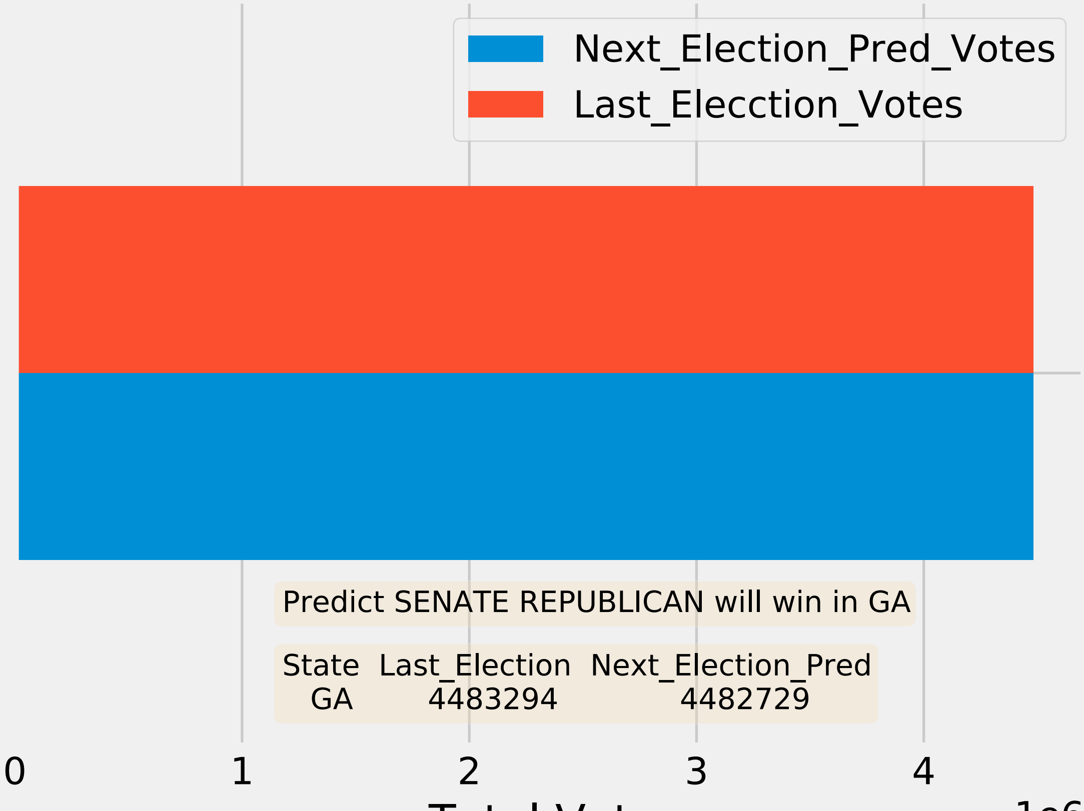
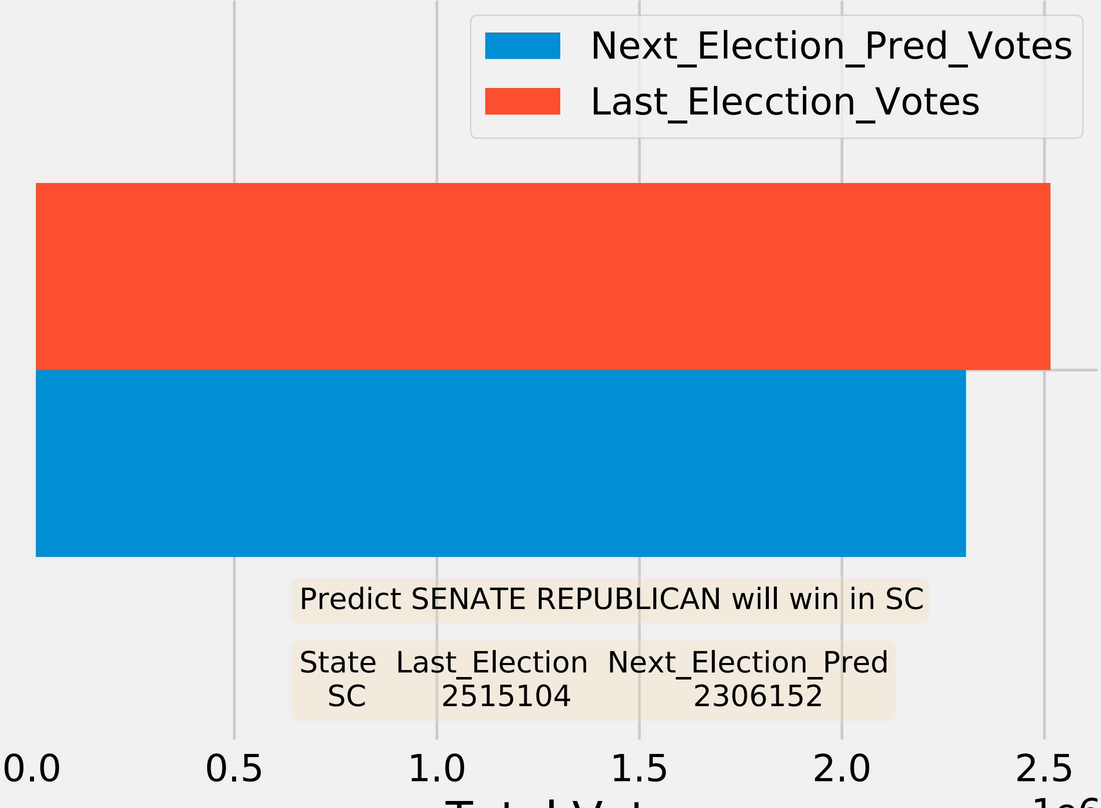
Next Senate Elections Predictions in GA



Predict SENATE REPUBLICAN will win in GA

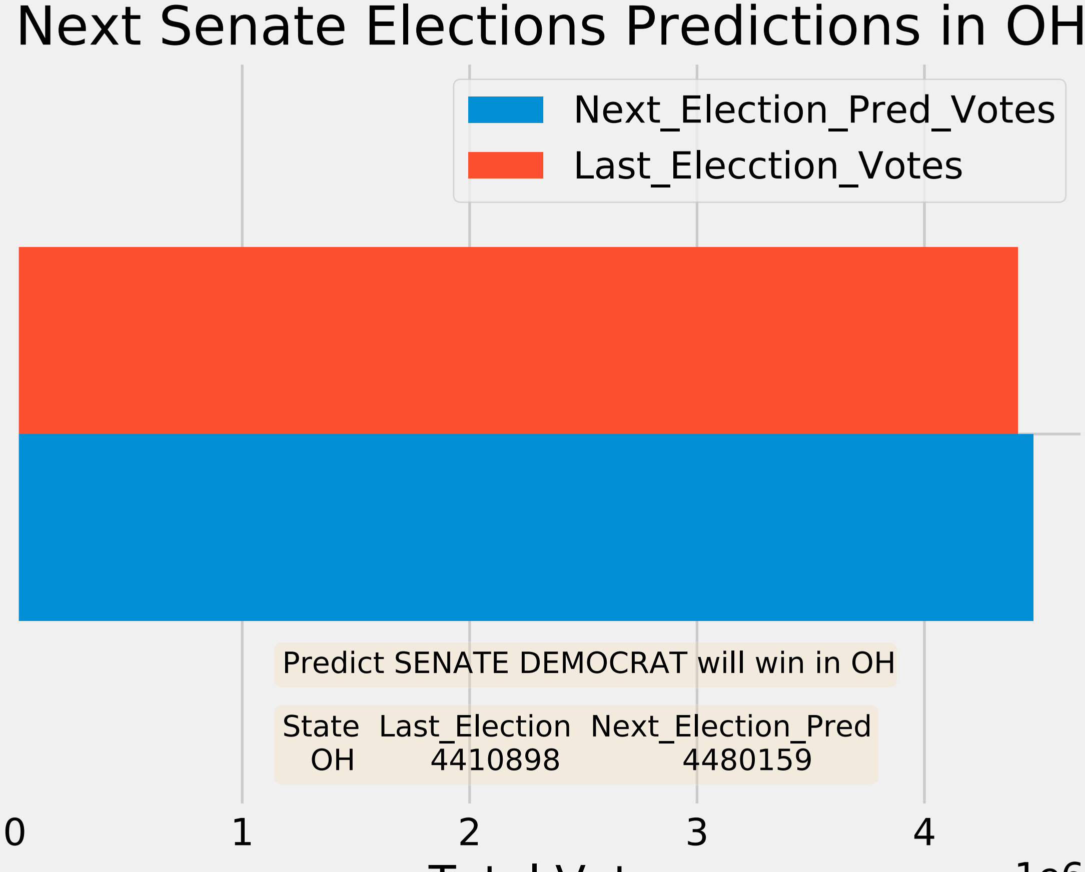
State	Last_Election	Next_Election_Pred
GA	4483294	4482729

