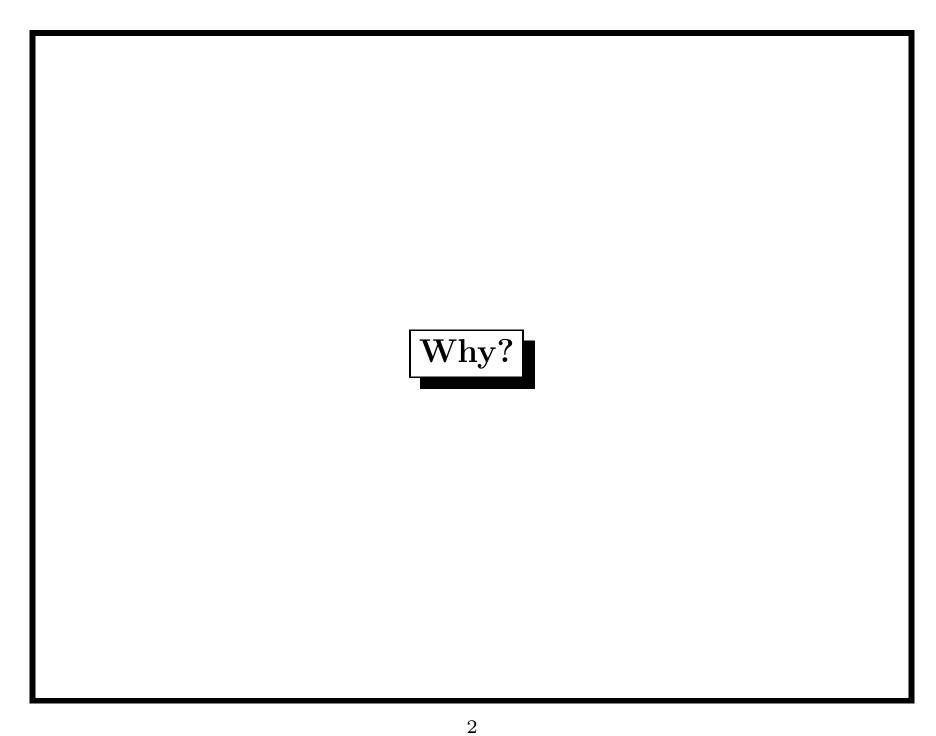
Academic Rankings with RePEc

Christian Zimmermann

and

all RePEc volunteers

RePEc.org



Because I can

Unique data

RePEc: bibliographic metadata

CitEc: citation analysis

LogEc: download statistics

RePEc Author Service

EDIRC: institution data

Coverage

200'000 papers

250'000 articles

12'000 authors

3'000 institutions

730'000 matched citations

Impact factors

 $Simple IF = \frac{number \ of \ citations}{number \ of \ papers \ or \ articles}$

Recursive IF = $A \frac{\sum_{\text{citations}} \text{Recursive IF}}{\text{number of papers or articles}}$

How do IF relate?

Series type	Al	1	$ w/ \ge 50$) items
	correl.	obs.	correl.	obs.
	Rank co	rrelatio	ns	
All	.969	2439	.972	1191
Journals	.975	580	.973	438
WP series	.976	1670	.964	721
	Corre	elations		
All	.832	2439	.11	1191
Journals	.87	580	.872	438
WP series	.86	1670	.862	721

And for individual items?

Corr(nb, simple) = 0.71

Corr(nb,recursive)=0.499

Corr(simple,recursive)=.806

Author Criteria

- 1. Number of Works
- 2. Citations
- 3. Page Counts
- 4. Download Counts

Number of Works

- 1. Simple count;
- 2. Count divided by number of authors on each work;
- 3. Count with simple impact factor weights;
- 4. Count with simple impact factor weights divided by number of authors on each work;
- 5. Count with recursive impact factor weights;
- 6. Count with recursive impact factor weights divided by number of authors on each work.

Citations

- 1. Simple citation count;
- 2. Citation count divided by number of authors on each work;
- 3. Citation count with simple impact factor weights;
- 4. Citation count with simple impact factor weights divided by number of authors on each work;
- 5. Citation count with recursive impact factor weights;
- 6. Citation count with recursive impact factor weights divided by number of authors on each work;
- 7. h-index.

Page Counts

- 1. Simple page count;
- 2. Page count divided by number of authors on each work;
- 3. Page count with simple impact factor weights;
- 4. Page count with simple impact factor weights divided by number of authors on each work;
- 5. Page count with recursive impact factor weights;
- 6. Page count with recursive impact factor weights divided by number of authors on each work;

Download Counts

- 1. Total abstract views in the past 12 months;
- 2. Total abstract views per author in the past 12 months;
- 3. Total downloads in the past 12 months;
- 4. Total downloads per author in the past 12 months.

