Gender and Research Quality – a bibliometric approach

Ulf Sandström
Associate professor
Linkoping University

Indicators

- No of Papers (P)
- Fractionalised publications (Frac P)
- Citations per paper (CPP)
- CPP to Journal Set (CPP/JCSm)
- CPP to Field (CPP/FCSm) ”crown indicator”
- Quality of Journals (JCS/FCS)

Data from three universities

- AREAS: Engineering and applied Natural science (agriculture), applied Medicine and applied Social science
- Personnel during 2003-2004 (5490 persons)
- ID-code
- Gender
- Status
- Age
- Etc.

Output data

- ISI-publications during 2004-2005
- Non-existing match between author names and addresses in the WoS (except for 1st AU and Reprint AU)
- Therefore, analysis is based on publications from 1:st author and corresponding author (reprint author)
- Procedure: matching of input and outputdata

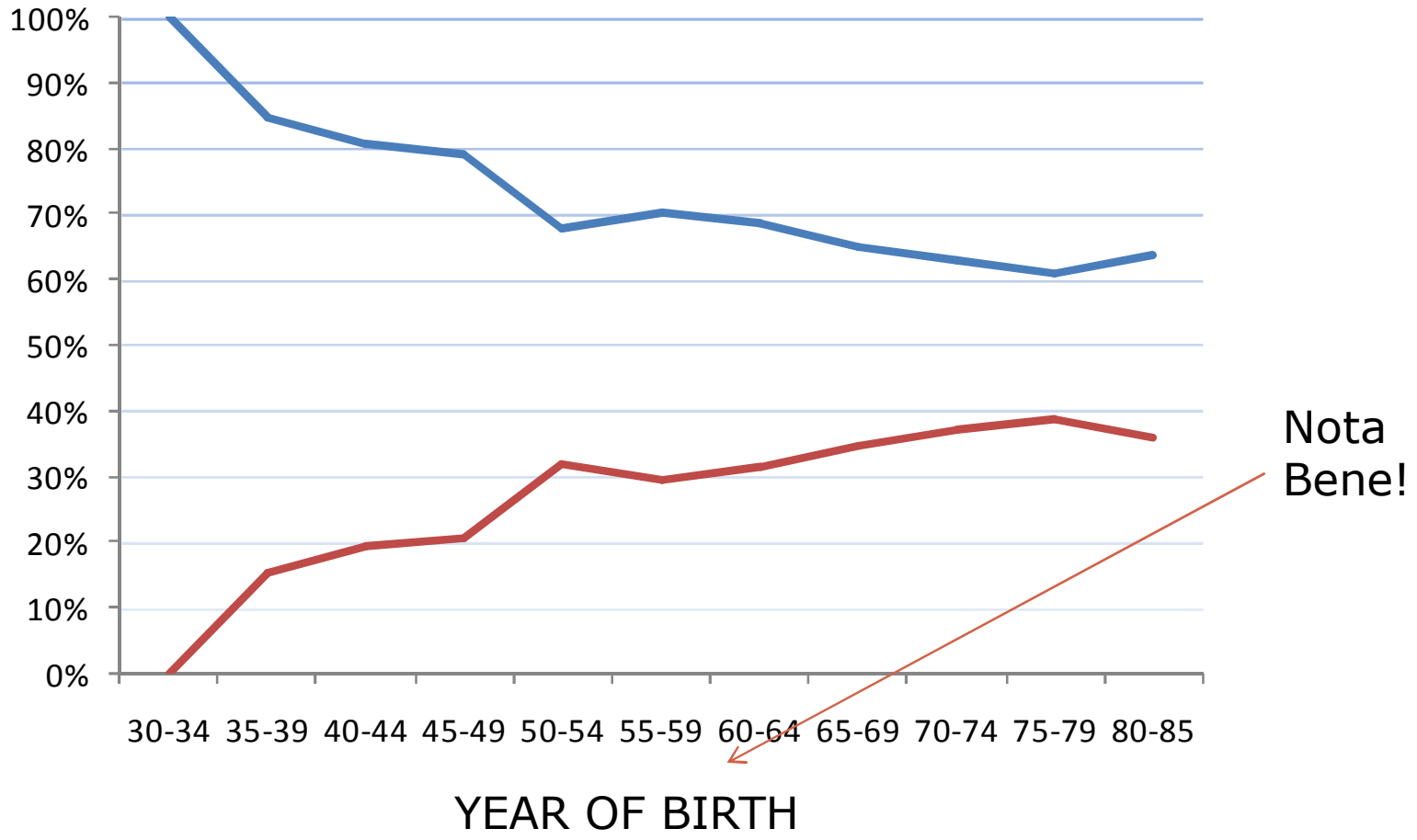
Features of the data

	PhD	Assist p	Eng	Res	Reader	Prof	Total
MALE	1487	147	245	638	633	553	3703
FEMALE	1026	85	114	257	226	79	1787
MALE %	40,2%	4,0%	6,6%	17,2%	17,1%	14,9%	100,0%
FEMALE %	57,4%	4,8%	6,4%	14,4%	12,6%	4,4%	100,0%
AGE (avg)	36,0	42,9	42,9	48,2	53,9	58,7	44,1
MALE	35,5	42,4	43,8	49,0	53,8	58,6	45,2
FEMALE	36,7	44,0	40,9	46,2	54,3	58,9	41,9
Publications	1020	176	31,5	424	292	475,5	2419
MALE	668	136,5	17,5	315,5	225,5	388,5	1751,5
FEMALE	352	39,5	14	108,5	66,5	87	667,5

Female researchers: younger and lower status

33 % females

Distribution over age groups



Gender and production

	Personnel	(%)	AGE	Publ	(%)	P/ pers
MALE	2516	67%	45,5	1416	71%	0,56
FEMALE	1250	33%	40,8	580	29%	0,46
Total	**3766**	**100%**	**43,9**	**1995**	**100%**	**0,53**

