

ModelSpec

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- Let HTD be the number of home touchdowns for a game
- Let HXP be the number of home extra point kicks made for a game
- Let HTP be the number of home two conversions made for a game
- Let HFG be the number of home field goals made for a game
- Let HSF be the number of home defense safeties for a game
- Let ATD be the number of away touchdowns for a game
- Let AXP be the number of away extra point kicks made for a game
- Let ATP be the number of away two conversions made for a game
- Let AFG be the number of away field goals made for a game
- Let ASF be the number of away defense safeties for a game
- Let HS be the home score for a game
- Let AS be the away score for a game
- Let RT be the result (spread) of a game
- Let TT be the total points for a game
- Let s be the season
- Let w be the week
- Let g be the specific game between two teams
- Let t be the team (32 NFL teams)

$$RT_{swgt} = HS_{swgt} - AS_{swgt}$$

$$TT_{swgt} = HS_{swgt} + AS_{swgt}$$

$$HS_{swgt} = 6HTD_{swgt} + HXP_{swgt} + 2HTP_{swgt} + 3HFG_{swgt} + 2HSF_{swgt}$$

$$AS_{swgt} = 6ATD_{swgt} + AXP_{swgt} + 2ATP_{swgt} + 3AFG_{swgt} + 2ASF_{swgt}$$

$$HTD_{swgt} \sim Pois(\lambda_{TD,t})$$

$$HXP_{swgt} \sim Bin(nAtt_{XP,swgt}, p_{XP,t})$$

$$HTP_{swgt} \sim Bin(nAtt_{TP,swgt}, p_{TP,t})$$

$$HFG_{swgt} \sim Bin(nAtt_{FG,swgt}, p_{FG,t})$$

$$HSF_{swgt} \sim Pois(\lambda_{SF,t})$$

$$HTD_{swgt} = nAtt_{XP,swgt} + nAtt_{TP,swgt}$$

$$nAtt_{FG,swgt} \sim Pois(\lambda_{FG,t})$$

$$ATD_{swgt} \sim Pois(\lambda_{TD,t})$$

$$AXP_{swgt} \sim Bin(nAtt_{XP,swgt}, p_{XP,t})$$

$$ATP_{swgt} \sim Bin(nAtt_{TP,swgt}, p_{TP,t})$$

$$AFG_{swgt} \sim Bin(nAtt_{FG,swgt}, p_{FG,t})$$

$$ASF_{swgt} \sim Pois(\lambda_{SF,t})$$

$$ATD_{swgt} = nAtt_{XP,swgt} + nAtt_{TP,swgt}$$

$$nAtt_{FG,swgt} \sim Pois(\lambda_{FG,t})$$

All