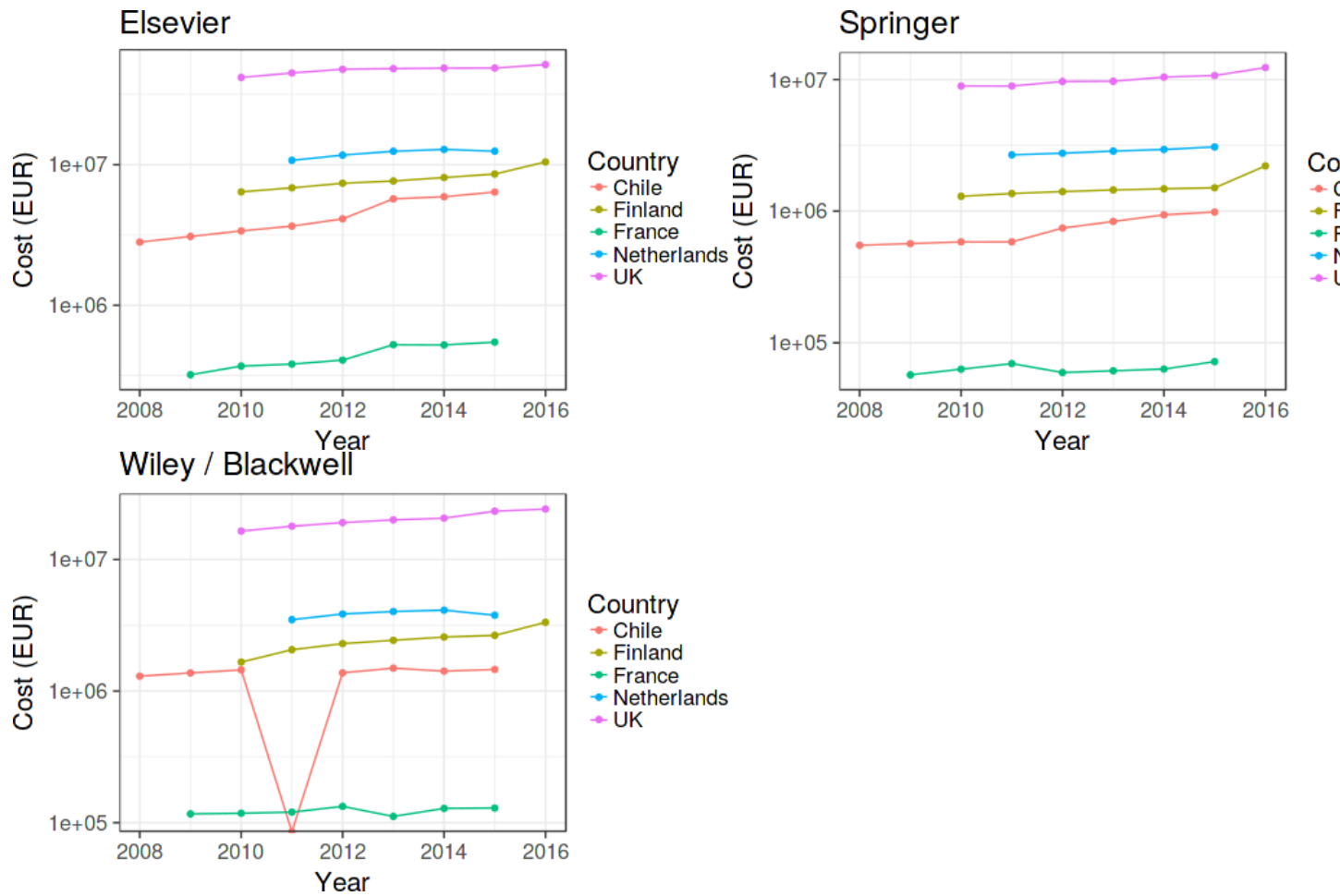


Figure 4: Cost timelines for selected publishers.