Next Senate Elections Predictions in SC



Predict SENATE REPUBLICAN will win in SC

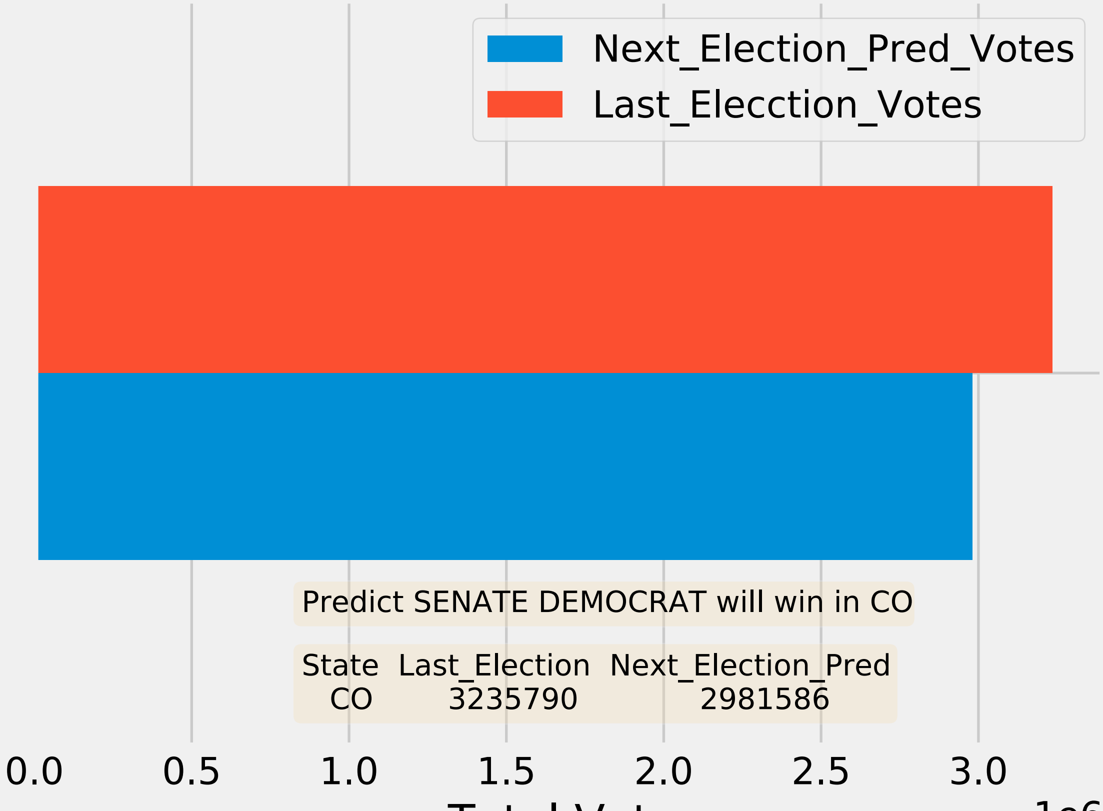
State	Last_Election	Next_Election_Pred
SC	2515104	2306152



Predict SENATE DEMOCRAT will win in OH

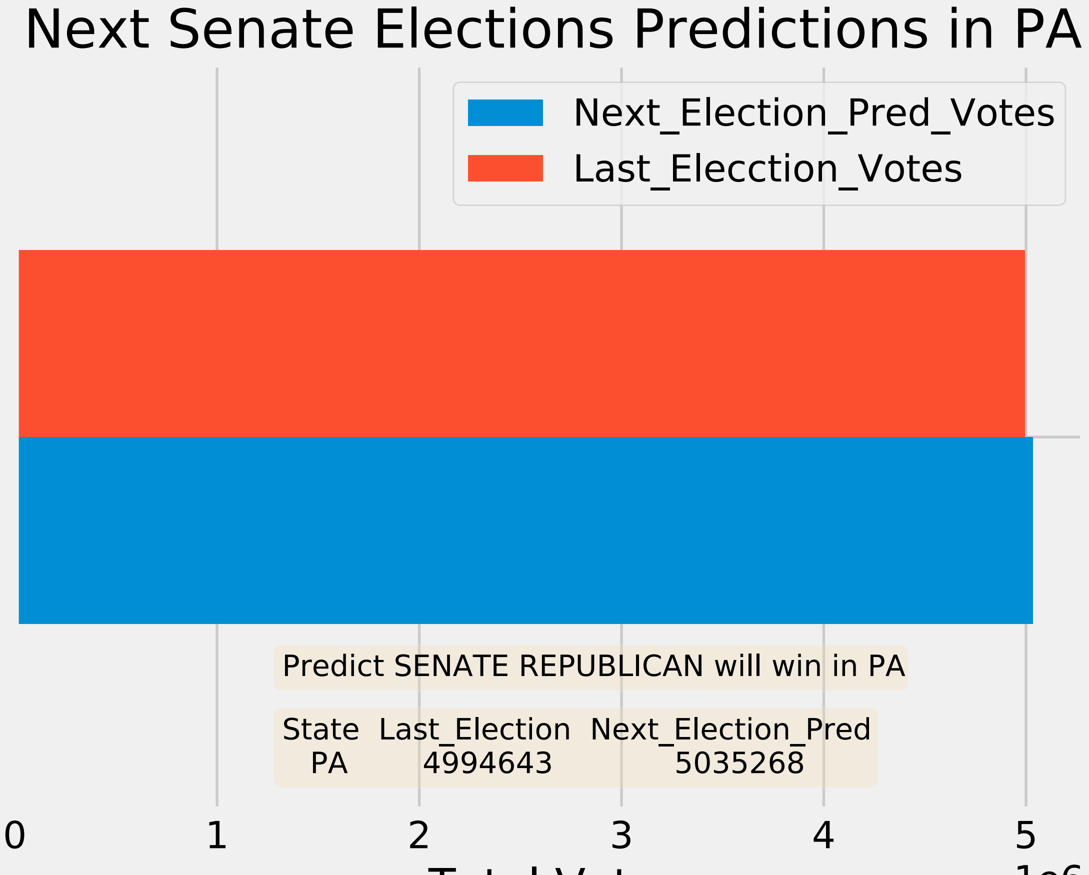
```
State  Last_Election  Next_Election_Pred
   OH        4410898             4480159
```

Next Senate Elections Predictions in CO



Predict SENATE DEMOCRAT will win in CO

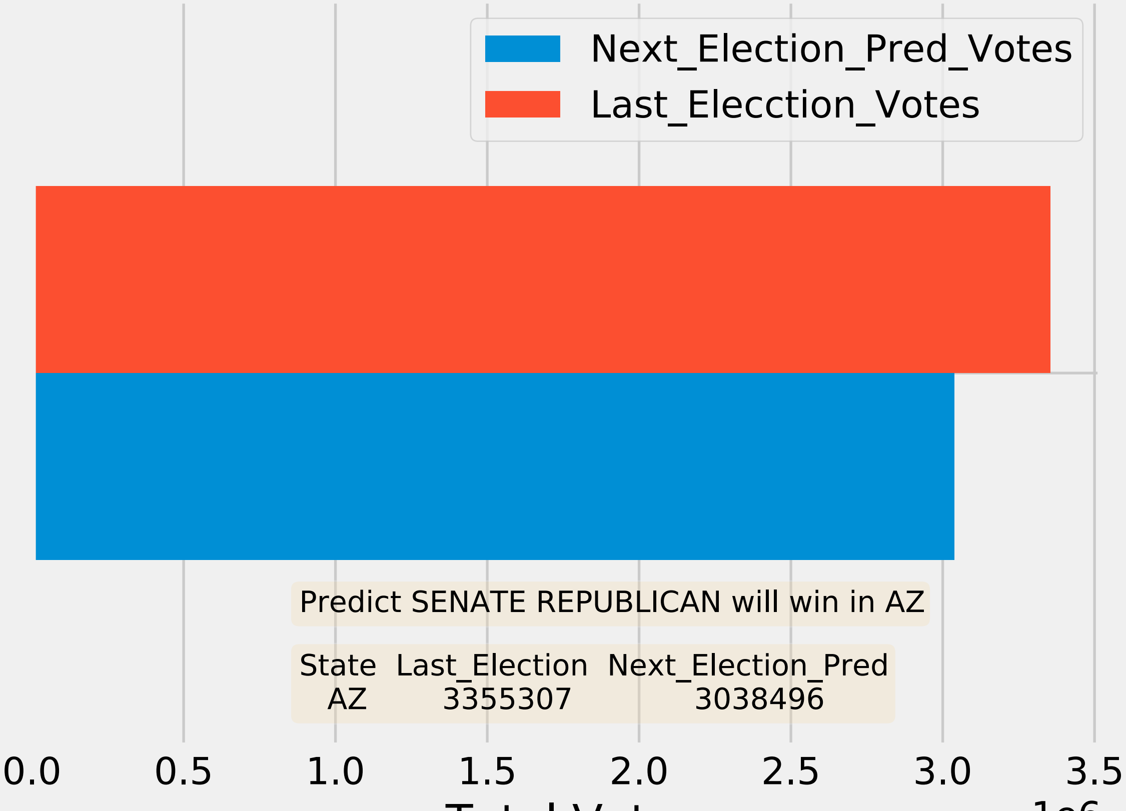
State	Last_Election	Next_Election_Pred
CO	3235790	2981586