onb					AWSc								Nb	Sc				AWSo				
Vork	sWork	sWork	sWork	sWork	sWorks	Cites	sCites	sCites	sCites	sCites	sCites	Index	\mathbf{Page}	sPage	sPages	sPage	sPage	sPages	View	sloads	View	sloa
989	.874	.814	.959	.864	.806	.811	.775	.761	.805	.774	.759	.797	.845	.804	.78	.827	.796	.774	.895	.83	.86	.79
	.849	.786	.969	.843	.781		.749						.848	.792	.768	.833	.786	.764	.88	.815	.861	.79
849	1	.962	.832	.989	.953	.859	.859	.85	.855	.858	.849	.838	.825	.89	.872	.81	.882	.866	.784	.73	.75	.69
786	.962	1	.773	.951	.992	.824	.833	.836	.82	.832	.835	.799	.777	.852	.867	.764	.844	.861	.731	.684	.697	.649
969	.832	.773	1	.856	.792	.759	.725	.712	.772	.736	.721	.743	.83	.782	.76	.842	.791	.768	.85	.785	.882	.80
843	.989	.951	.856	1	.96	.84	.841	.833	.847	.848	.838	.819	.818	.883	.866	.82	.887	.87	.771	.717	.767	.71
781	.953	.992	.792	.96	1	.808	.819	.822	.814	.824	.826	.783	.772	.847	.862	.773	.849	.866	.72	.672	.711	.66
788	.859	.824	.759	.84	.808	1	.974	.959	.99	.968	.954	.95	.805	.845	.821	.781	.831	.809	.757	.72	.714	.67
749	.859	.833	.725	.841	.819	.974	1	.99	.965	.995	.986	.917	.776	.839	.818	.755	.825	.807	.724	.688	.684	.64
733	.85	.836	.712	.833	.822	.959	.99	1	.951	.985	.996	.908	.763	.829	.816	.744	.817	.805	.711	.675	.672	.63
785	.855	.82	.772	.847	.814	.99	.965	.951	1	.973	.957	.935	.807	.847	.823	.796	.841	.818	.748	.712	.724	.68
749	.858	.832	.736	.848	.824	.968	.995	.985	.973	1	.99	.914	.779	.842	.821	.767	.834	.815	.72	.683	.692	.65
734	.849	.835	.721	.838	.826	.954	.986	.996	.957	.99	1	.905	.766	.832	.818	.754	.824	.812	.708	.671	.678	.64
775	.838	.799	.743	.819	.783	.95	.917	.908	.935	.914	.905	1	.774	.806	.785	.752	.794	.775	.734	.697	.691	.65
848	.825	.777	.83	.818	.772	.805	.776	.763	.807	.779	.766	.774	1	.933	.904	.984	.928	.9	.706	.648	.689	.62
792	.89	.852	.782	.883	.847					.842		.806	.933	1	.976	.92	.993	.971	.683	.629	.661	.60
768	.872	.867	.76	.866	.862	.821	.818	.816	.823	.821	.818	.785	.904	.976	1	.893	.97	.995	.66	.608	.64	.58
833	.81	.764	.842	.82	.773	.781	.755	.744	.796	.767	.754	.752	.984	.92	.893	1	.933	.903	.686	.628	.692	.62
786	.882	.844	.791	.887	.849		.825	.817	.841	.834	.824	.794	.928	.993	.97	.933	1	.976	.672	.618	.665	.60
764	.866	.861	.768	.87	.866	.809	.807	.805	.818	.815	.812	.775	.9	.971	.995	.903	.976	1	.652	.599	.642	.58
88	.784	.731	.85	.771	.72	.757	.724	.711	.748	.72	.708	.734	.706	.683	.66	.686	.672	.652	$1^{\overline{}}$.956	.957	.91
815	.73	.684	.785	.717	.672	.72					.671	.697	.648	.629	.608	.628	.618	.599	.956	1	.912	.95
861	.75	.697	.882	.767			.684					.691	.689	.661	.64	.692	.665	.642	.957	.912	1	.95
79	.695	.649	.808	.71	.66	.677	.647	.636	.686	.654	.641	.653	.625	.604	.583	.626	.605	.585	.913	.957	.95	1

onb					AWSc								Nb	Sc				AWSo				
Vork	sWork	sWork	sWork	sWork	sWorks	Cites	sCites	Cites	sCites	sCites	Cites	Index	Page	sPages	sPages	sPages	sPage	sPages	View	sloads	View	sloae
858	.502	.445	.718	.484	.431	.491	.467	.448	.484	.46	.441	.469	.409	.419	.411	.376	.405	.398	.622	.485	.546	.41
	.313	.261	.785	.315	.261	.284	.258	.244	.291	.265	.25	.261	.347	.274	.26	.34	.276	.26	.447	.347	.476	.35
313	1	.939	.368	.982	.927	.848	.867	.852	.843	.862	.845	.831	.756	.9	.872	.71	.882	.861	.408	.359	.355	.32
261	.939	1	.343	.928	.99	.781	.821	.838	.778	.815	.831	.769	.71	.869	.902	.678	.852	.891	.353	.317	.326	.3
785	.368	.343	1	.458	.405	.308	.326	.32	.375	.373	.36	.29	.383	.361	.345	.497	.422	.395	.375	.297	.6	.439
315	.982	.928	.458	1	.941	.813	.845	.833	.832	.857	.842	.8	.759	.9	.868	.754	.906	.878	.383	.334	.396	.352
261	.927	.99	.405	.941	1	.754	.803	.82	.768	.809	.824	.746	.71	.869	.898	.706	.869	.904	.332	.297	.352	.31
284	.848	.781	.308	.813	.754	1	.959	.926	.987	.945	.913	.969	.659	.81	.782	.605	.781	.759	.486	.475	.412	.423
258	.867	.821	.326	.845	.803	.959	1	.982	.954	.991	.974	.93	.655	.842	.817	.62	.821	.8	.444	.428	.403	.40
244	.852	.838	.32	.833	.82	.926	.982	1	.923	.975	.993	.903	.639	.834	.828	.611	.815	.813	.426	.41	.396	.398
291	.843	.778	.375	.832	.768	.987	.954	.923	1	.96	.927	.959	.667	.816	.783	.642	.803	.774	.47	.461	.447	.448
265	.862	.815	.373	.857	.809	.945	.991	.975	.96	1	.982	.92	.659	.843	.814	.645	.835	.809	.432	.419	.428	.42
25	.845	.831	.36	.842	.824	.913	.974	.993	.927	.982	1	.893	.64	.833	.825	.63	.827	.82	.414	.401	.415	.413
261	.831	.769	.29	.8	.746	.969	.93	.903	.959	.92	.893	1	.647	.787	.762	.597	.762	.743	.457	.445	.384	.39
347	.756	.71	.383	.759	.71	.659	.655	.639	.667	.659	.64	.647	1	.849	.785	.964	.839	.78	.258	.252	.263	.26'
274	.9	.869	.361	.9	.869	.81	.842	.834	.816	.843	.833	.787	.849	1	.95	.827	.988	.945	.336	.305	.306	.29
26	.872	.902	.345	.868	.898	.782			.783			.762	.785	.95	1	.761	.937	.99	.338	.31	.306	.29
34	.71	.678	.497	.754	.706	.605	.62	.611	.642	.645	.63	.597	.964	.827	.761	1	.852	.785	.224	.219	.314	.29
276	.882	.852	.422	.906	.869	.781	.821		.803			.762	.839	.988	.937	.852	1	.951	.315	.287	.331	.31
26	.861	.891	.395	.878	.904	.759	.8	.813	.774	.809	.82	.743	.78	.945	.99	.785	.951	1	.319	.292	.324	.30
447	.408	.353	.375	.383	.332	.486	.444	.426	.47	.432	.414	.457	.258	.336	.338	.224	.315	.319	1	.886	.842	.758
347	.359	.317	.297	.334	.297		.428	.41		.419	.401	.445	.252	.305	.31	.219	.287	.292	.886	1	.771	.90′
476	.355	.326	.6	.396	.352	.412			.447		.415	.384	.263	.306	.306	.314	.331	.324	.842	.771	1	.86
352	.328	.3	.439	.352	.315	.423	.406	.398	.448	.425	.413	.396	.267	.295	.296	.296	.311	.306	.758	.907	.864	1

