

Conditional Probability Chain - Math Only

Source baseline: age 22; distance approx. 150 yd; scoped .30-06; one shot; limited static practice; no public confirmed field zero; elevated roof-to-ground shot; dynamic target; stress; regional winds 25-40 mph. Sensitivity extension requested: wind upper bound 44 mph.

Model

$P(S) = P(\text{scope}) \times P(\text{engrave usable}) \times P(\text{roof/position}) \times P(\text{not interdicted before shot}) \times P(\text{base first-round hit at 150 yd}) \times F(\text{angle}) \times F(\text{wind}) \times F(\text{anxiety}) \times P(\text{fatal} \mid \text{hit}) \times P(\text{escape})$

Factor	Low	Central	High
P(scope)	0.50	0.65	0.80
P(engrave usable)	0.60	0.75	0.90
P(roof/position)	0.50	0.65	0.80
P(not interdicted before shot)	0.60	0.75	0.90
P(base 1st-round hit @ 150 yd)	0.15	0.25	0.40
F(angle: roof -> target)	0.75	0.85	0.95
F(wind: 25-44 mph sensitivity)	0.20	0.35	0.50
F(anxiety / acute stress)	0.50	0.65	0.80
P(fatal hit)	0.30	0.45	0.60
P(escape immediate scene)	0.50	0.65	0.80

Arithmetic Verification

LOW: $0.50 \times 0.60 \times 0.50 \times 0.60 \times 0.15 \times 0.75 \times 0.20 \times 0.50 \times 0.30 \times 0.50$
 $= 0.000151875000 = 0.015188\% = 1 \text{ in } 6,584.4$

CENTRAL: $0.65 \times 0.75 \times 0.65 \times 0.75 \times 0.25 \times 0.85 \times 0.35 \times 0.65 \times 0.45 \times 0.65$
 $= 0.003360589343 = 0.336059\% = 1 \text{ in } 297.6$

HIGH: $0.80 \times 0.90 \times 0.80 \times 0.90 \times 0.40 \times 0.95 \times 0.50 \times 0.80 \times 0.60 \times 0.80$
 $= 0.037822464000 = 3.782246\% = 1 \text{ in } 26.4$

Central-case stepwise product check

Step	Multiplier	Running P	Running %
1. scope	0.65	0.650000000000	65.000000%
2. engrave	0.75	0.487500000000	48.750000%
3. roof	0.65	0.316875000000	31.687500%
4. not_interdicted	0.75	0.237656250000	23.765625%
5. base_hit	0.25	0.059414062500	5.941406%
6. angle	0.85	0.050501953125	5.050195%

7. wind	0.35	0.017675683594	1.767568%
8. anxiety	0.65	0.011489194336	1.148919%
9. fatal hit	0.45	0.005170137451	0.517014%
10. escape	0.65	0.003360589343	0.336059%

Sensitivity-only conditional chain; factors other than source-fixed case parameters are illustrative model inputs, not empirical frequencies and not a posterior probability of identity or guilt.