

9. CASE STUDY #2: THE TALE OF TOM OSBORNE AND THE 1984 ORANGE BOWL

In the 1984 Orange Bowl the undefeated Nebraska Cornhuskers and the once-beaten Miami Hurricanes faced off. Because Nebraska came into the Bowl with the better record, it needed only a tie in order to finish the season with the number-one ranking.

But Nebraska fell behind by 31-17 in the fourth quarter. Then the Cornhuskers began a comeback. They scored a touchdown to make the score 31-23. Nebraska coach Tom Osborne had an important strategic decision to make.

In college football, a team that scores a touchdown then runs one play from a hash mark $2\frac{1}{2}$ yards from the goal line. The team has a choice between trying to run or pass the ball into the end zone, which scores two additional points, or trying the less risky strategy of kicking the ball through the goalposts, which scores one extra point.

Coach Osborne chose to play it safe, and Nebraska successfully kicked for the one extra point. Now the score was 31-24. The Cornhuskers continued their comeback. In the waning minutes of the game they scored a final touchdown, bringing the score to 31-30. A point conversion would have tied the game and landed them the title. But that would have been an unsatisfying victory. To win the championship with style, Osborne recognized that he had to go for the win.

The Cornhuskers went for the win with a two-point conversion attempt. Irving Fryer got the ball, but failed to score. Miami and Nebraska ended the year with equal records. Since Miami beat Nebraska, it was Miami that was awarded the top place in the standings.

Put yourself in the cleats of Coach Osborne. Could you have done better?

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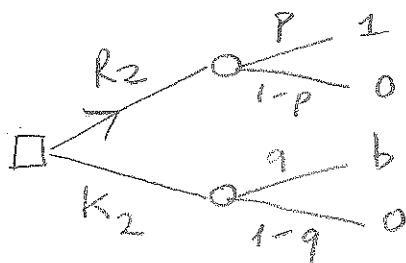
Notes:

So: touch-down gives 6 points; then you get 2 extra points if you score a run - which occurs with probability p - , or 1 extra point if you score a kick - probability

$q > p$. At 31-17 need 14 points to tie, so there is no question unless you score 2 touch-downs. Assuming you do, you need 2 extra points to tie; and you have two choices to make, one after each touch-down:

K_i (kick) or R_i (run) after touch-down $i = 1, 2$. Between the two choices, and after the second, Nature chooses if it goes "well" or "bad". DRAW THE DECISION TREE for the problem (5 decision nodes, right?).

Utility: 1 if you win championship and match; $b \in (0, 1)$ if you win only championship (match is a draw); 0 if you lose (match and championship). Assume elementary stochastic dominance. Observed choice of R_2 (matter of taste)



implies $p > qb$. So no 'mistake' here. Now analyze the problem and draw your conclusion.