Aggregating criteria

- 1. Harmonic mean
- 2. Arithmetic mean
- 3. Geometric mean
- 4. Lexicographic ranking
- 5. Graphicolexic ranking
- 6. "Percent of maximum"

Repeat by eliminating outliers.

		harm	nonic	arith	$_{ m metic}$	geom	etric	lexico	grpahic	graph	icolexic	per	cent
exclude outlie	ers?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
harmonic	no	1	1	.9901	.9897	.9951	.9947	.9749	.9722	.9187	.9187	.9905	.9905
harmonic	yes	1	1	.9898	.9895	.9949	.9946	.9753	.9726	.9175	.9175	.9904	.9904
arithmetic	no	.9901	.9898	_	1	.9968	.9975	.9447	.9411	.9482	.9482	.9836	.9849
arithmetic	yes	.9897	.9895	1	1	.9966	.9974	.9432	.9396	.947	.947	.983	.9843
geometric	no	.9951	.9949	.9968	.9966	1	.9999	.959	.9559	.9334	.9334	.9871	.9877
geometric	yes	.9947	.9946	.9975	.9974	.9999	1	.9563	.9531	.9341	.9341	.9865	.9872
lexicographic	no	.9749	.9753	.9447	.9432	.959	.9563	1	.9993	.8554	.8554	.9678	.9659
lexicographic	yes	.9722	.9726	.9411	.9396	.9559	.9531	.9993	1	.8497	.8497	.9654	.9632
graphicolexic	no	.9187	.9175	.9482	.947	.9334	.9341	.8554	.8497	1	1	.9227	.9257
graphicolexic	yes	.9187	.9175	.9482	.947	.9334	.9341	.8554	.8497	1	1	.9227	.9257
percent	no	.9905	.9904	.9836	.983	.9871	.9865	.9678	.9654	.9227	.9227	1	.9995
percent	yes	.9905	.9904	.9849	.9843	.9877	.9872	.9659	.9632	.9257	.9257	.9995	1

		harn	nonic	arith	$_{ m metic}$	geom	etric	lexico	grpahic	graph	icolexic	per	cent
exclude outlie	ers?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
harmonic	no	1	1	.8266	.8268	.9428	.9354	.894	.8939	.6676	.6676	.9893	.9885
harmonic	yes	1	1	.8254	.8257	.942	.9346	.895	.8949	.6659	.6659	.9892	.9883
arithmetic	no	.8266	.8254	1	.9999	.9629	.9674	.6054	.6053	.9421	.9421	.8635	.8774
arithmetic	yes	.8268	.8257	.9999	1	.9632	.9678	.6047	.6046	.9395	.9395	.8636	.8775
geometric	no	.9428	.942	.9629	.9632	1	.9997	.7514	.7512	.8511	.8511	.9594	.9686
geometric	yes	.9354	.9346	.9674	.9678	.9997	1	.7377	.7376	.8576	.8576	.9533	.9633
lexicographic	no	.894	.895	.6054	.6047	.7514	.7377	1	1	.4418	.4418	.8839	.8665
lexicographic	yes	.8939	.8949	.6053	.6046	.7512	.7376	1	1	.4417	.4417	.8838	.8664
graphicolexic	no	.6676	.6659	.9421	.9395	.8511	.8576	.4418	.4417	1	1	.7112	.7282
graphicolexic	yes	.6676	.6659	.9421	.9395	.8511	.8576	.4418	.4417	1	1	.7112	.7282
percent	no	.9893	.9892	.8635	.8636	.9594	.9533	.8839	.8838	.7112	.7112	1	.9988
percent	yes	.9885	.9883	.8774	.8775	.9686	.9633	.8665	.8664	.7282	.7282	.9988	1