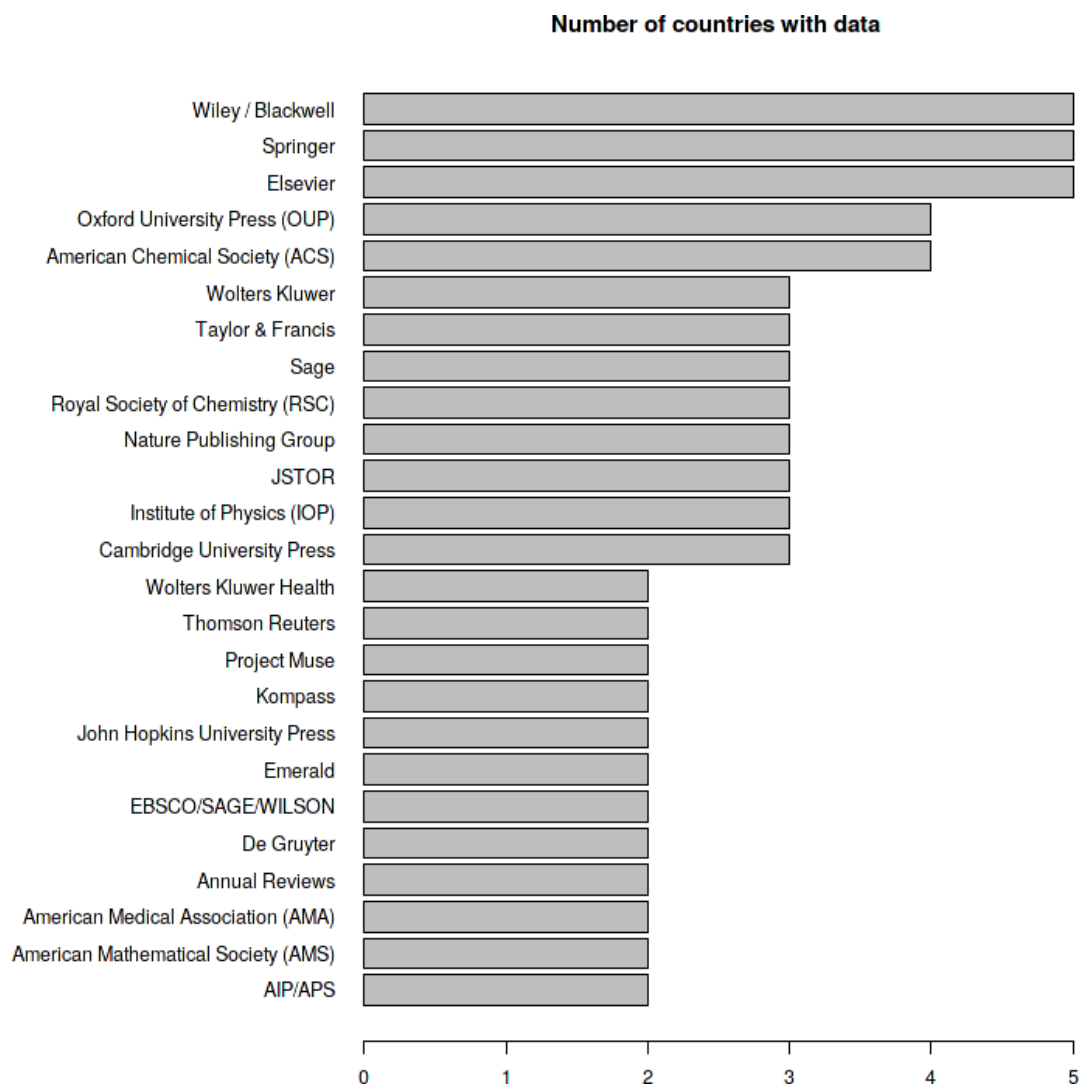


Figure 5: Number of countries with data for at least one year. Publishers with more than one country are shown.