Determining Tournament Suitability By the Number of Games Per Entry

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A tournament director needs to select a tournament type most in sync with programmatic goals. One of the goals of many tournaments, especially in recreational settings, is to equalize the number of games played by each entry. Often this goal needs to be compromised due to limited playing time or the importance of determining overall rankings. The purpose of this paper is to provide data on the number of games required for seven common tournament types. This information will assist the tournament director in selecting the tournament best suited to the tournament goals.

The playoff structure used to calculate the number of games for each tournament is discussed below. The Double Elimination (DE) data was calculated assuming the first place team lost no matches. The Multi-Level (ML) tournament is basically a Single Elimination (SE) tournament with a series of consolation rounds. (For more information on this tournament type the reader may wish to refer to *Organizing Successful Tournaments,* written by the author.) The Round Robin - Double Split (RD) was calculated assuming a four game playoff format with the top four teams. The Round Robin - Triple Split (RT) was calculated assuming a six person Round Robin

(RR) playoff for the top two finishers in each of the three pools. The Round Robin - Quadruple Split (RQ) was calculated assuming a SE eight entry playoff with a third and fourth place match. The SE and RR do not have any additional playoff structure. The seeding used for each type is one that is commonly used and can be found in the tournament book referred to above.

The following example illustrates how the tables can be used. If there were 12 entries and sufficient time, the RR would clearly be the best in terms of equalizing the number of

games played. In the RR everyone plays the same number of games. However, the RR would require 66 games. If limiting the number of games is desired, then the ML tournament would be the next best choice. The total number of games is decreased from 66 to 20 and the difference between the number of games played is only one, with the maximum games played equalling four and minimum played equalling three. However, one of the difficulties of the ML tournament is that it does not allow for players who lost a match to regain their position, something that the Round Robin Split tournament and the DE does. Of those tournament types, the RD would likely be preferred since the spread in the number of games played is only two, with a maximum of seven games to a minimum of five. However, this format would require 34 games. If 34 games are too many, then the other three options are available. However, the RT can quickly be dismissed since it requires only one game less and significantly increases the spread in number of games played. For the remaining two formats, the DE is slightly better than the RQ in terms of equalizing the number of games played, but the RQ requires two fewer games. Finally, if one wants the fewest number of games, and is not concerned that this choice would mean adopting a format with the highest relative spread in the number of games played per entry, then the SE would be the choice. The SE requires only 11 games, but those playing in the maximum number of games play in three times as many games as those who play only one game in the entire tournament. This is one of the worst formats for equalizing the number of games per entries.

In addition to understanding the overall effects by looking at the total, maximum, minimum, and mean number of games played, it is also important to see who is most effected by limiting the number of games. For 12 entries, RT, SE, RQ, and DE considerably disadvantage the lower seeded players by eliminating them relatively early from the tournament. The RT is

most unequal and the DE is the best of these four alternatives. The RD and ML provide a considerable improvement with respect to the number of games in which lower seeds participate. Obviously the RR best equalizes the number of games played because each entry plays all of the others.

Though equalizing the number of games is most desirable in many tournament settings, the reality of time and facility constraints often impose adjustments to this goal. With the following charts, the tournament director will know the direct different tournament options have on the number of games participated in by each of the entries.

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Bibliography

Byl, J. (1990). **Organizing successful tournaments.** Champaign, IL: Human Kinetics.

Three Entries			
Seeded Position	SE	DE	RR
1	1	2	2
2	2	4	2
3	1	2	2
Total	2.00	4.00	3.00
Maximum	2.00	4.00	2.00
Minimum	1.00	2.00	2.00
Mean	1.33	2.67	2.00

Four Entries			
Seeded Position	SE	DE	RR
1	2	3	3
2	2	4	3
3	1	3	3
4	1	2	3
Total	3.00	6.00	6.00
Maximum	2.00	4.00	3.00
Minimum	1.00	2.00	3.00
Mean	1.50	3.00	3.00

Five Entries			
Seeded Position	SE	DE	RR
1	2	3	4
2	2	4	4
3	1	4	4
4	2	3	4
5	1	2	4
Total	4.00	8.00	10.00
Maximum	2.00	4.00	4.00
Minimum	1.00	2.00	4.00
Mean	1.60	3.20	4.00

