

1046-N1-1991      **Michael A. Jones\*** ([maj@ams.org](mailto:maj@ams.org)), Mathematical Reviews, 416 S. Fourth Street, Ann Arbor, MI 48104. *The Superbowl Box Pool*.

Each year approximately 45% of U.S. households watch the Superbowl and approximately \$90 million is bet on the game. A common office pool, the Superbowl box pool, sells each square of a  $10 \times 10$  grid for the same price. After all squares have been sold, the row and column headings are revealed to indicate the units' digits of the scores of the two teams. At the end of each quarter, a percentage of the collected money is returned to the person who bought the square that matches the teams' scores modulo 10. Although the pool is fair because each square is equally likely to be purchased for the same price and the expected value is zero, certain scores are clearly better, e.g.,  $(7, 0)$ , than others, e.g.,  $(5, 8)$ .

After years of running a Superbowl box pool at a neighbor's house, I thought about how to create odds for the different scores. I develop both 200-state and 100-state Markov chain models of Superbowl play to determine the likelihood of end-of-quarter scores. Touchdown, extra point, field goal, safety, and two-point conversion data from the 2008 NFL season are parameters for the model. Outcomes are compared with end-of-quarter data from both the 2008 NFL season and past Superbowls. I also discuss the assumptions and limitations of the model. (Received September 16, 2008)