

FRC 2026 Scouting Simulation Insights

In the simulation there are 24 robots each with a unique fire rate function.

Lets start with saying **there is no single perfect scouting method**.

The 90% Accuracy Threshold

If the robot has is or above 90% accuracy AND the scouter is decent, we can reliably use some scouting methods that will have less than 10% error rate.

But if the robot accuracy is less than 15% or the scouter is bad then all of the methods become unreliable.

All the robot are set to be the same amount accuracy

Robot Accuracy	Shot Error	Magazine Hit Error	Max Fire Rare Error	Volley Error	OPR Error
95%	2.42%	7.74%	20.58%	12.9%	13.95%
90%	2.32%	13.7%	19.73%	18.98%	14.02%
85%	2.41%	20.43%	20.05%	25.74%	17.4%
80%	2.21%	27.54%	19.3%	33.61%	14.56%
75%	2.34%	36.36%	20.63%	41.31%	13.17%
70%	2.44%	46.21%	21.31%	51.68%	13.86%

10 tournaments with 25 matches per robot for each robot accuracy

Each robot gets a random different accuracy within the range

Accuracy Range	Shot Error	Magazine Hit Error	Max Fire Rate Error	Volley Error	OPR Error
50%-100%	2.48%	42.21%	23.71%	66.65%	14.34%
70%-95%	2.29%	26.23%	21.00%	44.87%	12.37%
85%-98%	2.48%	11.87%	20.43%	24.99%	12.29%
50%-75%	2.37%	66.62%	25.14%	72.63%	14.20%

5 tournaments with 25 matches per robot for each robot accuracy range

Each robot gets a completely random accuracy

Accuracy range	Shot Error	Magazine Hit Error	Max Fire Rate Error	Volley Error	OPR Error
1-100	2.62%	372.77%	160.64%	-----	32.90%

15 tournaments with 30 matches per robot for each robot accuracy

If the robot accuracy is below 90% or the scouter is bad all methods become unreliable other than the OPR but OPR requires a large amount of hit.

Facts To Notice:

- **Max Fire Rate Error** stays within 19%–21.5% almost all the time
- **OPR Error** stays within 13%–17.5% almost all the time

Note:

- *The OPR is so good because the insane amount of games there was per accuracy.*
- *The Shot Error is there to see if its working well as it shouldn't change as a result of the accuracy change (it worked well).*

Stats

We can approximate the numbers (80 tournaments with 25 matches per robot + 15 tournaments with 30 matches per robot).

Tournaments: 95

Matches: 10,400

Games: 58,800

Volleys: 204,700

Total Shots Fired: 11,300,000