Six Entries					
Seeded Position	SE	DE	ML	RR	RD
1	2	3	2	5	4
2	2	4	2	5	4
3	2	5	3	5	4
4	2	4	3	5	4
5	1	2	2	5	2
6	1	2	2	5	2
Total	5.00	10.00	7.00	15.00	10.00
Maximum	2.00	5.00	3.00	5.00	4.00
Minimum	1.00	2.00	2.00	5.00	2.00
Mean	1.67	3.33	2.33	5.00	3.33

Seven Entries					
Seeded Position	SE	DE	ML	RR	RD
1	2	3	2	6	4
2	3	5	3	6	5
3	2	5	3	6	4
4	2	4	3	6	5
5	1	2	2	6	2
6	1	3	3	6	3
7	1	2	2	6	3
Total	6.00	12.00	9.00	21.00	13.00
Maximum	3.00	5.00	3.00	6.00	5.00
Minimum	1.00	2.00	2.00	6.00	3.00
Mean	1.71	3.43	2.57	6.00	3.71

Eight Entries					
Seeded Position	SE	DE	ML	RR	RD
1	3	4	3	7	5
2	3	5	3	7	5
3	2	5	3	7	5
4	2	4	3	7	5
5	1	3	3	7	3
6	1	3	3	7	3
7	1	2	3	7	3
8	1	2	3	7	3
Total	7.00	14.00	12.00	28.00	16.00
Maximum	3.00	5.00	3.00	7.00	5.00
Minimum	1.00	2.00	3.00	7.00	3.00
Mean	1.75	3.50	3.00	7.00	4.00

Nine Entries

Seeded Position	SE	DE	ML	RR	RD	RT
1	3	4	3	8	5	7
2	3	5	3	8	6	7
3	2	5	3	8	5	7
4	2	4	4	8	6	7
5	1	3	3	8	3	7
6	1	4	3	8	4	7
7	1	2	3	8	3	2
8	2	3	3	8	4	2
9	1	2	3	8	4	2
Total	8.00	16.00	14.00	36.00	20.00	24.00
Maximum	3.00	5.00	4.00	8.00	6.00	7.00
Minimum	1.00	2.00	3.00	8.00	3.00	3.00
Mean	1.78	3.56	3.11	8.00	4.44	5.33

Thirteen Entries

Seeded Position	SE	DE	ML	RR	RD	RT	RQ
1	3	4	3	12	7	8	5
2	3	5	3	12	8	8	5
3	2	5	4	12	7	9	5
4	3	5	4	12	8	8	6
5	2	5	4	12	5	8	3
6	2	5	3	12	6	9	3
7	2	4	3	12	5	3	3
8	2	4	3	12	6	3	4
9	1	2	3	12	5	4	2
10	1	3	4	12	6	3	2
11	1	2	4	12	5	3	2
12	1	2	3	12	6	4	3
13	1	2	3	12	6	4	3
Total	12.00	24.00	22.00	78.00	40.00	37.00	23.00
Maximum	3.00	5.00	4.00	12.00	8.00	9.00	6.00
Minimum	1.00	2.00	3.00	12.00	5.00	3.00	2.00
Mean	1.85	3.69	3.38	12.00	6.15	5.69	3.54

Fifteen Entries

Seeded Position	SE	DE	ML	RR	RD	RT	RQ
1	3	4	3	14	8	9	5
2	4	6	4	14	9	9	6
3	3	6	4	14	8	9	6
4	3	5	4	14	9	9	6
5	2	5	4	14	6	9	3
6	2	5	4	14	7	9	4
7	2	4	4	14	6	4	4
8	2	4	4	14	7	4	4
9	1	3	4	14	6	4	2
10	1	3	4	14	7	4	3
11	1	2	3	14	6	4	3
12	1	3	4	14	7	4	3
13	1	2	3	14	6	4	3
14	1	2	4	14	7	4	3
15	1	2	3	14	7	4	3
Total	14.00	28.00	28.00	105.00	53.00	45.00	29.00
Maximum	4.00	6.00	4.00	14.00	9.00	9.00	6.00
Minimum	1.00	2.00	3.00	14.00	6.00	4.00	3.00
Mean	1.88	3.73	3.73	14.00	7.07	6.00	3.87

