



Handicapping Math

A Guide for WATT Handicappers

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Twenty-five years ago Liberty Publishing Company (LPC) was the nation's leading publisher of horse race handicapping titles available in thousands of bookstores nationally. Anticipating the downfall of the retail book industry, LPC sold its book publishing operations to concentrate on publishing software, including the remarkable speed/pace program, **Winning at the Track**.

LPC published a long list of excellent horseracing guides. Among them was *The Mathematics of Horse Racing* by statistician David B. Fogel. In the book he outlined a study of thousands of horses within two age brackets: **3-years old** and **4-years old and up**.

Without going into elaborate detail regarding the mathematics and formulas behind this study, here is the author's brief explanation of the methodology: *(Editor's suggestion – don't give up here!)*

"When we analyzed the factor "Racing at a new distance" we found that only 10.7% of those horses that changed distance won their next race. We expected to see 15.3% winners. The difference between these scores is -4.6%.

This difference must be compared to the expected variability of the sample. This variability is equal to the square root of $p(1-p)/n$, where p is the expected percentage and n is the total number of horses in the category. Thus, for this calculation, the expected variability is the square root of $(0.153)(0.847)/300 = 0.021$.

Therefore, the weight that should be assigned to this factor is $-0.046/0.021 = -2.19$."

The weightings that appear on the next three tables illustrate the relative importance of each handicapping factor. By assigning each horse in any contest weightings from these tables, one can appreciate the statistical advantage (or disadvantage) of each horse versus its competition.

These were the most important factors that emerged from this interesting study and the weight that was attributed to each factor:

All horses

Racing within 24 days of the last race.....	+0.84
Racing at the same distance.....	+0.62
Racing after a layoff of 25 or more days.....	-1.64
Racing at a new distance.....	-2.19

3-year olds

Losing last race by 4 or fewer lengths.....	+2.14
Racing at the same track.....	+0.85
Losing last race by 9 or more lengths.....	-1.14
Racing at a new track.....	-1.84

4-years and up

Winning last race by 2 or more lengths.....	+2.74
Racing at a lower class.....	+1.76
Winning last race by less than 2 lengths.....	+1.23
Losing last race by 9 or more lengths.....	-2.15

A few conclusions can be drawn from these tables as well as from other observations:

- It is a significant negative when horses are racing at a new distance;
- It is more favorable when a horse is running within 25 days of its last race;
- It is a positive when a 3-year old did not lose by more than 4 lengths in its last race;
- It is a positive when older horses, 4-years and up, win the last time out;
- It is a positive when older horses, 4-years and up, are dropping in class;
- It is a negative when any horse loses its last race by 9 lengths or more.

Regarding a change in distance from one contest to the next, handicappers should take into consideration the extent of the change. As a general rule, if it is no more than 660 feet (or one furlong), the new distance might be manageable. For example, here is how a 7-furlong race might be measured, and it can be seen that a 1-furlong change is within 15%:

@ 7 furlongs	
	<u>FEET</u>
4F	= 2,640
4½	= 2,970
5F	= 3,300
5½	= 3,630
6F	= 3,960 -14%
6½	= 4,290
7F	= 4,620 100%
7½	= 4,950
8F	= 5,280 +14%
1.70	= 5,490

Racing pros know that a mile runner has less difficulty with 7 furlongs than does a 6f sprinter.

Finally, regarding exacta wagers, here is a table that I have used for many years showing the approximate points at which I believe exactas are not worth playing (green):

Place	1-1	8-5	2-1	5-2	3-1	5-1	6-1	8-1
Win								
1-1							22	25
8-5					20	23	30	35
2-1				21	25	32	36	40
5-2			22	27	32	37	45	50
3-1	20	23	27	32	40	45	55	60
5-1	30	33	35	45	48	60	65	80
6-1	35	42	52	55	65	75	85	95
8-1	45	50	65	70	80	90	100	120



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