Chance and streaks
Political Streaks

- Democrats from 1932-1952
- Republicans from 1896-1912
Which looks more like a “fair coin”?
TTTHTHTHHHHHTTHHTHTTTT
HTHHTTHTHTHTHTHTTHHTTHHTH

The “Hot Hand”

People attribute random streaks to something other than chance.

Pervasive: Google News: hot streak
What is the Hot Hand?

• A player has “a better chance of making a shot after having just made his last two or three shots than he does after having just missed his last two or three shots”
  – 91% Basketball fans agree

• They perceive that streak shooting reflects hotness and not the runs that would be expected by chance.
# Tom Gilovich’s 1981 study of Philadelphia 76ers

<table>
<thead>
<tr>
<th>Player</th>
<th>P(hit)</th>
<th>P(hit/2 hits)</th>
<th>P(hit/2 misses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Julius Erving</td>
<td>.52</td>
<td>.52</td>
<td>.51</td>
</tr>
<tr>
<td>Lionel Hollins</td>
<td>.46</td>
<td>.46</td>
<td>.49</td>
</tr>
<tr>
<td>Daryl Dawkins</td>
<td>.62</td>
<td>.58</td>
<td>.73</td>
</tr>
</tbody>
</table>

- For all players, the $p$(hit/hit) did not differ from $p$(hit/miss).
- The streaks of hits and misses was no different from the number of runs expected by chance.
- The number of “hot” and “cold” nights did not differ from number expected by chance.
Hot Hand
(Gilovich, Vallone, & Tversky, 1984)

- Study 2: Free throw data (1981 Celtics)
- Study 3: Controlled shooting study with college basketball players
  - 100 shots from there “50% zone.”

- No greater percentage of runs, and
  \[ p(H2/H1) = p(H2/M1) \]
Even if players are streaky, difficult to detect while watching games

http://www.rawbw.com/~deano/articles/aa121896.htm
Hot streaks

- Pervasively wrong
  - Google News: hot streak

- Resources
  - http://thehothand.blogspot.com/