	Indivi	dual cr	riteria	Aggre	gate cri	iteria
Sample	mean	max	min	mean	max	min
Full	.804	.996	.583	.961	1	.85
1-250	.533	.99	064	.719	1	.205
1-500	.581	.991	.131	.805	1	.383
1-750	.608	.993	.182	.835	1	.446
1-1000	.611	.993	.219	.836	1	.442
1-2000	.628	.993	.219	.862	1	.511
1-3000	.644	.993	.246	.889	1	.603
1-4000	.664	.993	.294	.906	1	.64
4001-8000	.508	.991	.01	.896	1	.618
8001–12000	.308	.99	14	.837	1	.42
1001–2000	.523	.992	035	.84	1	.426
2001–3000	.477	.991	126	.863	1	.508
3001–4000	.44	.99	165	.844	1	.44
4001–5000	.401	.99	269	.824	1	.36
5001-6000	.38	.989	229	.835	1	.421
6001-7000	.351	.99	239	.857	1	.489
7001-8000	.352	.991	181	.918	1	.699
8001–12000	.301	.99	 14	.837	1	.42

Institutions	
Affiliations of authors	
Sum of individual criteria	

	Sc				AWSc								Nb	Sc				AWS				
Vork	sWork	sWork	sWork	sWork	sWorks	Cites	sCites	sCites	Cites	Cite	sCites	Index	Page	sPage	sPage	sPage	sPage	sPages	View	sloads	View	sloa
995	.874	.818	.988	.857	.804	.766	.711	.693	.743	.691	.681	.931	.957	.842	.793	.947	.828	.779	.943	.908	.913	.87
	.854	.795	.992	.838							.658	.923	.96	.825	.775	.95	.812	.762	.937	.904	.913	.87
854	1	.985	.888	.996	.979	.955	.932	.92	.942	.918	.914	.94	.919	.984	.963	.925	.981	.957	.918	.916	.916	.90
795	.985	1	.833	.984	.996	.961	.952	.951	.948	.938	.944	.902	.865	.966	.967	.874	.965	.964	.884	.887	.886	.883
992	.888	.833	1	.878	.826	.781	.728	.711	.766	.716	.705	.931	.969	.859	.81	.969	.852	.803	.941	.91	.928	.889
838	.996	.984	.878	1	.985	.953	.932	.919	.949	.927	.921	.922	.906	.981	.96	.919	.984	.961	.904	.902	.91	.90
781	.979	.996	.826	.985	1	.956	.949	.946	.952	.944	.948	.886	.854	.961	.963	.869	.966	.967	.87	.874	.881	.88
744	.955	.961	.781	.953	.956	1	.992	.981	.991	.982	.979	.891	.829	.953	.963	.836	.95	.958	.871	.893	.881	.899
686	.932	.952	.728	.932		.992			.985	.991	.991	.848	.778	.931	.953	.787	.93	.95	.829	.851	.845	$.86^{\circ}$
669	.92	.951	.711	.919			.993		.968	.979	.991	.83	.759	.917	.944	.767	.915	.94	.813	.836	.828	.84'
722	.942	.948	.766	.949	.952	.991	.985	.968	1	.993	.983	.869	.81	.942	.955	.824	.947	.958	.851	.873	.876	.89
668	.918	.938	.716	.927	_		.991			_	.994	.827	.761	.92	.945	.776	.926	.948	.811	.834	.841	.863
658	.914	.944	.705	.921			.991					.818	.75	.914	.943	.764	.919	.947	.803	.826	.831	.85
923	.94	.902	.931	.922	.886		.848					1	.949	.917	.891	.942	.901	.876	.954	.951	.938	.92
96	.919	.865	.969	.906	.854		.778			.761		.949	1	.915	.871	.996	.904	.86	.932	.912	.918	.89
825	.984	.966	.859	.981			.931				.914	.917	.915	1	.979	.92	.996	.973	.895	.894	.899	.893
775	.963	.967	.81	.96	.963		.953					.891	.871	.979	1	.878	.976	.996	.869	.875	.881	.88
95	.925	.874	.969	.919	.869		.787				.764	.942	.996	.92	.878	1	.916	.873	.925	.906	.919	.89
812	.981	.965	.852	.984	.966	.95	.93		.947			.901	.904	.996	.976	.916	1	.977	.882	.881	.894	.888
762	.957	.964	.803	.961		.958		.94	.958			.876	.86	.973	.996	.873	.977	1	.856	.862	.875	.87
937	.918	.884	.941	.904	.87	.871	.829		.851			.954	.932	.895	.869	.925	.882	.856	1	.988	.987	.96
904	.916	.887	.91	.902			.851					.951	.912	.894	.875	.906	.881	.862	.988	1	.98	.983
913	.916	.886	.928	.91	.881	.881	.845	.828	.876	.841	.831	.938	.918	.899	.881	.919	.894	.875	.987	.98	1	.98′

