The Efficacy of League Formats in Ranking Teams

Appendix: Tournament Metrics for Several Parameter Combinations

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The table below presents the detailed estimates of different tournament metrics considered in our study. Each entry in the table corresponds to a different pair of parameters (α, σ) given in the rows and columns, respectively. The table is organised in blocks. Each block corresponds to nine tournament designs studied. The last column gives the short name for the particular league design scheme.

We suggest that the significance of differences between different formats is compared based on the confidence intervals resulting from the normal approximation. That is, the $1 - \bar{\alpha}$ confidence interval for a sample of observations $\mathbf{x} = (x_1, x_2, \ldots, x_n)$ is:

$$\left(\bar{\mathbf{x}} - \frac{z_{1-\bar{\alpha}/2} \cdot sd(\mathbf{x})}{\sqrt{n}}, \bar{\mathbf{x}} + \frac{z_{1-\bar{\alpha}/2} \cdot sd(\mathbf{x})}{\sqrt{n}}\right),$$

where z denotes a given quantile of the standard normal distribution and $\bar{\mathbf{x}}$ and $sd(\mathbf{x})$ are the sample mean and the sample standard deviation, respectively. The width of this interval is $\frac{2}{\sqrt{n}} z_{1-\bar{\alpha}/2} \cdot sd(\mathbf{x})$. Assuming the significance level of $\bar{\alpha} = 0.05$, we suggest the three given metrics considered – Kendall's τ, Spearman's Footrule distance and the fraction of the best team wins – should be considered with error margins of ca. ± 0.001, ± 0.004 and ± 0.003, respectively. Accordingly, the metric values are rounded to the third decimal digit. These margins should be taken into account when considering the significance of differences between the reported numbers.

	<-	Kendall	->	<-	Spearman	->	<-	Best wins	->	Format
$\alpha \setminus \sigma$	**0.1**	**0.25**	**0.4**	**0.1**	**0.25**	**0.4**	**0.1**	**0.25**	**0.4**	
10	0.463	0.692	0.789	2.319	1.409	1.008	0.383	0.603	0.704	a_1
10	0.458	0.685	0.781	2.338	1.442	1.039	0.376	0.589	0.691	a_2
10	0.445	0.676	0.775	2.386	1.477	1.067	0.360	0.578	0.682	b
10	0.421	0.662	0.768	2.484	1.535	1.095	0.363	0.585	0.691	c_1
10	0.418	0.654	0.760	2.495	1.565	1.127	0.360	0.568	0.677	c_2
10	0.405	0.644	0.753	2.540	1.606	1.159	0.337	0.553	0.666	d_1
10	0.403	0.638	0.747	2.548	1.630	1.184	0.331	0.539	0.655	d_2
10	0.382	0.618	0.731	2.625	1.712	1.253	0.307	0.517	0.631	e
10	0.285	0.510	0.639	2.983	2.135	1.627	0.234	0.412	0.531	f
20	0.423	0.686	0.787	2.472	1.435	1.015	0.342	0.598	0.703	a_1
20	0.416	0.678	0.780	2.498	1.471	1.046	0.332	0.583	0.690	a_2
20	0.405	0.669	0.773	2.539	1.503	1.074	0.323	0.573	0.683	b
20	0.385	0.657	0.766	2.617	1.555	1.101	0.325	0.579	0.692	c_1
20	0.380	0.649	0.759	2.635	1.588	1.134	0.316	0.562	0.678	c_2
20	0.369	0.638	0.751	2.675	1.630	1.167	0.302	0.547	0.667	d_1
20	0.365	0.631	0.745	2.688	1.658	1.193	0.298	0.533	0.654	d_2
20	0.345	0.612	0.729	2.761	1.737	1.261	0.276	0.513	0.631	e
20	0.255	0.503	0.637	3.090	2.162	1.634	0.213	0.405	0.531	f
100	0.410	0.685	0.787	2.519	1.441	1.016	0.334	0.599	0.704	a_1
100	0.403	0.676	0.779	2.547	1.477	1.048	0.321	0.582	0.691	a_2
100	0.392	0.668	0.773	2.585	1.511	1.076	0.317	0.574	0.683	b
100	0.375	0.656	0.766	2.656	1.560	1.103	0.315	0.579	0.692	c_1
100	0.368	0.647	0.758	2.680	1.594	1.136	0.304	0.561	0.676	c_2
100	0.357	0.636	0.751	2.719	1.639	1.169	0.294	0.547	0.664	d_1
100	0.352	0.630	0.744	2.736	1.665	1.196	0.285	0.534	0.651	d_2
100	0.334	0.610	0.728	2.804	1.745	1.263	0.270	0.510	0.632	e
100	0.247	0.502	0.637	3.122	2.169	1.637	0.208	0.406	0.532	f
∞	0.409	0.685	0.787	2.522	1.441	1.015	0.334	0.598	0.704	a_1
∞	0.402	0.676	0.779	2.549	1.477	1.047	0.322	0.582	0.693	a_2
∞	0.392	0.668	0.773	2.587	1.510	1.075	0.315	0.574	0.681	b

	<-	Kendall	->	<-	Spearman	->	<-	Best wins	->	Format
∞	0.375	0.655	0.767	2.655	1.562	1.099	0.317	0.577	0.692	c_1
∞	0.369	0.647	0.759	2.678	1.595	1.132	0.305	0.560	0.676	c_2
∞	0.357	0.636	0.751	2.719	1.638	1.166	0.296	0.548	0.665	d_1
∞	0.352	0.630	0.745	2.736	1.665	1.193	0.286	0.534	0.652	d_2
∞	0.334	0.610	0.729	2.805	1.742	1.260	0.272	0.512	0.632	e
∞	0.247	0.502	0.637	3.120	2.166	1.636	0.208	0.407	0.532	f