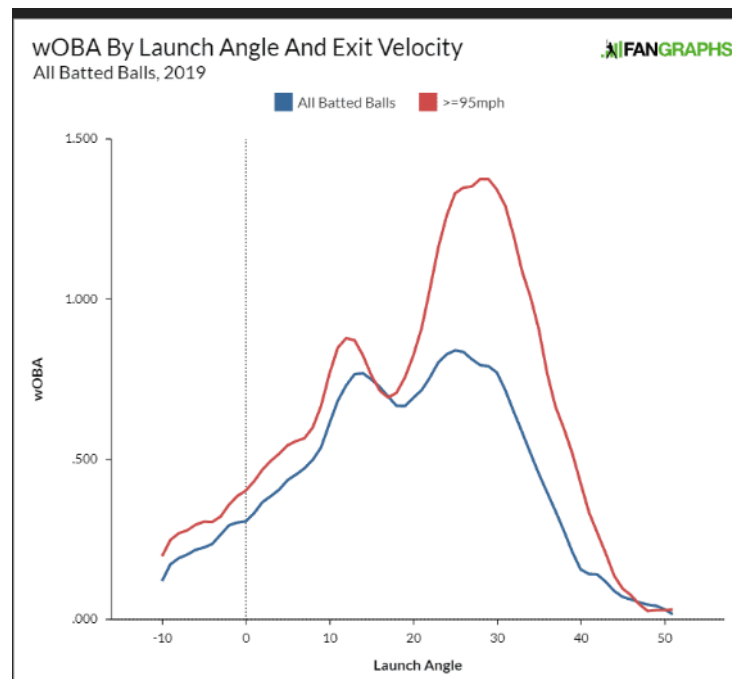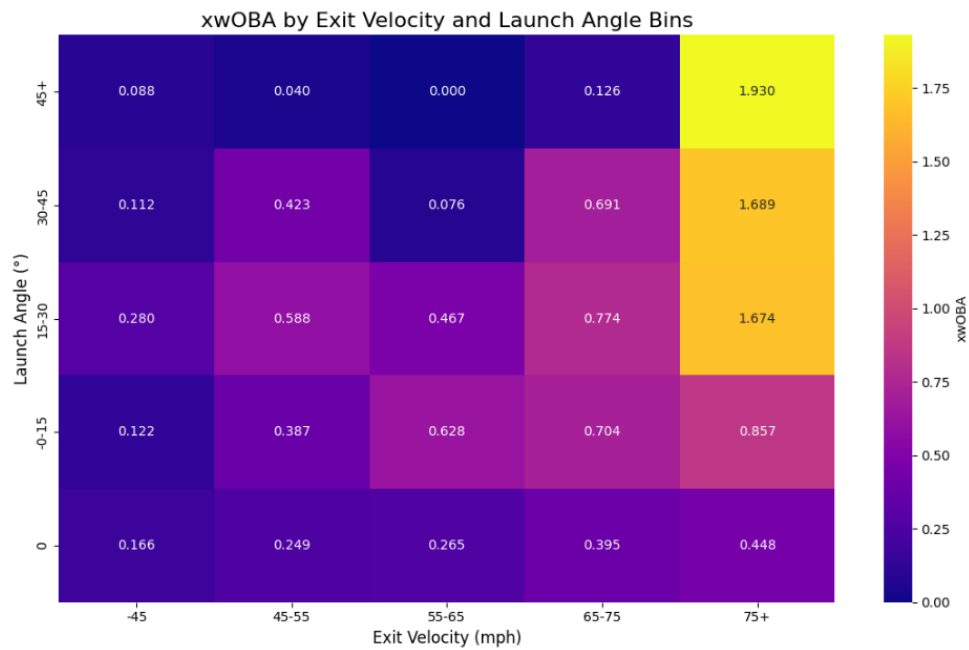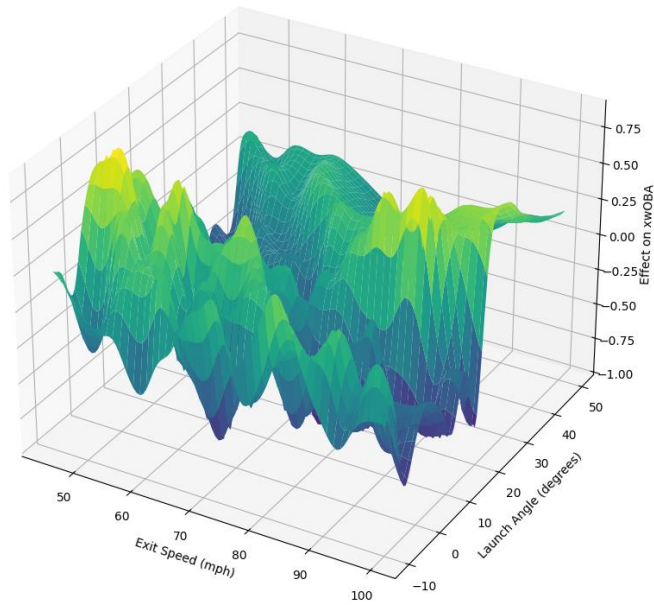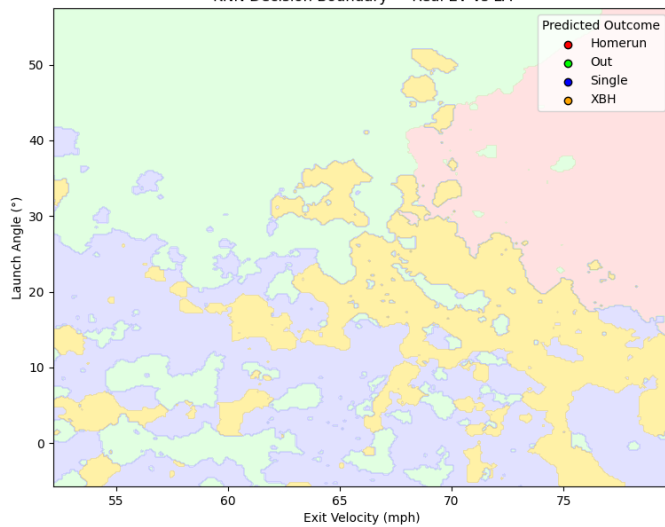Visuals for Softball