871 .907 .883 .889 .903 .88

899 .864 .847 .896 .863 .852 .925 89 .892 .881 .892 .888 .876

.967 .983 .987 1

.758 .688 .984 .741 .673 .533 .468 .474 .499 .44 .455 .864 .908 .691 .618 .899 .683 .602 .868 .822 .8 758 1 .972 .787 .989 .963 .849 .823 .821 .786 .804 .878 .846 .942 .89 .843 .934 .874 .783 .758 .7 984 .787 .718 1 .785 .717 .56 .499 .503 .539 .481 .495 .869 .904 .713 .641 .919 .718 .635 .84 .822 .88 .865 .91 .919 .716 .641 .824 .806 .822 .829 .927 .878 .842 .938 .88 .756 .735 .7 .72 .963 .989 .716 .969 .965 .959 .765 .646 .847 .833<	Nb					AWSc						AWS		Nb	Sc				AWSo			$\mathbf{n}\mathbf{A}\mathbf{A}\mathbf{b}\mathbf{s}$	
.758 .688 .984 .741 .673 .533 .468 .474 .499 .44 .455 .864 .908 .691 .618 .899 .683 .602 .868 .822 .8 758 1 .972 .787 .989 .963 .849 .823 .812 .786 .804 .878 .846 .942 .89 .843 .934 .874 .783 .758 .7 984 .787 .718 1 .785 .717 .56 .499 .503 .539 .481 .495 .869 .904 .713 .641 .919 .718 .635 .84 .894 .563 .839 .818 .801 .824 .806 .921 .894 .999 .976 .969 .963 .989 .766 .646 .847 .833 .637 .831 .81 .676 .735 .74 .894 .969 .965 .959 .765 .	Vorks	sWork	sWorks	sWork	sWork	sWorks	Cites	Cites	Cites	cites	sCites	Cites	Index	Page	sPages	sPage	sPages	sPage	sPages	View	sloads	View	sloa
758 1 .972 .787 .989 .963 .849 .823 .821 .786 .804 .878 .846 .942 .89 .843 .934 .875 .716 .60 .989 .849 .833 .841 .81 .792 .82 .83 .765 .91 .905 .776 .904 .888 .652 .716 .6 .844 .820 .83 .841 .81 .792 .82 .83 .765 .91 .913 .718 .919 .718 .635 .849 .904 .833 .841 .919 .718 .635 .849 .860 .821 .899 .927 .878 .842 .938 .88 .756 .733 .848 .801 .824 .806 .721 .894 .897 .769 .999 .833 .849 .868 .833 .849 .862 .833 .849 .883 .889 .899 .971 .969 .956	986	.796	.729	.975	.774	.71	.58	.516	.52	.538	.479	.494	.89	.9	.716	.641	.889	.702	.62	.895	.839	.824	.74
688 .972 1 .718 .96 .989 .849 .833 .841 .81 .792 .82 .83 .765 .91 .905 .776 .904 .888 .652 .716 .6 984 .787 .718 1 .785 .717 .56 .499 .503 .539 .481 .495 .869 .904 .713 .641 .919 .718 .635 .84 .82 .88 741 .989 .963 .989 .716 .971 1 .834 .819 .822 .818 .801 .824 .806 .721 .894 .897 .769 .909 .899 .533 .686 .66 533 .849 .849 .56 .833 .834 1 .989 .976 .969 .956 .959 .765 .646 .847 .833 .637 .831 .81 .676 .718 .64 .484 .833 .641 .999 .941 .991 .981 .988 .716 .591 .828		.758	.688	.984	.741	.673	.533	.468	.474	.499	.44	.455	.864	.908	.691	.618	.899	.683	.602	.868	.822	.824	.74
984 .787 .718 1 .785 .717 .56 .499 .503 .539 .481 .495 .869 .904 .713 .641 .919 .718 .655 .84 .82 .8 741 .989 .966 .785 1 .971 .833 .808 .806 .82 .794 .809 .852 .829 .927 .878 .842 .938 .88 .756 .735 .7 372 .963 .989 .716 .971 1 .834 .819 .823 .818 .801 .824 .806 .721 .894 .897 .769 .909 .899 .533 .686 .66 .64 .847 .833 .637 .811 .81 .689 .966 .959 .765 .646 .847 .833 .637 .811 .89 .963 .937 .941 .968 .718 .595 .826 .826 .589 .81	758	1	.972	.787	.989	.963	.849	.823	.823	.812	.786	.804	.878	.846	.942	.89	.843	.934	.874	.783	.758	.728	.69
741	688	.972	1	.718	.96	.989	.849	.833	.841	.81	.792	.82	.83	.765	.91	.905	.776	.904	.888	.652	.716	.665	.65
672 .963 .989 .716 .971 1 .834 .819 .823 .818 .801 .824 .806 .721 .894 .897 .769 .909 .899 .533 .686 .6 533 .849 .849 .56 .833 .834 1 .989 .976 .969 .956 .959 .765 .646 .847 .833 .637 .831 .81 .676 .718 .6 468 .823 .843 .499 .808 .819 .989 1 .985 .963 .969 .971 .716 .591 .825 .823 .584 .799 .618 .667 .5 474 .823 .841 .503 .822 .8818 .969 .963 .937 .941 .988 .717 .61 .811 .803 .817 .881 .893 .881 .629 .675 .64 44 .786 .792	984	.787	.718	1	.785	.717	.56	.499	.503	.539	.481	.495	.869	.904	.713	.641	.919	.718	.635	.84	.82	.841	.76
533 .849 .56 .833 .834 1 .989 .976 .969 .956 .959 .765 .646 .847 .833 .637 .831 .81 .676 .718 .6 468 .823 .833 .499 .808 .819 .989 1 .985 .963 .969 .971 .716 .591 .825 .823 .585 .811 .799 .62 .664 .5 474 .823 .841 .503 .806 .823 .976 .985 1 .937 .941 .968 .718 .595 .826 .826 .589 .81 .799 .618 .667 .5 499 .812 .811 .539 .82 .818 .969 .963 .937 1 .991 .98 .717 .61 .811 .803 .617 .794 .786 .578 .625 .5 .5 .845 .898 .881 <	741	.989	.96	.785	1	.971	.833	.808	.806	.82	.794	.809	.852	.829	.927	.878	.842	.938	.88	.756	.735	.726	.69
468 .823 .833 .499 .808 .819 .989 1 .985 .963 .969 .971 .716 .591 .825 .823 .585 .811 .799 .62 .664 .5 474 .823 .841 .503 .806 .823 .976 .985 1 .937 .941 .968 .718 .595 .826 .826 .589 .81 .799 .618 .667 .5 499 .812 .81 .539 .82 .818 .969 .963 .937 1 .991 .98 .717 .61 .811 .803 .617 .817 .8 .629 .675 .6 44 .786 .792 .481 .794 .801 .956 .969 .941 .991 1 .988 .67 .559 .787 .789 .567 .794 .786 .573 .625 .5 455 .804 .82 .495 .809 .921 .971 .968 .98 .988 1 <td< td=""><td>672</td><td>.963</td><td>.989</td><td>.716</td><td>.971</td><td>1</td><td>.834</td><td>.819</td><td>.823</td><td>.818</td><td>.801</td><td>.824</td><td>.806</td><td>.721</td><td>.894</td><td>.897</td><td>.769</td><td>.909</td><td>.899</td><td>.533</td><td>.686</td><td>.634</td><td>.65</td></td<>	672	.963	.989	.716	.971	1	.834	.819	.823	.818	.801	.824	.806	.721	.894	.897	.769	.909	.899	.533	.686	.634	.65
474	533	.849	.849	.56	.833	.834	1	.989	.976	.969	.956	.959	.765	.646	.847	.833	.637	.831	.81	.676	.718	.639	.67
499 .812 .81 .539 .82 .818 .969 .963 .937 1 .991 .98 .717 .61 .811 .803 .617 .817 .8 .629 .675 .6 44 .786 .792 .481 .794 .801 .956 .969 .941 .991 1 .988 .67 .559 .787 .789 .567 .794 .786 .578 .625 .5 455 .804 .82 .495 .809 .824 .959 .971 .968 .98 .988 1 .689 .573 .807 .813 .583 .813 .807 .574 .638 .5 862 .878 .83 .869 .852 .806 .765 .715 .718 .717 .67 .689 1 .733 .812 .769 .828 .812 .744 .456 .791 .6 912 .847 .784 .912 .83 .77 .646 .591 .596 .611 .559 <t< td=""><td>468</td><td>.823</td><td>.833</td><td>.499</td><td>.808</td><td>.819</td><td>.989</td><td>1</td><td>.985</td><td>.963</td><td>.969</td><td>.971</td><td>.716</td><td>.591</td><td>.825</td><td>.823</td><td>.585</td><td>.811</td><td>.799</td><td>.62</td><td>.664</td><td>.592</td><td>.63</td></t<>	468	.823	.833	.499	.808	.819	.989	1	.985	.963	.969	.971	.716	.591	.825	.823	.585	.811	.799	.62	.664	.592	.63
44 .786 .792 .481 .794 .801 .956 .969 .941 .991 1 .988 .67 .559 .787 .789 .567 .794 .786 .578 .625 .5 455 .804 .82 .495 .809 .824 .959 .971 .968 .98 .988 1 .689 .573 .807 .813 .583 .813 .807 .574 .638 .5 862 .878 .83 .869 .852 .806 .765 .715 .718 .717 .67 .689 1 .733 .812 .769 .828 .812 .744 .456 .791 .6 912 .847 .784 .912 .83 .77 .646 .591 .596 .611 .559 .577 .881 1 .85 .78 .988 .84 .762 .811 .76 .76 .61 .87 .826 .811 .787 .808 .831 .85 1 .959 .84 .989	474	.823	.841	.503	.806	.823	.976	.985	1	.937	.941	.968	.718	.595	.826	.826	.589	.81	.799	.618	.667	.593	.63