chemistry

engineering

environmental

materials

medicine

natural sci

physics

Citation Scores

Impact score

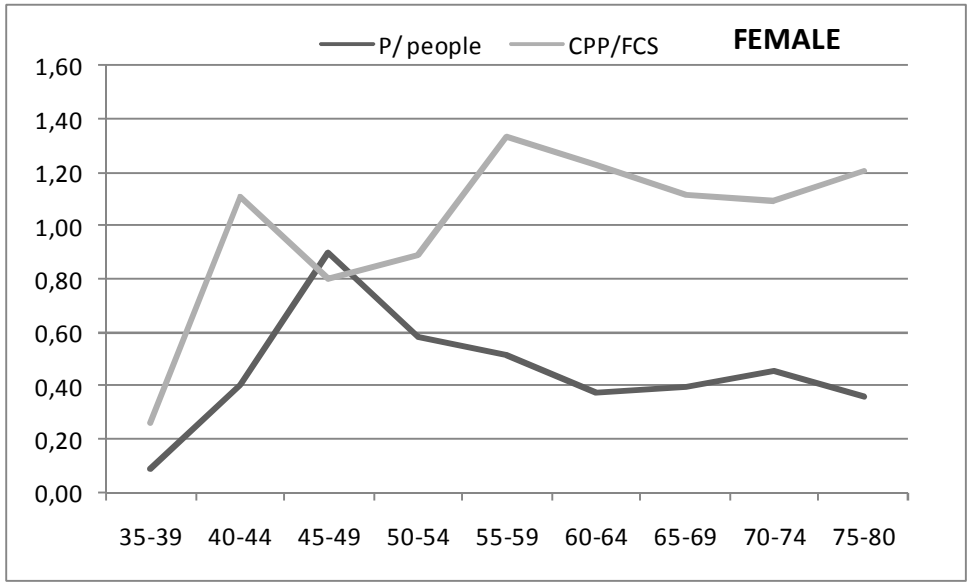
Crown Indicator

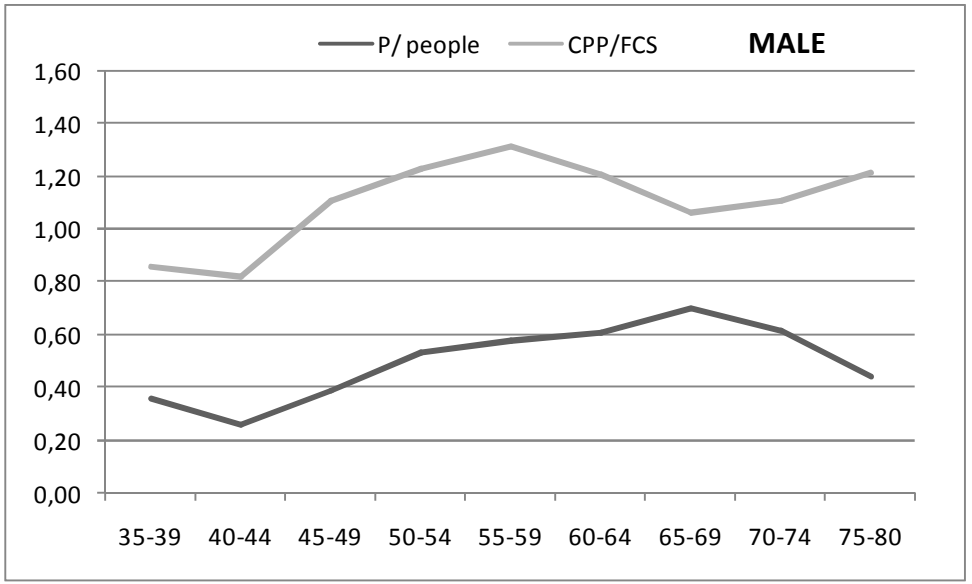
	CPP/JCS	JCS/FCS	CPP/FCS
MALE	1,01	1,18	1,13
FEMALE	0,98	1,13	1,13
Total	**1,00**	**1,17**	**1,13**

Journal normalised

	Pers	(%)	Publ	P/ people	CPP/JCS	JCS/FCS	CPP/FCS
PhD-stud							
MALE	976	26%	549	0,55	0,89	1,21	1,02
FEMALE	711	19%	301	0,40	1,05	1,13	1,19
Ass prof							
MALE	103	3%	104	1,00	0,90	1,18	0,99
FEMALE	60	2%	32	0,53	0,97	1,13	1,03
Res eng							
MALE	177	5%	13	0,07	0,39	1,10	0,38
FEMALE	96	3%	14	0,14	0,51	1,07	0,64
Resarcher							
MALE	549	15%	296	0,53	1,19	1,26	1,36
FEMALE	227	6%	105	0,45	0,99	1,06	0,97
Associate							
MALE	320	8%	155	0,43	1,01	1,10	1,06
FEMALE	101	3%	50	0,36	0,78	1,04	0,87
Prof							
MALE	391	10%	301	0,75	1,10	1,08	1,22
FEMALE	55	1%	80	1,39	0,91	1,31	1,37
Total	**3766**	**100%**	**1995**	**0,51**	**1,00**	**1,17**	**1,13**

	Pers	Frac P	P/Pers	CPP/JCS	JCS/FCS	CPP/FCS	AGE
chem							
MALE	277	241	**0,87**	1,04	1,20	**1,14**	41,4
FEMALE	185	103	**0,56**	1,01	1,33	**1,52**	37,9
materials							