$$\overline{\text{xwOBA}}(EV, LA) = 0.087002 + 0.396497\, f_{\text{interaction}}(EV, LA) + 0.515372\, f_{\text{ExitSpeed}}(EV) + 0.469593\, f_{\text{Angle}}(LA)$$

xwOBA by Exit Velocity and Launch Angle Bins

Launch Angle (°)	-45	45-55	55-65	65-75	75+
45+	0.088	0.040	0.000	0.126	1.930
30-45	0.112	0.423	0.076	0.691	1.689
15-30	0.280	0.588	0.467	0.774	1.674
-0-15	0.122	0.387	0.628	0.704	0.857
0	0.166	0.249	0.265	0.395	0.448

Exit Velocity (mph)

wOBA By Launch Angle And Exit Velocity
All Batted Balls, 2019
FANGRAPHS
All Batted Balls   >=95mph

GAM 2D Interaction Surface: f_interaction(EV, LA)

KNN Decision Boundary — Real EV vs LA


```
============================
 GAM xwOBA ACCURACY
============================
RMSE: 0.16259
MAE:  0.09908
R²:   0.94391
```

Mean CV F1: 0.8311859311111787 ± 0.020160031281483328

```
Confusion matrix:
 [[149   1   0   0]
 [  3 107  30  10]
 [  0  10 127  13]
 [  6   3  11 130]]
probabilities of     Homerun       Out  Single       XBH
0       0.0  0.088206  0.911794  0.000000
1       0.0  0.000000  0.079732  0.920268
2       0.0  0.339446  0.660554  0.000000
3       1.0  0.000000  0.000000  0.000000
4       0.0  0.015558  0.944117  0.040325
```