The Hot Hand: Comparing Sports Performances to Chance

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Statistical testing often involves comparing obtained data to what could have occurred by chance. The sports world provides many examples, as athletes' or teams' streaky performances can be assessed for their likelihood of being chance phenomena. My "hot hand" website helps introduce students to probabilistic analyses of streaks.

Link to access my website: http://www.hs.ttu.edu/hdfs3390/hothand.htm

Ways that instructors can use these materials:

The key is for instructors to analyze actual sports performances that appear to be "streaky" in terms of their likelihood of occurring by chance. Instructors have many options: they can stage their own athletic events (e.g., taking the class to a school gym to shoot baskets), conduct new analyses of recent college or professional sports events, or go over with their students some of the existing statistical case studies on my website. The website provides thorough instruction on how to conduct hot hand analyses in a variety of ways, such as runs tests, sequential analyses (p[hit | hit] vs. p[hit | miss]), binomial calculations, and computer simulations.

How I have used the materials in ways that might work for others:

I have found a spinner model based on the children's board game *All-Star Baseball* (suggested by Albert & Bennett in their book *Curve Ball*) to be effective. Each disk (which is inserted into a spinner) represents a real Major League Baseball player, with different batting outcomes (e.g., single, home run, strike out) displayed along the circumference of the disk. The sizes of the different outcome zones on a given disk are proportional to the player's actual statistics. The key phenomenon is that repeated spinning of the same disk (thus guaranteeing a constant underlying true probability of a hit throughout the series of "at bats") can still yield what appear to be protracted "hot" and "cold" stretches. An actual *All-Star Baseball* board game can be a useful classroom tool (if interested, go to: http://www.cadaco.com/press/press-allstarbaseball.html).