455 .804 .82 .495 .809 .824 .959 .971 .968 .98 .988 1 .689 .573 .807 .813 .583 .813 .807 .574 .638 .5 862 .878 .83 .869 .852 .806 .765 .715 .718 .717 .67 .689 1 .733 .812 .769 .828 .812 .744 .456 .791 .6 912 .847 .784 .912 .83 .77 .646 .591 .596 .611 .559 .577 .881 1 .85 .78 .988 .84 .762 .811 .76 .7 691 .942 .912 .714 .927 .901 .847 .825 .826 .811 .787 .808 .831 .85 1 .959 .84 .989 .943 .717 .7 .6 618 .89 .905 .641 .878 .897 .833 .823 .826 .803 .789 <td< td=""><td>499</td><td>.812</td><td>.81</td><td>.539</td><td>.82</td><td>.818</td><td>.969</td><td>.963</td><td>.937</td><td>1</td><td>.991</td><td>.98</td><td>.717</td><td>.61</td><td>.811</td><td>.803</td><td>.617</td><td>.817</td><td>.8</td><td>.629</td><td>.675</td><td>.636</td><td>.68</td></td<>	499	.812	.81	.539	.82	.818	.969	.963	.937	1	.991	.98	.717	.61	.811	.803	.617	.817	.8	.629	.675	.636	.68
862 .878 .83 .869 .852 .806 .765 .715 .718 .717 .67 .689 1 .733 .812 .769 .828 .812 .744 .456 .791 .6 912 .847 .784 .912 .83 .77 .646 .591 .596 .611 .559 .577 .881 1 .85 .78 .988 .84 .762 .811 .76 .7 691 .942 .912 .714 .927 .901 .847 .825 .826 .811 .787 .808 .831 .85 1 .959 .84 .989 .943 .717 .7 .6 618 .89 .905 .641 .878 .897 .833 .823 .826 .803 .789 .813 .769 .779 .959 1 .773 .952 .988 .66 .653 .6 9 .843 .78 .921 .842 .781 .637 .585 .589 .618 .567 .	44	.786	.792	.481	.794	.801	.956	.969	.941	.991	1	.988	.67	.559	.787	.789	.567	.794	.786	.578	.625	.591	.64
912 .847 .784 .912 .83 .77 .646 .591 .596 .611 .559 .577 .881 1 .85 .78 .988 .84 .762 .811 .76 .7 691 .942 .912 .714 .927 .901 .847 .825 .826 .811 .787 .808 .831 .85 1 .959 .84 .989 .943 .717 .7 .6 618 .89 .905 .641 .878 .897 .833 .823 .826 .803 .789 .813 .769 .779 .959 1 .773 .952 .988 .66 .653 .6 9 .843 .78 .921 .842 .781 .637 .585 .589 .618 .567 .584 .867 .988 .84 .773 1 .847 .771 .794 .745 .7 683 .934 .904 .718 .938 .911 .831 .817 .794 .813 .816	455	.804	.82	.495	.809	.824	.959	.971	.968	.98	.988	1	.689	.573	.807	.813	.583	.813	.807	.574	.638	.598	.64
691 .942 .912 .714 .927 .901 .847 .825 .826 .811 .787 .808 .831 .85 1 .959 .84 .989 .943 .717 .7 .6 618 .89 .905 .641 .878 .897 .833 .823 .826 .803 .789 .813 .769 .779 .959 1 .773 .952 .988 .66 .653 .6 9 .843 .78 .921 .842 .781 .637 .585 .589 .618 .567 .584 .867 .988 .84 .773 1 .847 .771 .794 .745 .7 683 .934 .904 .718 .938 .911 .831 .811 .817 .794 .813 .816 .84 .989 .952 .847 1 .956 .701 .684 .6 602 .874 .888 .635 .88 .899 .81 .799 .799 .8 .786 .807 <td< td=""><td>862</td><td>.878</td><td>.83</td><td>.869</td><td>.852</td><td>.806</td><td>.765</td><td>.715</td><td>.718</td><td>.717</td><td>.67</td><td>.689</td><td>1</td><td>.733</td><td>.812</td><td>.769</td><td>.828</td><td>.812</td><td>.744</td><td>.456</td><td>.791</td><td>.647</td><td>.73</td></td<>	862	.878	.83	.869	.852	.806	.765	.715	.718	.717	.67	.689	1	.733	.812	.769	.828	.812	.744	.456	.791	.647	.73
618 .89 .905 .641 .878 .897 .833 .823 .826 .803 .789 .813 .769 .779 .959 1 .773 .952 .988 .66 .653 .6 9 .843 .78 .921 .842 .781 .637 .585 .589 .618 .567 .584 .867 .988 .84 .773 1 .847 .771 .794 .745 .7 683 .934 .904 .718 .938 .911 .831 .811 .81 .817 .794 .813 .816 .84 .989 .952 .847 1 .956 .701 .684 .6 602 .874 .888 .635 .88 .899 .81 .799 .799 .8 .786 .807 .744 .761 .943 .988 .771 .956 1 .635 .63 .6 891 .785 .739 .886 .76 .716 .677 .621 .627 .631 .579 <t< td=""><td>912</td><td>.847</td><td>.784</td><td>.912</td><td>.83</td><td>.77</td><td>.646</td><td>.591</td><td>.596</td><td>.611</td><td>.559</td><td>.577</td><td>.881</td><td>1</td><td>.85</td><td>.78</td><td>.988</td><td>.84</td><td>.762</td><td>.811</td><td>.76</td><td>.753</td><td>.68</td></t<>	912	.847	.784	.912	.83	.77	.646	.591	.596	.611	.559	.577	.881	1	.85	.78	.988	.84	.762	.811	.76	.753	.68
9	691	.942	.912	.714	.927	.901	.847	.825	.826	.811	.787	.808	.831	.85	1	.959	.84	.989	.943	.717	.7	.674	.64
683 .934 .904 .718 .938 .911 .831 .811 .81 .817 .794 .813 .816 .84 .989 .952 .847 1 .956 .701 .684 .6 602 .874 .888 .635 .88 .899 .81 .799 .799 .8 .786 .807 .744 .761 .943 .988 .771 .956 1 .635 .63 .6 891 .785 .739 .886 .76 .716 .677 .621 .627 .631 .579 .596 .869 .811 .717 .662 .795 .701 .639 1 .97 .9 823 .758 .721 .822 .736 .699 .718 .664 .668 .675 .625 .639 .834 .76 .7 .653 .745 .684 .631 .97 1 .9 828 .729 .684 .85 .727 .683 .639 .592 .595 .636 .591 <t< td=""><td>618</td><td>.89</td><td>.905</td><td>.641</td><td>.878</td><td>.897</td><td>.833</td><td>.823</td><td>.826</td><td>.803</td><td>.789</td><td>.813</td><td>.769</td><td>.779</td><td>.959</td><td>1</td><td>.773</td><td>.952</td><td>.988</td><td>.66</td><td>.653</td><td>.627</td><td>.61</td></t<>	618	.89	.905	.641	.878	.897	.833	.823	.826	.803	.789	.813	.769	.779	.959	1	.773	.952	.988	.66	.653	.627	.61
602 .874 .888 .635 .88 .899 .81 .799 .799 .8 .786 .807 .744 .761 .943 .988 .771 .956 1 .635 .63 .6 891 .785 .739 .886 .76 .716 .677 .621 .627 .631 .579 .596 .869 .811 .717 .662 .795 .701 .639 1 .97 .9 823 .758 .721 .822 .736 .699 .718 .664 .668 .675 .625 .639 .834 .76 .7 .653 .745 .684 .631 .97 1 .9 828 .729 .684 .85 .727 .683 .639 .592 .595 .636 .591 .603 .796 .753 .674 .628 .757 .679 .624 .953 .935 1	9	.843	.78	.921	.842	.781	.637	.585	.589	.618	.567	.584	.867	.988	.84	.773	1	.847	.771	.794	.745	.756	.69
891 .785 .739 .886 .76 .716 .677 .621 .627 .631 .579 .596 .869 .811 .717 .662 .795 .701 .639 1 .97 .9 823 .758 .721 .822 .736 .699 .718 .664 .668 .675 .625 .639 .834 .76 .7 .653 .745 .684 .631 .97 1 .9 828 .729 .684 .85 .727 .683 .639 .592 .595 .636 .591 .603 .796 .753 .674 .628 .757 .679 .624 .953 .935 1	683	.934	.904	.718	.938	.911	.831	.811	.81	.817	.794	.813	.816	.84	.989	.952	.847	1	.956	.701	.684	.679	.65
823 .758 .721 .822 .736 .699 .718 .664 .668 .675 .625 .639 .834 .76 .7 .653 .745 .684 .631 .97 1 .9 828 .729 .684 .85 .727 .683 .639 .592 .595 .636 .591 .603 .796 .753 .674 .628 .757 .679 .624 .953 .935 1	602	.874	.888	.635	.88	.899	.81	.799	.799	.8	.786	.807	.744	.761	.943	.988	.771	.956	1	.635	.63	.623	.60
828 .729 .684 .85 .727 .683 .639 .592 .595 .636 .591 .603 .796 .753 .674 .628 .757 .679 .624 .953 .935 1	891	.785	.739	.886	.76	.716	.677	.621	.627	.631	.579	.596	.869	.811	.717	.662	.795	.701	.639	1	.97	.953	.90
	823	.758	.721	.822	.736	.699	.718	.664	.668	.675	.625	.639	.834	.76	.7	.653	.745	.684	.631	.97	1	.935	.94
743 $.693$ $.656$ $.767$ $.694$ $.658$ 1674 $.632$ $.631$ $.683$ $.642$ $.65$ $.747$ 1687 $.648$ $.61$ $.691$ $.652$ $.607$ 1.902 $.942$ $.91$	828	.729	.684	.85	.727	.683	.639	.592	.595	.636	.591	.603	.796	.753	.674	.628	.757	.679	.624	.953	.935	1	.96
	743	.693	.656	.767	.694	.658	.674	.632	.631	.683	.642	.65	.747	.687	.648	.61	.691	.652	.607	.902	.942	.966	1