Predict SENATE REPUBLICAN will win in PA

State	Last_Election	Next_Election_Pred
PA	4994643	5035268

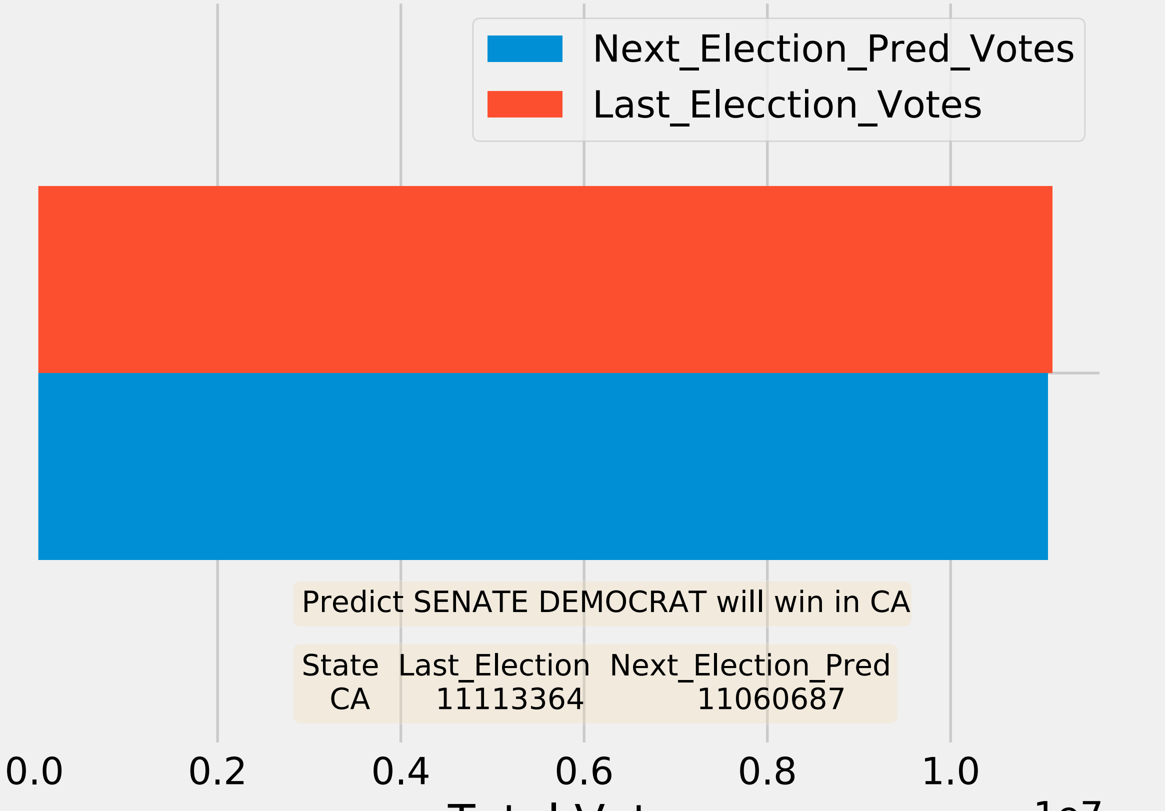
Next Senate Elections Predictions in AZ



Predict SENATE REPUBLICAN will win in AZ

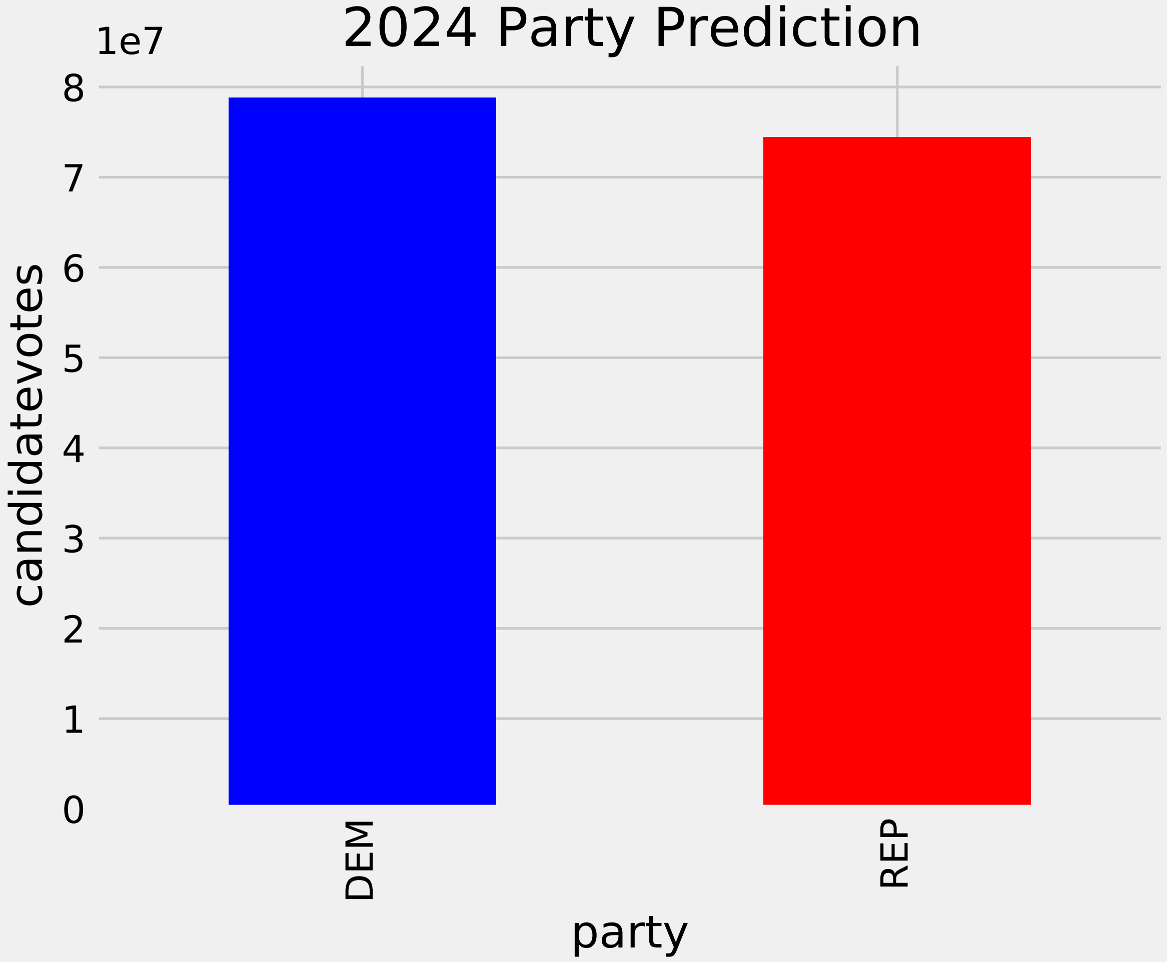
State	Last_Election	Next_Election_Pred
AZ	3355307	3038496