Ten Entries

Seeded Position	SE	DE	ML	RR	RD	RT
1	3	4	3	9	6	7
2	3	5	3	9	6	7
3	2	5	3	9	6	8
4	2	4	3	9	6	7
5	1	4	3	9	4	7
6	1	4	3	9	4	8
7	2	3	3	9	4	2
8	2	3	3	9	4	2
9	1	2	3	9	4	3
10	1	2	3	9	4	3
Total	9.00	18.00	15.00	45.00	24.00	27.00
Maximum	3.00	5.00	3.00	9.00	6.00	8.00
Minimum	1.00	2.00	3.00	9.00	4.00	2.00
Mean	1.80	3.60	3.00	9.00	4.80	5.40

Fourteen Entries

Seeded Position	SE	DE	ML	RR	RD	RT	RQ
1	3	4	3	13	8	8	5
2	3	5	4	13	8	9	5
3	3	6	4	13	8	9	6
4	3	5	4	13	8	8	6
5	2	5	4	13	6	9	3
6	2	5	3	13	6	9	3
7	2	4	3	13	6	3	4
8	2	4	4	13	6	4	4
9	1	3	4	13	6	4	2
10	1	3	4	13	6	3	2
11	1	2	3	13	6	4	3
12	1	2	4	13	6	4	3
13	1	2	3	13	6	4	3
14	1	2	3	13	6	4	3
Total	13.00	26.00	25.00	91.00	46.00	41.00	26.00
Maximum	3.00	6.00	4.00	13.00	8.00	9.00	6.00
Minimum	1.00	2.00	3.00	13.00	6.00	3.00	2.00
Mean	1.86	3.71	3.57	13.00	6.57	5.86	3.71

Sixteen Entries

Seeded Position	SE	DE	ML	RR	RD	RT	RQ
1	4	5	4	15	9	9	6
2	4	6	4	15	9	9	6
3	3	6	4	15	9	10	6
4	3	5	4	15	9	9	6
5	2	5	4	15	7	9	4
6	2	5	4	15	7	10	4
7	2	4	4	15	7	4	4
8	2	4	4	15	7	4	4
9	1	3	4	15	7	5	3
10	1	3	4	15	7	4	3
11	1	3	4	15	7	4	3
12	1	3	4	15	7	5	3
13	1	2	4	15	7	4	3
14	1	2	4	15	7	4	3
15	1	2	4	15	7	5	3
16	1	2	4	15	7	5	3
Total	15.00	30.00	32.00	120.00	60.00	50.00	32.00
Maximum	4.00	6.00	4.00	15.00	9.00	10.00	6.00
Minimum	1.00	2.00	4.00	15.00	7.00	4.00	3.00
Mean	1.88	3.75	4.00	15.00	7.50	6.25	4.00

Eleven Entries

Seeded Position	SE	DE	ML	RR	RD	RT
1	3	4	3	10	6	7
2	3	5	3	10	7	8
3	2	5	3	10	6	8
4	2	4	4	10	7	7
5	1	4	3	10	4	8
6	2	5	3	10	5	8
7	2	3	3	10	4	2
8	2	4	3	10	5	3
9	1	2	3	10	4	3
10	1	2	3	10	5	3
11	1	2	3	10	5	3
Total	10.00	20.00	17.00	55.00	29.00	30.00
Maximum	3.00	5.00	4.00	10.00	7.00	8.00
Minimum	1.00	2.00	3.00	10.00	4.00	3.00
Mean	1.82	3.64	3.09	10.00	5.27	5.45

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Twelve Entries

Seeded Position	SE	DE	ML	RR	RD	RT	RQ
1	3	4	3	11	7	8	5
2	3	5	3	11	7	8	5
3	2	5	4	11	7	8	5
4	2	4	4	11	7	8	5
5	2	5	3	11	5	8	3
6	2	5	3	11	5	8	3
7	2	4	3	11	5	3	3
8	2	4	3	11	5	3	3
9	1	2	4	11	5	3	2
10	1	2	4	11	5	3	2
11	1	2	3	11	5	3	2
12	1	2	3	11	5	3	2
Total	11.00	22.00	20.00	66.00	34.00	23.00	20.00
Maximum	3.00	5.00	4.00	11.00	7.00	8.00	5.00
Minimum	1.00	2.00	3.00	11.00	5.00	3.00	2.00
Mean	1.83	3.67	3.33	11.00	5.67	5.50	3.33