		harm	onic	arith	$_{ m metic}$	geom	etric	lexico	grpahic	graph	icolexic	per	cent
exclude outlie	ers?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
harmonic	no	1	1	.8249	.8299	.9178	.9167	.9961	.9961	.7021	.7021	.853	.8543
harmonic	yes	1	1	.8248	.8298	.9177	.9166	.9961	.9961	.702	.702	.8529	.8542
arithmetic	no	.8249	.8248	1	.9996	.9421	.9395	.8255	.8255	.8882	.8882	.9812	.9819
arithmetic	yes	.8299	.8298	.9996	1	.947	.9446	.8307	.8307	.8847	.8847	.9843	.9849
geometric	no	.9178	.9177	.9421	.947	1	.9999	.9206	.9206	.8143	.8143	.9762	.9772
geometric	yes	.9167	.9166	.9395	.9446	.9999	1	.9195	.9195	.8113	.8113	.9753	.9763
lexicographic	no	.9961	.9961	.8255	.8307	.9206	.9195	1	1	.7017	.7017	.8561	.8575
lexicographic	yes	.9961	.9961	.8255	.8307	.9206	.9195	1	1	.7017	.7017	.8561	.8575
graphicolexic	no	.7021	.702	.8882	.8847	.8143	.8113	.7017	.7017	1	1	.8566	.8575
graphicolexic	yes	.7021	.702	.8882	.8847	.8143	.8113	.7017	.7017	1	1	.8566	.8575
percent	no	.853					.9753			.8566	.8566	1	.9999
percent	yes	.8543	.8542	.9819	.9849	.9772	.9763	.8575	.8575	.8575	.8575	.9999	1