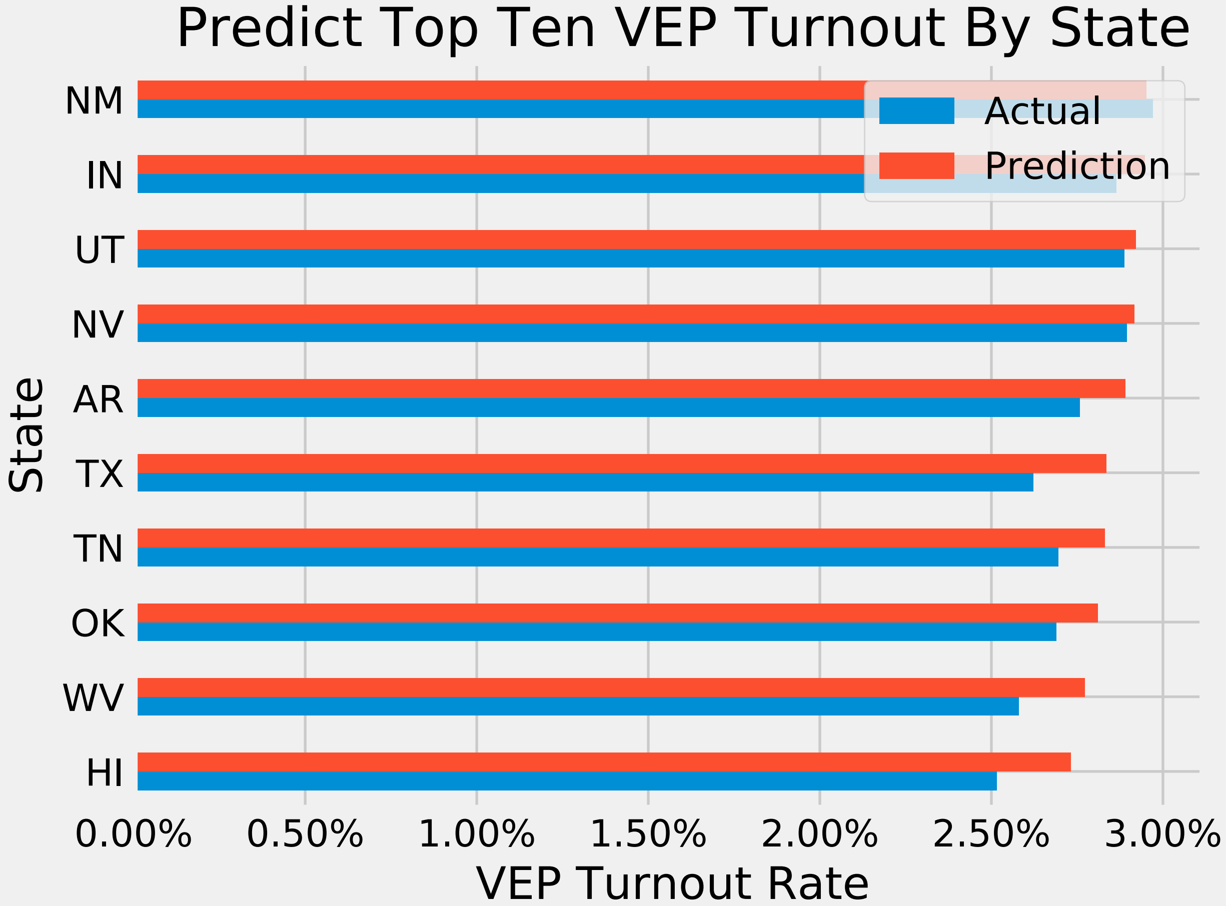
Next Senate Elections Predictions in CA

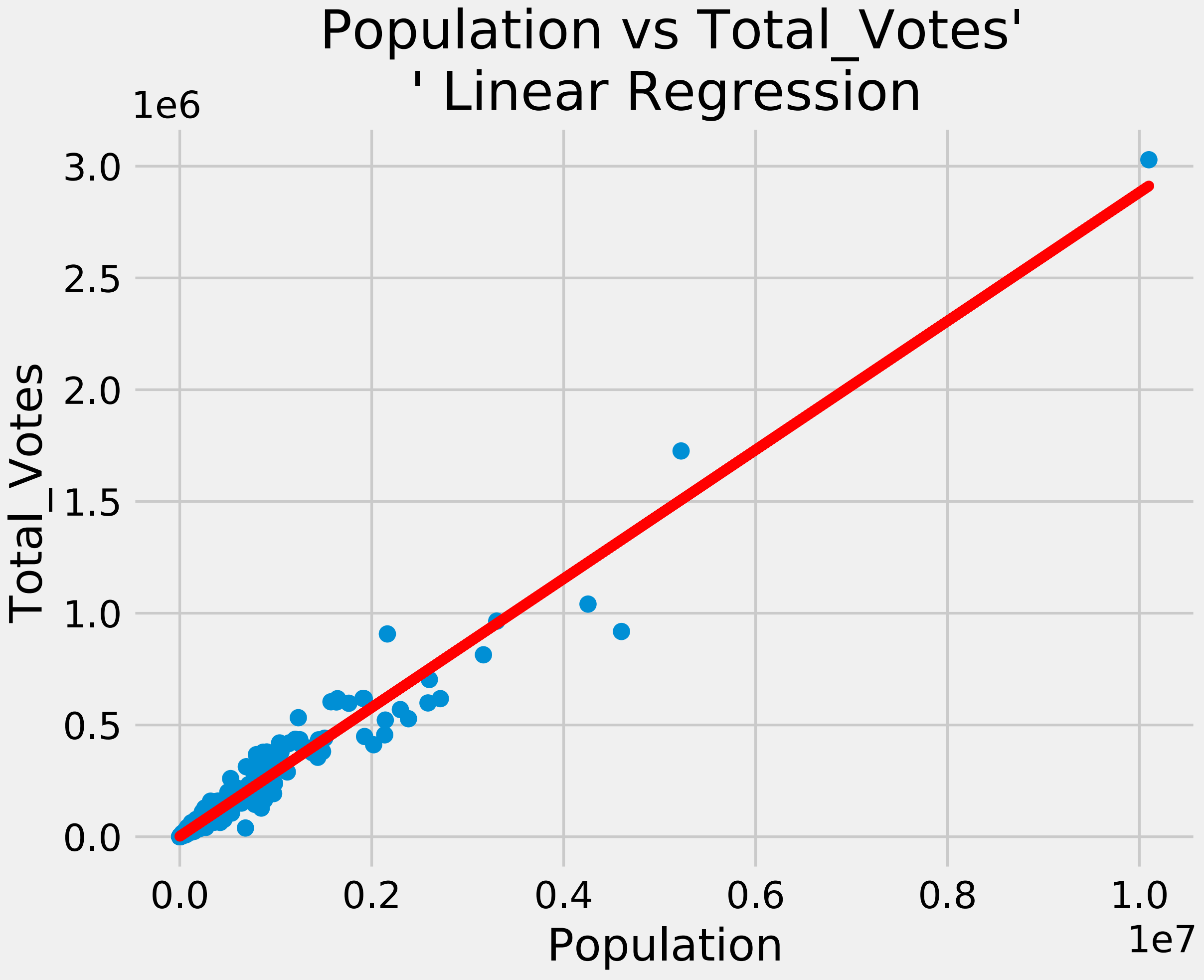


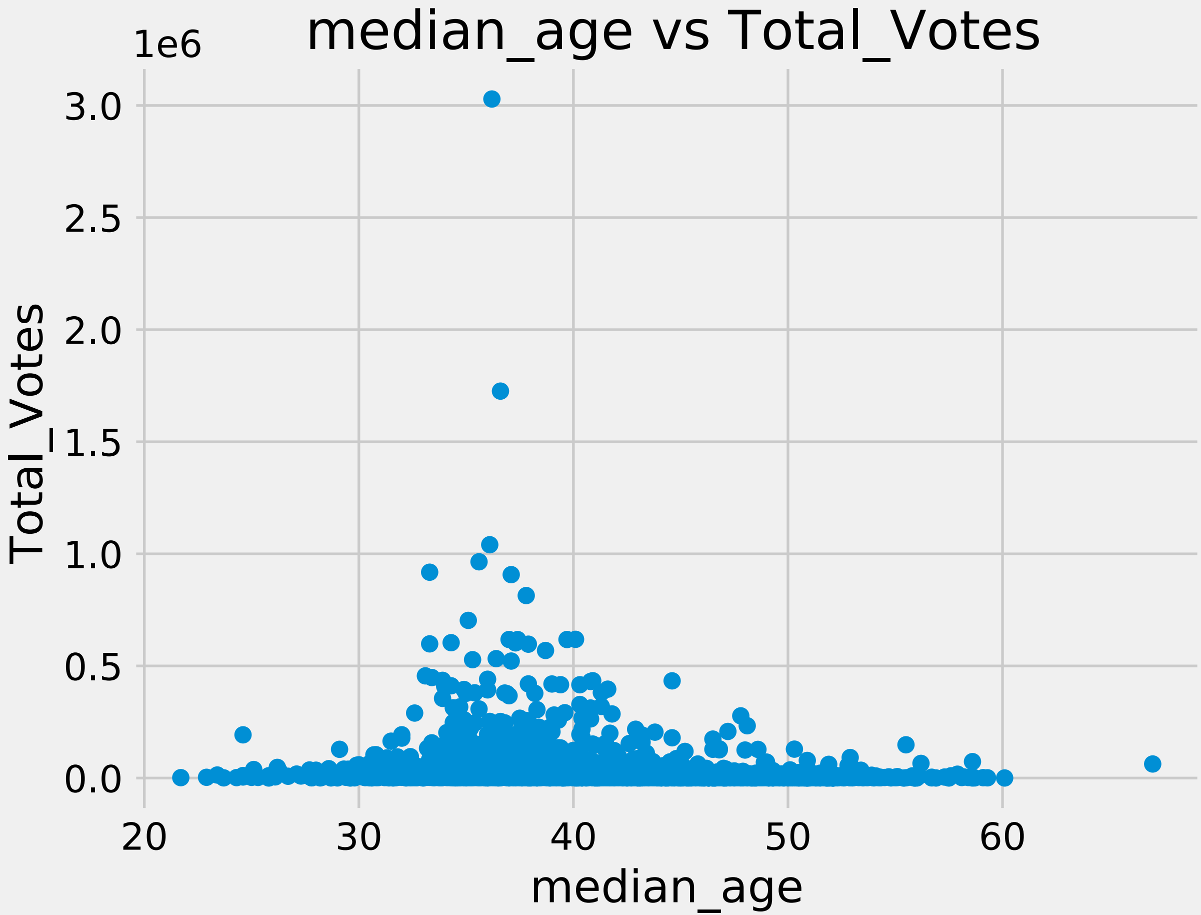
Predict SENATE DEMOCRAT will win in CA

State	Last_Election	Next_Election_Pred
CA	11113364	11060687

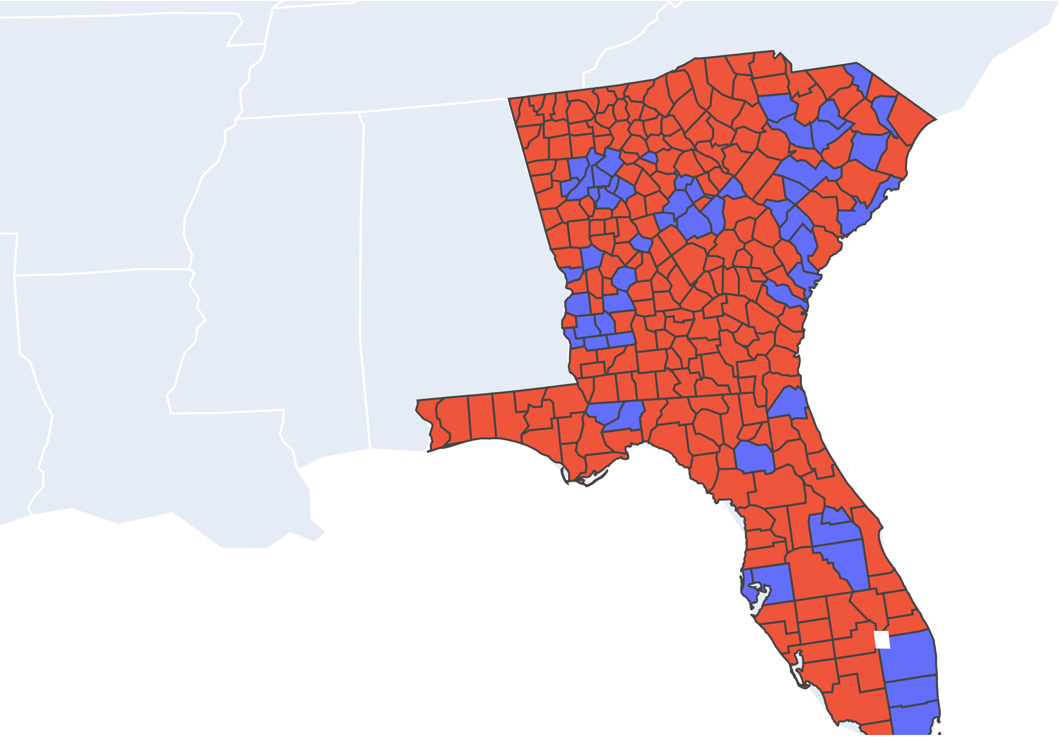

2024 Party Prediction
1e7
8
7
6
5
4
3
2
1
0
candidatevotes
DEM
REP
party


Predict Top Ten VEP Turnout By State
Actual
Prediction
State
NM
