

Statistical Tests of Tim Donaghy's allegations of games officiated by Dick Bavetta
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[The data used in this report was compiled by the authors. The data is available on Joe Price's website: www.byuresearch.org/home . The analysis is an honest attempt to test the specific claims. Interested readers are encouraged to use the data to confirm the conclusions in the report. None of these results provide evidence that Donaghy was lying in his allegations, since it is possible that his observations are the result of an personal impression based on a subset of the data. The results simply provide a statistical test of whether specific claims about games in which Bavetta was one of the three officials are verifiable statistically.]

- Would betting on the underdog in games where the spread was 7 or more points and Bavetta was the official have been a profitable strategy?

If you had bet on the underdog all of the games in which Bavetta was an official and in which one of the teams was favored to win by 7 or more points, your bet would have paid off only 46.2% of the games. This would have caused you to, on average, lose about 11.8% of the money that you bet, on average.

Record When Betting on the "Big Underdog"

	Bavetta Is Not Ref	Bavetta is Ref	Difference	P-Value of Difference
Percentage of Winning Bets on the Underdog	0.5259	0.4615	0.0644	0.1018
<i>Standard Deviation</i>	<i>[0.4995]</i>	<i>[0.5009]</i>	<i>[0.0506]</i>	
Number of Observations	1,544	104	1,644	

- Mean and Median final score margin of Bavetta games vs. NBA as a whole.

Donaghy claims that Dick Bavetta preferred to keep games close. If Bavetta did successfully skew the games, then we should observe smaller point differences in games where Bavetta was the referee. Instead, we observe that point margins (home score – away score) are, on average, slightly higher in games refereed by Bavetta, although the difference is not statistically significant.

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Mean Final Score Margin of Bavetta Games vs. NBA as a Whole

	Bavetta Is Not Ref	Bavetta is Ref	Difference	P-Value of Difference
Mean Absolute Margin	10.4171	10.7815	-0.3644	0.8040
<i>Standard Deviation</i>	[7.4383]	[7.2910]	[0.4256]	
Number of Observations	4,888	325	5,213	

Median Final Score Margin of Bavetta Games vs. NBA as a Whole

	Bavetta Is Not Ref	Bavetta is Ref	Difference	P-Value of Difference
Median Absolute Margin	9.0000	9.0000	0.0000	0.6101
<i>Interquartile Range</i>	[9.0000]	[10.0000]		
Number of Observations	4,888	325	5,213	

- Final margin of Bavetta games vs. the Betting Lines

Using betting line data from www.covers.com, we check if Bavetta sways margins down from the predicted spread. We would expect the absolute value of the margin to be lower (closer to zero) than the betting line. In fact, we find that games in which Bavetta was the referee were slightly closer to the spread but this different is not statistically significant.

Final Margin of Bavetta Games vs. Betting Lines (Absolute Difference)

	Bavetta Is Not Ref	Bavetta is Ref	Difference	P-Value of Difference
Mean Absolute Difference Between Margin and Line	8.8267	8.6000	0.2267	0.7159
<i>Standard Deviation</i>	[6.9607]	[6.4982]	[0.3971]	
Number of Observations	4,888	325	4,888	

- Record of "Big Underdogs" (closing line of 7 or greater) in Bavetta games.

It is possible that Dick Bavetta only attempts to keep margins close when one team is heavily favored against the other. In that case, we would expect more upsets by "Big Underdogs" (teams that betting lines predict will lose by 7 or more points) when Mr. Bavetta referees. In the table below, we list the percentage of games where the favored team (as predicted by betting lines) actually wins. While we had expected the win record of favored teams to be lower in Bavetta-refereed games, the win percentages are actually higher. This difference is not statistically significant.

Win Record of Favorite in "Big Underdog" Games

	Bavetta Is Not Ref	Bavetta is Ref	Difference	P-Value of Difference
Percentage of Wins by Favored Team	0.8006	0.8288	-0.0282	0.7652
<i>Standard Deviation</i>	[0.3997]	[0.3784]	[0.0390]	
Number of Observations	1,690	111	1,690	

- Foul calls in Bavetta games ("big underdogs" vs. "big favorites" i.e. same set of games)

It is true that games in which Bavetta is the referee, there are fewer fouls called on the team who is not favored to win and this difference is larger in games in which there is a big underdog (i.e. favored to lose by 7 points or more). However, the gap between the favored team and underdog is even larger in the games which Bavetta was not a referee (though these differences are not statistically significant).

Fouls Called in Games Without a "Big Underdog"

	Bavetta Is Not Ref	Bavetta is Ref	Difference-in-Differences	P-Value of DID
Fouls Called on Favored Team	22.7737	24.0829		0.6337
<i>Standard Deviation</i>	[4.5981]	[4.9078]		
Fouls Called on Underdog	22.0693	23.5377		
<i>Standard Deviation</i>	[4.3937]	[4.8448]		
Difference	-0.7044	-0.5452	0.1592	
<i>Standard Deviation of Difference</i>	[0.1191]	[0.4853]	[0.4659]	
Number of Observations	5,704	404	6,108	

Fouls Called in Games With a "Big Underdog"

	Bavetta Is Not Ref	Bavetta is Ref	Difference-in-Differences	P-Value of DID
Fouls Called on Favored Team	22.9747	24.0000		0.6805
<i>Standard Deviation</i>	[4.7935]	[5.3208]		
Fouls Called on Underdog	20.8873	22.2212		
<i>Standard Deviation</i>	[4.2996]	[4.9521]		
Difference	-2.0874	-1.7788	0.3086	
<i>Standard Deviation of Difference</i>	[0.1639]	[0.7128]	[0.6579]	
Number of Observations	3,088	208	3,296	