Hit Streaks in Baseball

Consider an average baseball player who has a batting average of 0.250. We will assume that the outcomes of each at bat are independent and that the probability that the player gets a hit is 1/4.

We will assume that a player gets four at bats per game. We will use `randbin` to simulate a season in this player’s career. A baseball season is 162 games long. Each team member should do 30 seasons, and for each season, construct a histogram of the number of hit streaks of length 10, 15, 20, 25, 30, and so on for each multiple of five. (A hit streak is any stretch with at least one hit in each game during that stretch)

1. Combine your data into one histogram for the seasons. What do you notice about this distribution as related to the individual distributions? (mean, median, range, standard deviation, etc)

2. Assume that your combined season data is normal. Find the probability of a streak of at least 20 games, at least 35 games, and at least 56 games.

Now do all of the above for a player with a 0.300 average.

Given what you have just found, is it surprising that some player in the history of baseball has a streak of 56 games? (there have been roughly *** player seasons in the history of MLB, as of the start of the 2008 season) Explain your reasoning.