IN
UT
NV
AR
TX
TN
OK
WV
HI
0.00%
0.50%
1.00%
1.50%
2.00%
2.50%
3.00%
VEP Turnout Rate

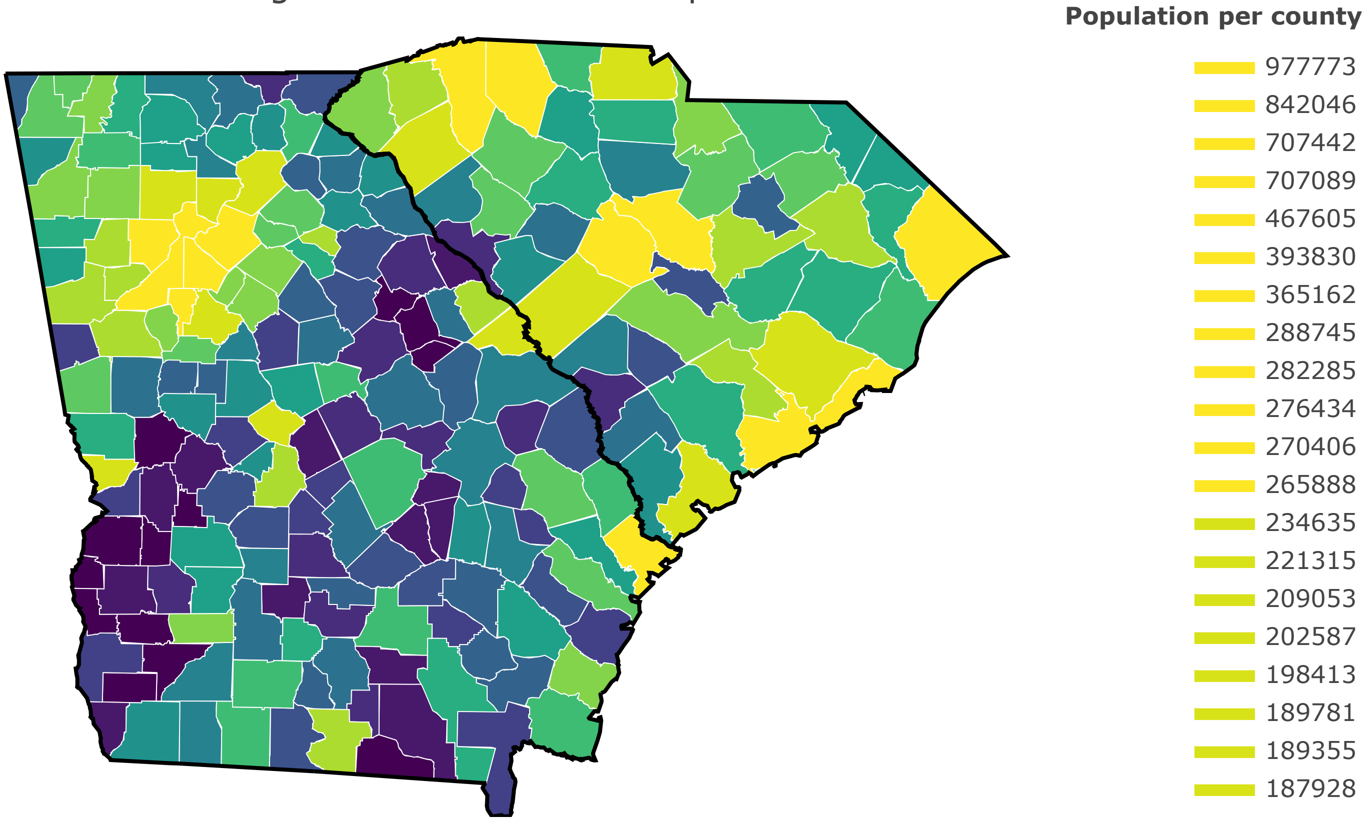

Population vs Total_Votes'
' Linear Regression
1e6
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Total_Votes
0.0
0.2
0.4
0.6
0.8
1.0
1e7
Population

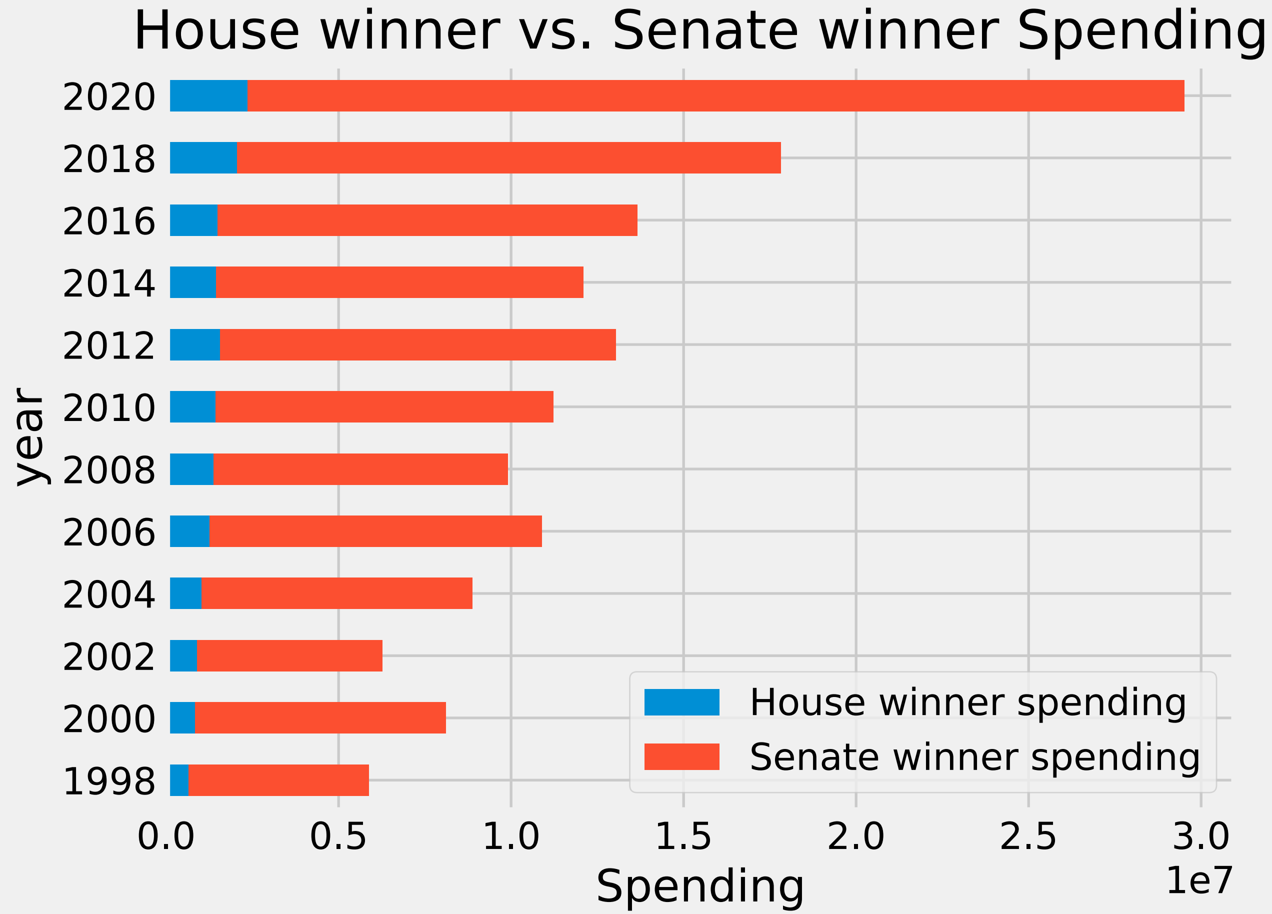

median_age vs Total_Votes
1e6
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Total_Votes
20
30
40
50
60
median_age

