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A CHALLENGE?**

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### MOVING BACK THE NCAA'S THREE-POINT LINE: A CHALLENGE?

In an effort to spread defenses in men's basketball and rejuvenate post play (nearest to the basket), the NCAA decided in May 2007 to move the men's three-point line back a foot to a new distance of 20 feet, 9 inches. Did the additional twelve inches present a challenge for Division I teams? Did teams not only take fewer three-point shots, but did the new line adversely affect shooting percentages?

In this brief note, we examine the difference in the average number of three-point field goal attempts (hereafter, *3PTFGA*) and the percentage of three-pointers made from behind the new arch (hereafter, *PCT*) between 2008-09 (one season after the change) and 2007-08 (one season before). All data are from [www.ncaa.com/sports/m-baskbl/stats/](http://www.ncaa.com/sports/m-baskbl/stats/) for all Division I men's basketball teams that made a minimum of five three-point field goals per game both seasons. There were observations on a total of 280 Division-I men's basketball programs.<sup>1</sup> We also made before-and-after comparisons for eight conferences: Atlantic Coast Conference (hereafter, ACC); Big East; Big Ten; Big 12; PAC-10; Southeastern Conference (SEC); Western Athletic Conference (WAC); and Conference USA. Finally, we compared three-point field goal attempts and the percentage of three-pointers made for two elite groups of schools: the "Sweet 16" from the 2007-08 NCAA Tournament and the "Sweet 16" from the 2008-09 Tournament.<sup>2</sup>

The results of a series of paired *t*-tests are reported in Table 1. For all 280 schools, the average number of three-pointers attempted ( $p = .015$ ) and the average percentage made ( $p = .001$ ) dropped in the season following the change. By contrast, for the eight conferences (accounting for about one-third of the Division I teams in our sample), the differences were few. The PAC-10 with the highest three-point shooting percentage (of the eight conferences examined here) before the change (36.1 percent) connected on the highest percentage of three-pointers (36.9 percent)

after the change. Of note, the shooting percentage fell in the Big East ( $p = .008$ ) and the number of three-pointers attempted fell in the WAC ( $p = .028$ ).<sup>3,4</sup> Among elite schools (namely, the “Sweet 16” in each NCAA Tournament, the year before and after the change), there were no statistically significant differences.

#### *Concluding Remarks*

In 2007, the NCAA voted to move the three-point line in men’s basketball one additional foot away from the basket. The new three-point distance became effective at the start of the 2008-09 season. For all Division I teams in our sample, the number of three-point shots attempted fell, on average, about 2.1 percent and the percentage of three-pointers made fell less than one percent (from 35.3 percent to 34.6 percent). For conferences that have sent disproportionately many teams to the season-ending “March Madness” tournament, the movement of the three-point line has neither deterred long-range shooters nor adversely affected their shooting percentage. Deep shooters (especially from elite programs) have adjusted quite well to stepping a foot back.

**Table 1. Paired *t*-Test Results  
on 3-Pointers Attempted and Made,  
for Selected Conferences  
between 2007-08 and 2008-09**

	2007-08 averages <sup>a</sup>			2008-09 averages			p-value <sup>*</sup> on difference 2007-08 and 2008-09	
	3PTFG	3PTFGA	PCT	3PTFG	3PTFGA	PCT	3PTFGA	PCT
<i>All schools</i> (n = 280)	221.535	626.189	.353	212.796	612.986	.346	<b>.015</b>	<b>.001</b>
<i>Selected conferences</i>								
ACC (n = 12)	218.917	613.417	.356	202.583	585.917	.344	.215	.054
Big East (n = 16)	221.813	630.875	.350	218.438	649.438	.333	.834	<b>.008</b>
Big Ten (n = 11)	225.545	648.182	.349	228.818	646.455	.354	.480	.743
Big 12 (n = 12)	223.333	632.083	.353	234.167	652.583	.358	.696	.722
PAC-10 (n = 10)	213.400	591.500	.361	213.600	576.300	.369	.285	.715
SEC (n = 12)	241.833	681.667	.354	224.583	648.500	.346	.173	.198
WAC (n = 9)	203.889	571.667	.355	184.000	528.333	.345	<b>.028</b>	.214
Conference USA (n = 12)	217.750	629.833	.341	197.583	582.417	.338	.164	.413
<i>Sweet 16</i> 2007-08	255.375	697.000	.367	237.313	661.375	.359	.109	.125
<i>Sweet 16</i> 2008-09	236.438	651.688	.363	238.750	663.313	.360	.687	.282

\* *p*-values are for a one-tailed alternative that the average for 2008-09 is smaller than the corresponding average for 2007-08.

<sup>a</sup>The average *PCT* reported here for the paired *t*-tests is equal to the sum of the *PCT*s across all *n* schools divided by *n*; it is not the average *PCT* found by summing *3PTFG* across all *n* schools and then dividing this sum by the sum of the *3PTFGA*s across all *n* schools.

### Footnotes

1. There were initially 265 Division I schools common to both NCAA lists, one each season, with a minimum of 5.0 three-point field goals made per game. In some instances, a school was listed one year, but not the other. To include all members of the eight selected conferences, we needed to add observations (both years) on fifteen more teams (from the respective school's men's basketball Web site): Wake Forest (ACC); Connecticut, St. John's and USF (Big East); Michigan State (Big Ten); Texas (Big 12); Washington and USC (PAC-10); Alabama (SEC); Nevada, Hawaii and San Jose State (WAC); and Tulane, Southern Mississippi and Rice (Conference USA).
2. Seven schools advanced to their respective regional semifinals both seasons: Kansas, Louisville, Memphis, Michigan State, North Carolina, Villanova, and Xavier.
3. The Big East includes the following schools: Cincinnati, Connecticut, DePaul, Georgetown, Louisville, Marquette, Notre Dame, Pittsburgh, Providence, Rutgers, Seton Hall, St. John's, Syracuse, USF, Villanova, and West Virginia.
4. The WAC includes the following schools: Boise State, Fresno State, Hawaii, Idaho, Louisiana Tech, Nevada, New Mexico State, San Jose State, and Utah State.