MALE	423	355	**0,84**	0,97	1,24	**1,11**	43,3
FEMALE	104	76	**0,73**	0,87	1,02	**0,98**	39,0
phys							
MALE	162	124	**0,77**	0,86	1,16	**0,96**	45,2
FEMALE	27	19	**0,69**	0,62	1,34	**0,85**	34,3
engineer							
MALE	556	197	**0,35**	0,90	1,13	**1,03**	43,6
FEMALE	94	23	**0,24**	1,40	0,93	**1,24**	38,4
env							
MALE	206	69	**0,33**	1,23	1,01	**1,14**	49,7
FEMALE	142	38	**0,27**	1,06	0,85	**1,01**	41,5
natural							
MALE	624	260	**0,42**	1,11	1,28	**1,38**	46,8
FEMALE	384	157	**0,41**	0,89	1,21	**1,01**	41,4
medicine							
MALE	268	171	**0,64**	0,99	1,01	**1,00**	50,9
FEMALE	314	165	**0,53**	1,07	1,06	**1,11**	43,4





YEAR OF BIRTH

Female: constant levels of productivity

High citations scores born 55-59

Male: higher level of productivity for the younger

Highest quality scores born 55-59

Conclusion

- Female researchers have lower productivity; more prudent with their publications
- While publishing fewer papers; they reach the same relative citation scores as males
- Age matters: female researchers are younger
- High potential for more publications from the female population
- Mind the quality!
- Further analysis needed!

Thanks!