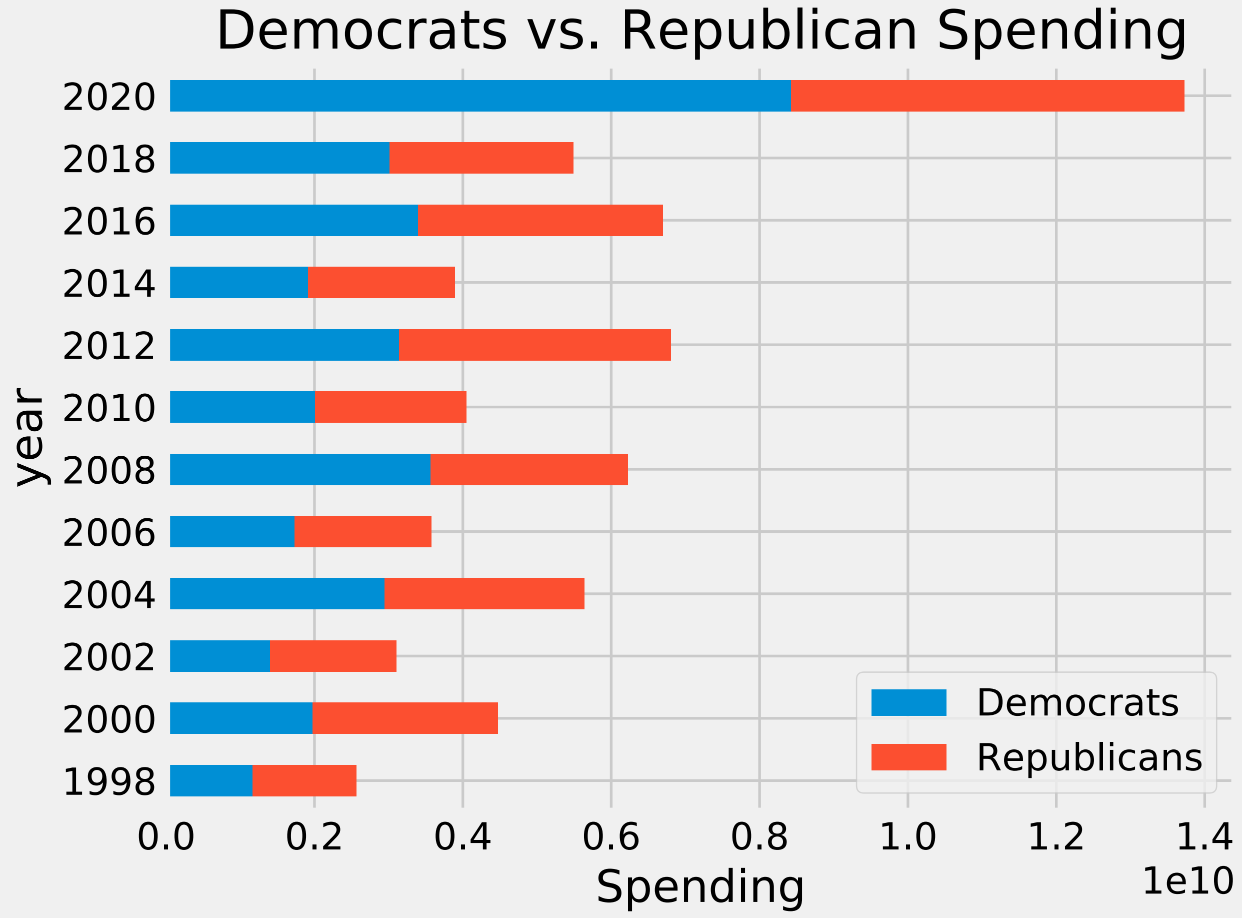
Georgia vs South Carolina & Florida' ' 2020 swing states total_votes