		harn	onic	arith	$_{ m metic}$	geom	netric	lexico	grpahic	graph	icolexic	per	cent
exclude outlie	ers?	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
harmonic	no	1	1	.5746	.5693	.8076	.8104	.9953	.9953	.6366	.6366	.5576	.5678
harmonic	yes	1	1	.5743	.569	.8073	.8101	.9953	.9953	.6363	.6363	.5573	.5675
arithmetic	no	.5746	.5743	1	.9986	.8066	.7893	.5718	.5718	.9799	.9799	.9001	.9043
arithmetic	yes	.5693	.569	.9986	1	.8131	.7967	.5679	.5679	.9707	.9707	.9122	.9161
geometric	no	.8076	.8073	.8066	.8131	1	.999	.8142	.8142	.7992	.7992	.8453	.8578
geometric	yes	.8104	.8101	.7893	.7967	.999	1	.8176	.8176	.7816	.7816	.8399	.8525
lexicographic	no	.9953	.9953	.5718	.5679	.8142	.8176	1	1	.6305	.6305	.5726	.5827
lexicographic	yes	.9953	.9953	.5718	.5679	.8142	.8176	1	1	.6305	.6305	.5726	.5827
graphicolexic	no	.6366	.6363	.9799	.9707	.7992	.7816	.6305	.6305	1	1	.8601	.8651
graphicolexic	yes	.6366	.6363	.9799	.9707	.7992	.7816	.6305	.6305	1	1	.8601	.8651
percent	no	.5576	.5573	.9001	.9122	.8453	.8399	.5726	.5726	.8601	.8601	1	.9987
percent	yes	.5678	.5675	.9043	.9161	.8578	.8525	.5827	.5827	.8651	.8651	.9987	1

	Indivi	dual cr	riteria	Aggre	gate cri	iteria
Sample	mean	max	min	mean	max	min
Full	.893	.996	.658	.883	.996	.702
1-250	.763	.991	.44	.779	.995	.557
1-500	.815	.992	.526	.810	.994	.636
1-1000	.875	.995	.631	.851	.995	.711
1001–2000	.728	.996	051	.953	.999	.887
2001–3000	.441	1	996	.991	1	.974

