

Group 1: Tennis

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The Game of Tennis

- ▶ Point: Smallest unit of measurement (Love-15-30-40-game)
- ▶ Game: A game is one when a player reaches 4 points with at least a 2 point advantage
- ▶ Set: A set consists of 6 games and is won by the player who reaches 6 games first
- ▶ Advantage Set: If a game score of 6-6 is reached and advantage set rules are used, a player can only win a set with a 2 game lead
- ▶ Matches: Best of 3 set (for women) or 5 sets (for men)
- ▶ Tie-break game: If a game score of 6-6 is reached and tie-break set rules are used. In a tie-break game, a player/team must reach 7 points with a two point advantage to win

Values

Things we need to know:

- ▶ Empirical probability of winning a rally on serve
- ▶ Empirical probability of winning a game on serve

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Things we need to calculate:

- ▶ Theoretical probability of winning a game on serve
- ▶ Theoretical probability of winning a set
- ▶ Theoretical probability of winning a match
- ▶ Theoretical probability of winning the tie-breaker

Slide with R Output

| P(Win a Rally) | Empirical P(Win a Game) | Paper P(Win a Game) | Our P(Win a Game) |
|----------------|-------------------------|---------------------|-------------------|
| 0.69 | 0.71 | 0.89 | 0.89 |
| 0.63 | 0.80 | 0.79 | 0.79 |
| 0.65 | 0.85 | 0.83 | 0.83 |
| 0.63 | 0.77 | 0.79 | 0.79 |

Slide with Plot