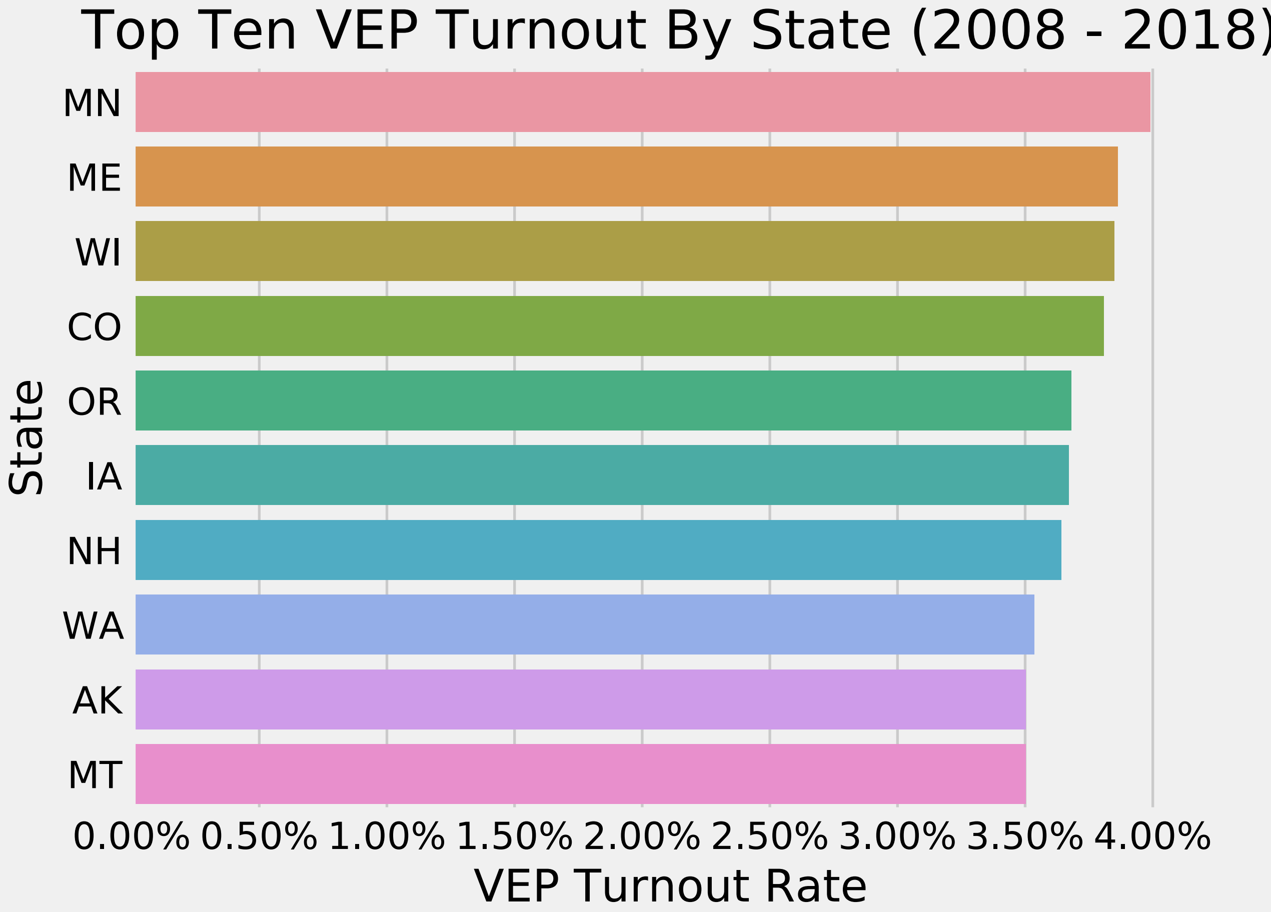


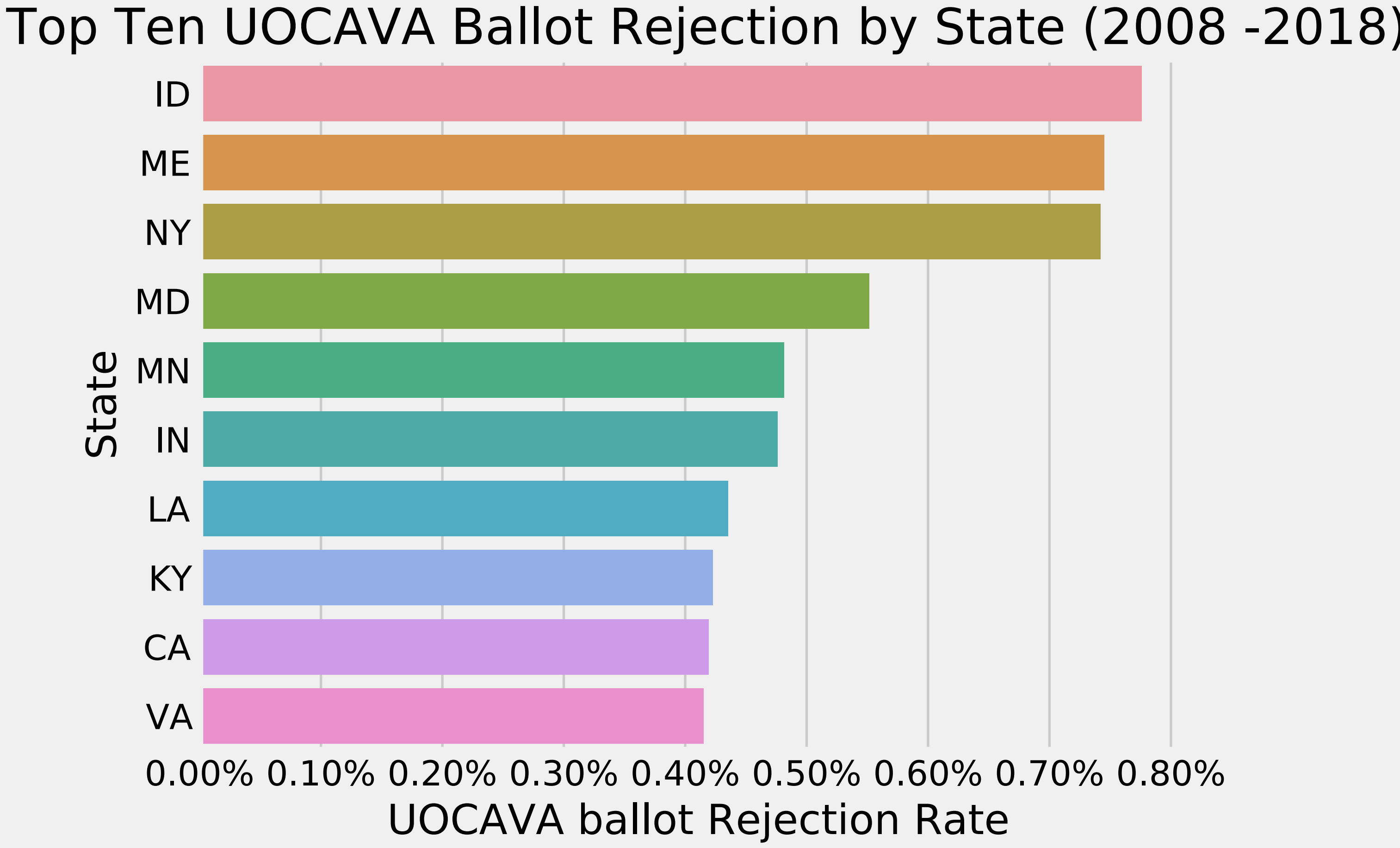
Georgia vs South Carolina Population

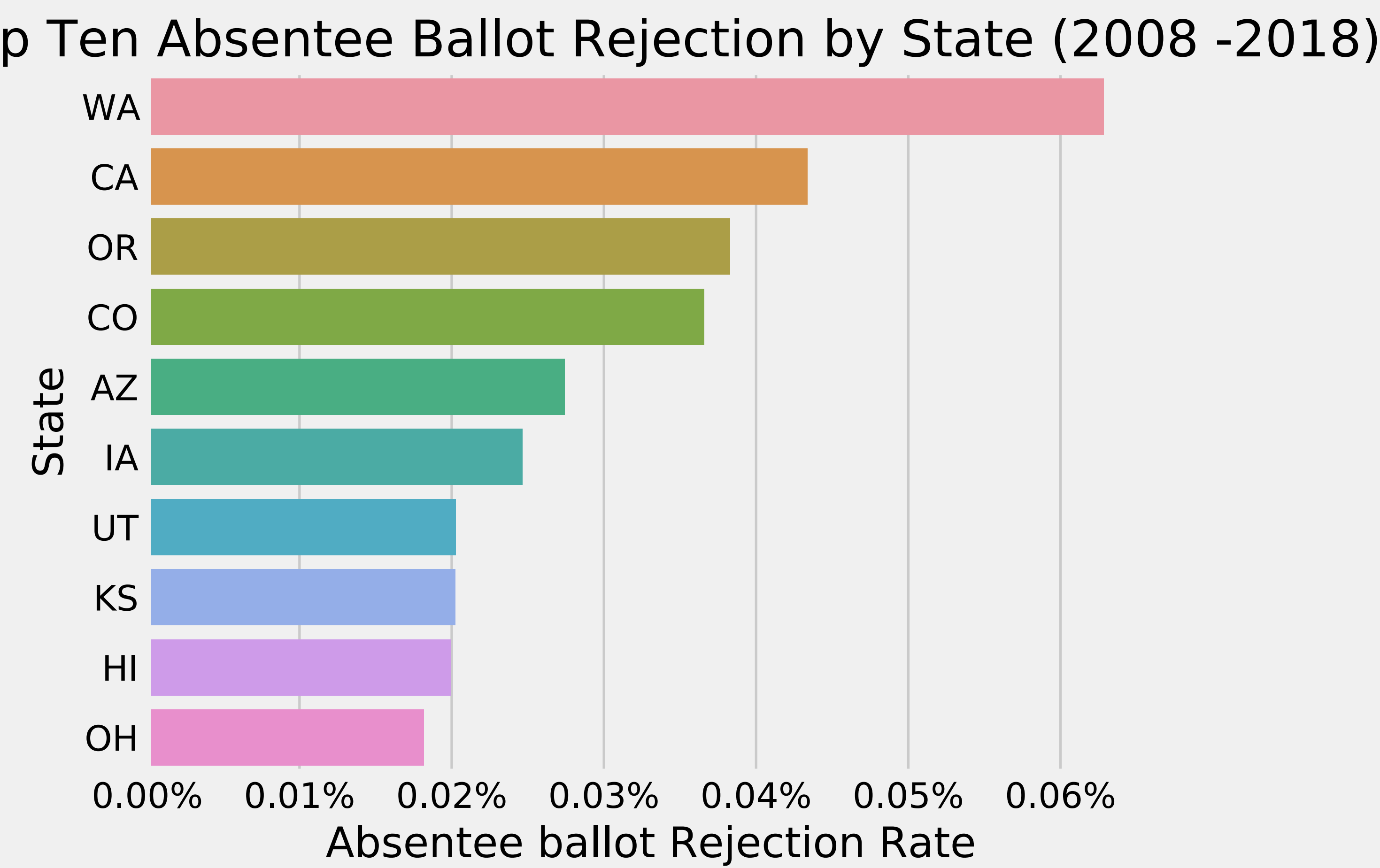


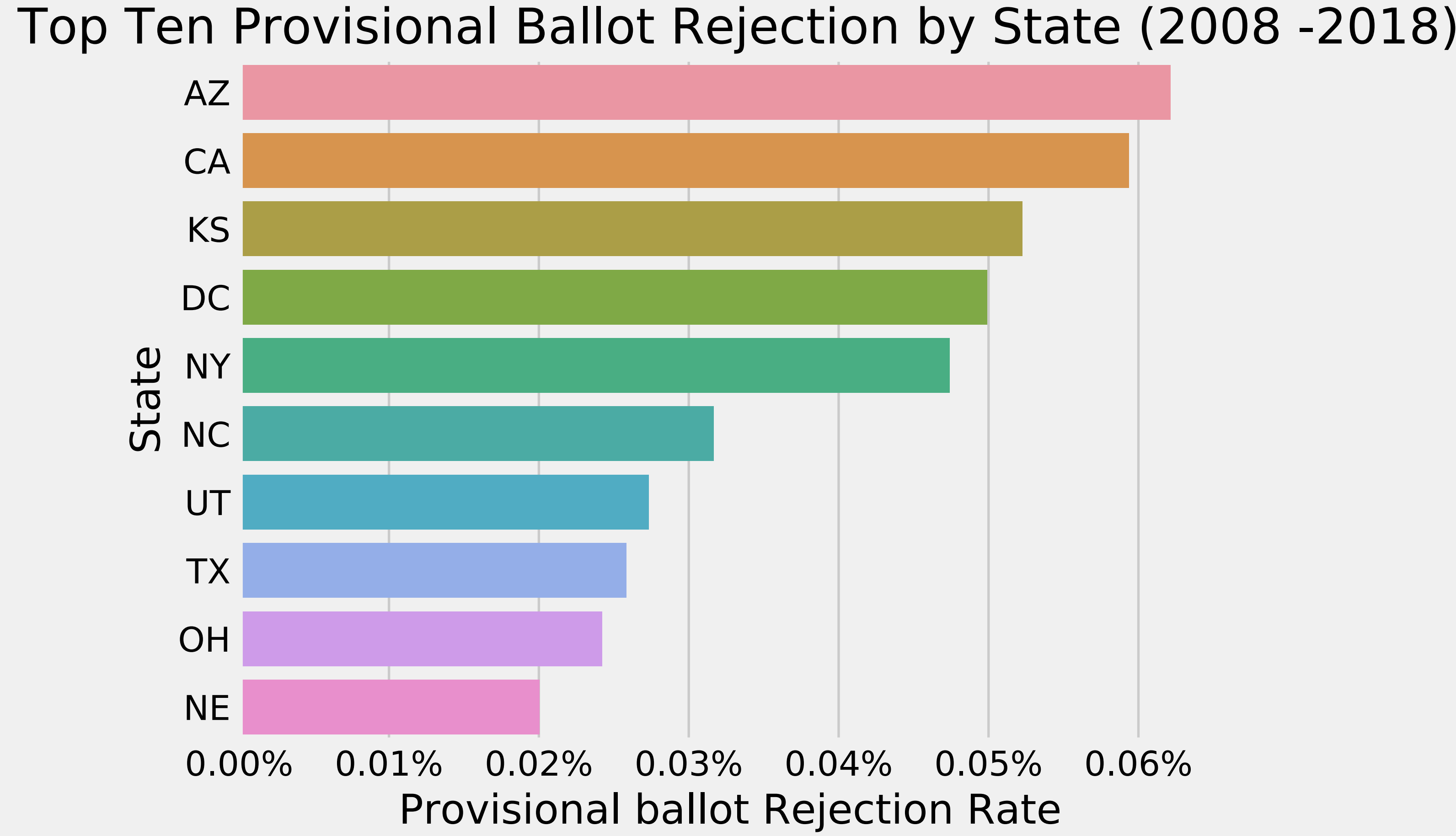

House winner vs. Senate winner Spending
year
2020
2018
2016
2014
2012
2010
2008
2006
2004
2002
2000
1998
0.0
0.5
1.0
1.5
2.0
2.5
3.0
1e7
Spending
House winner spending
Senate winner spending

