

	Evaluation Of Models Results Summary																							
	Model Results With Census Data Only											Model Results With Previous Electoral History											Model Comparison	
	Standard Features				Engineered Features				Delta Models (E-S)			Standard Features				Engineered Features				Delta Models (E-S)			% Delta Test	% Delta Test Engineered
Model	Train	Test	% Delta (Test-Train)		Train	Test	% Delta (Test-Train)		% Train	% Test		Train	Test	% Delta (Test-Train)		Train	Test	% Delta (Test-Train)		% Train	% Test		Standard (Without to with Previous History)	(Without to with Previous History)
Initial Logistic Regression																								
F1	0.8717	0.7945	-8.86%		0.8812	0.8349	-5.25%		1.08%	5.08%		0.9897	0.9217	-6.87%		0.9838	0.9124	-7.25%		-0.60%	-1.00%		16.00%	9.29%
Accuracy	0.8636	0.7907	-8.44%		0.8729	0.8326	-4.62%		1.08%	5.29%		0.9891	0.9209	-6.90%		0.9829	0.9116	-7.26%		-0.63%	-1.01%		16.47%	9.50%
Logstic Regression GS																								
F1	0.8603	0.8333	-3.14%		0.8697	0.8360	-3.88%		1.09%	0.32%		0.9593	0.9206	-4.03%		0.9660	0.9081	-5.99%		0.70%	-1.36%		10.48%	8.63%
Accuracy	0.8532	0.8256	-3.24%		0.8619	0.8198	-4.89%		1.02%	-0.70%		0.9578	0.9128	-4.70%		0.9651	0.9012	-6.63%		0.76%	-1.27%		10.56%	9.93%
Logstic Regression GS - Polynomials																								
F1	0.9902	0.8087	-18.32%		0.9083	0.8000	-11.93%		-8.26%	-1.08%		0.9972	0.9215	-7.59%		0.9929	0.9312	-6.21%		-0.43%	1.06%		13.94%	16.40%
Accuracy	0.9898	0.7965	-19.53%		0.9026	0.7791	-13.69%		-8.81%	-2.19%		0.9971	0.9128	-8.45%		0.9927	0.9244	-6.88%		-0.44%	1.27%		14.60%	18.66%
K Nearest Neighbors GS																								
F1	1.0000	0.7736	-22.64%		0.8513	0.7805	-8.32%		-14.87%	0.89%		0.8889	0.8365	-5.89%		0.9059	0.8342	-7.91%		1.91%	-0.28%		8.14%	6.88%
Accuracy	1.0000	0.7209	-27.91%		0.8314	0.7384	-11.19%		-16.86%	2.42%		0.8779	0.8023	-8.61%		0.8997	0.8081	-10.18%		2.48%	0.72%		11.29%	9.45%
Decision Trees - No Limits																								
F1	1.0000	0.7513	-24.87%		1.0000	0.7938	-20.62%		0.00%	5.66%		1.0000	0.8913	-10.87%		1.0000	0.8962	-10.38%		0.00%	0.55%		18.63%	12.89%
Accuracy	1.0000	0.7267	-27.33%		1.0000	0.7674	-23.26%		0.00%	5.60%		1.0000	0.8837	-11.63%		1.0000	0.8895	-11.05%		0.00%	0.66%		21.60%	15.91%
Decision Trees - Limits GS																								
F1	0.8828	0.7857	-11.00%		0.8649	0.7917	-8.46%		-2.04%	0.76%		0.9543	0.9222	-3.36%		0.9571	0.9158	-4.32%		0.30%	-0.70%		17.37%	15.68%
Accuracy	0.8750	0.7558	-13.62%		0.8547	0.7674	-10.20%		-2.33%	1.54%		0.9535	0.9186	-3.66%		0.9549	0.9070	-5.02%		0.15%	-1.27%		21.54%	18.18%
Random Forest																								
F1	0.8588	0.7869	-8.37%		0.8551	0.7912	-7.47%		-0.42%	0.55%		0.9586	0.9341	-2.56%		0.9571	0.9341	-2.41%		-0.16%	0.00%		18.70%	18.06%
Accuracy	0.8547	0.7733	-9.52%		0.8517	0.7791	-8.53%		-0.34%	0.75%		0.9578	0.9302	-2.88%		0.9564	0.9302	-2.74%		-0.15%	0.00%		20.30%	19.40%
XGBoost																								
F1	0.9387	0.8380	-10.73%		0.9301	0.8333	-10.41%		-0.92%	-0.56%		0.9574	0.9297	-2.89%		0.9618	0.9348	-2.81%		0.46%	0.55%		10.94%	12.18%
Accuracy	0.9375	0.8314	-11.32%		0.9288	0.8256	-11.11%		-0.93%	-0.70%		0.9564	0.9244	-3.35%		0.9608	0.9302	-3.18%		0.46%	0.63%		11.19%	12.67%