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06518. *Streaking: Finding the probability for various batting streaks.*

In baseball, a player can gain instant fame by duplicating or exceeding one of the fabled types of batting streaks. The most well known is Joe DiMaggio's 1941 streak of getting at least one hit in 56 consecutive games. There are also other batting streaks such as Ted Williams' (1949) 84-game consecutive on-base streak, Joe Sewell's (1929) 115-game streak of not striking-out in a game, and the 8-game streak of hitting at least one home run in each game, held by three players (Ken Griffey Jr., Don Mattingly, and Dale Long). Other streaks include most consecutive plate appearances with a hit (the record is 12 held by Walt Dropo (1952)), most consecutive plate appearances getting on-base (the record is 16 held by Ted Williams (1957)). In this paper, we present two functions to calculate the probability of a player duplicating a hitting streak. One is recursive; the other is a new piecewise function that calculates the probability directly. These functions are used to compare types of streaks with respect to their difficulty of duplicating. In particular, the 56-game consecutive hitting streak is compared to the 84-game consecutive on-base streak. (Received July 14, 2011)