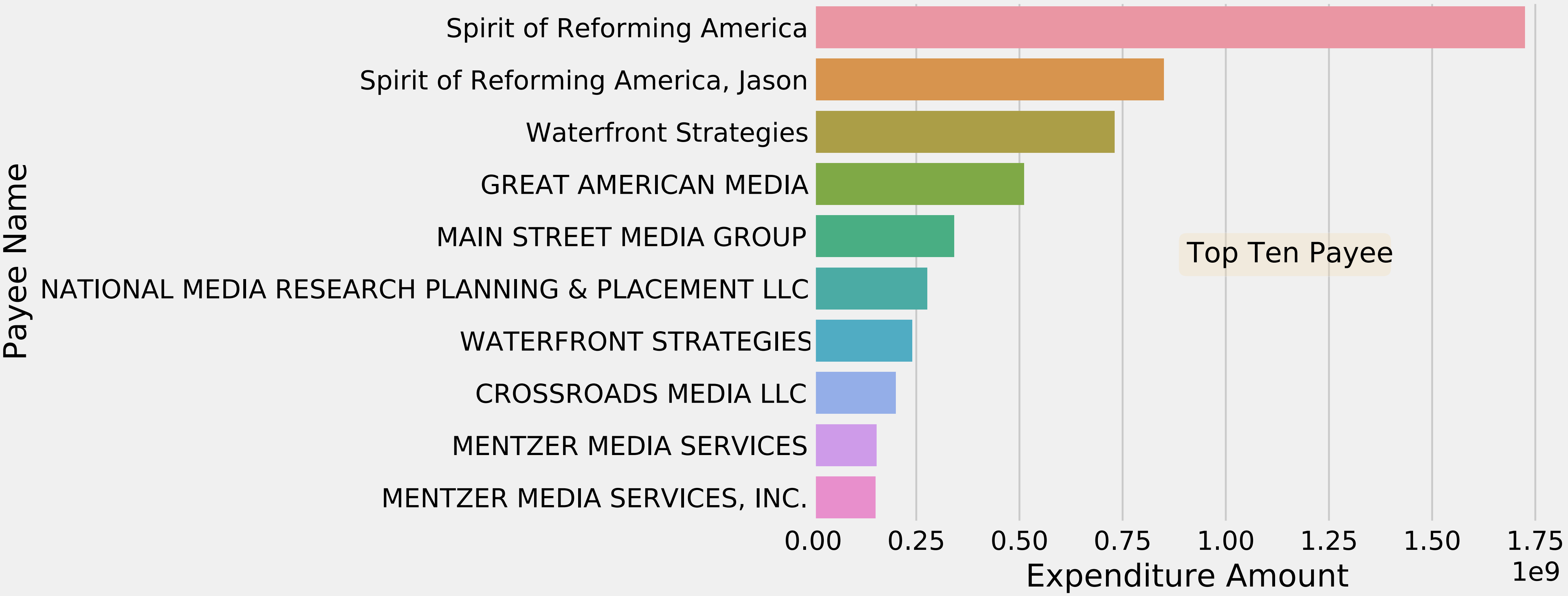

Democrats vs. Republican Spending
2020
2018
2016
2014
2012
2010
2008
2006
2004
2002
2000
1998
year
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1e10
Spending
Democrats
Republicans

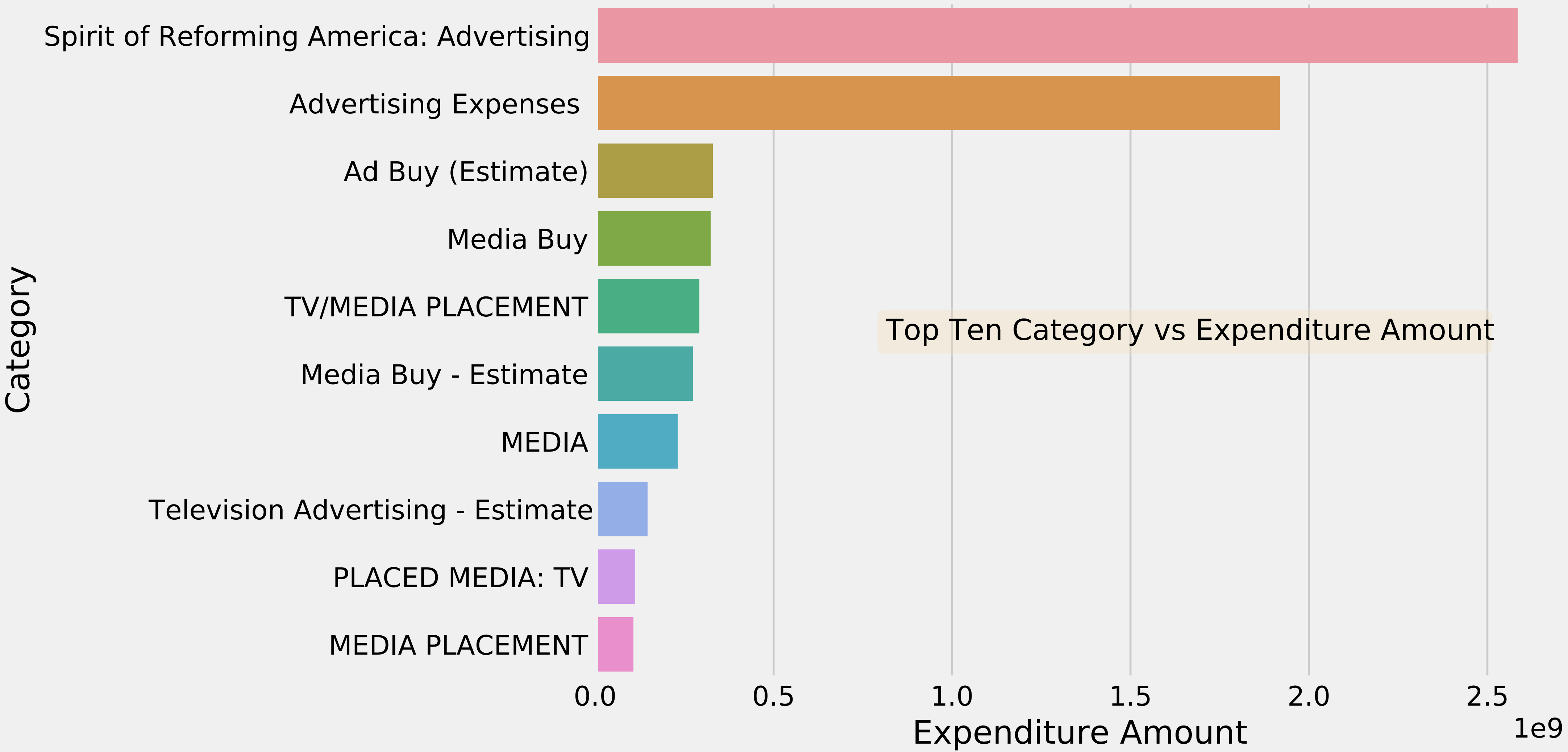

Top Ten VEP Turnout By State (2008 - 2018)
State
MN
ME
WI
CO
OR
IA
NH
WA
AK
MT
0.00%
0.50%
1.00%
1.50%
2.00%
2.50%
3.00%
3.50%
4.00%
VEP Turnout Rate

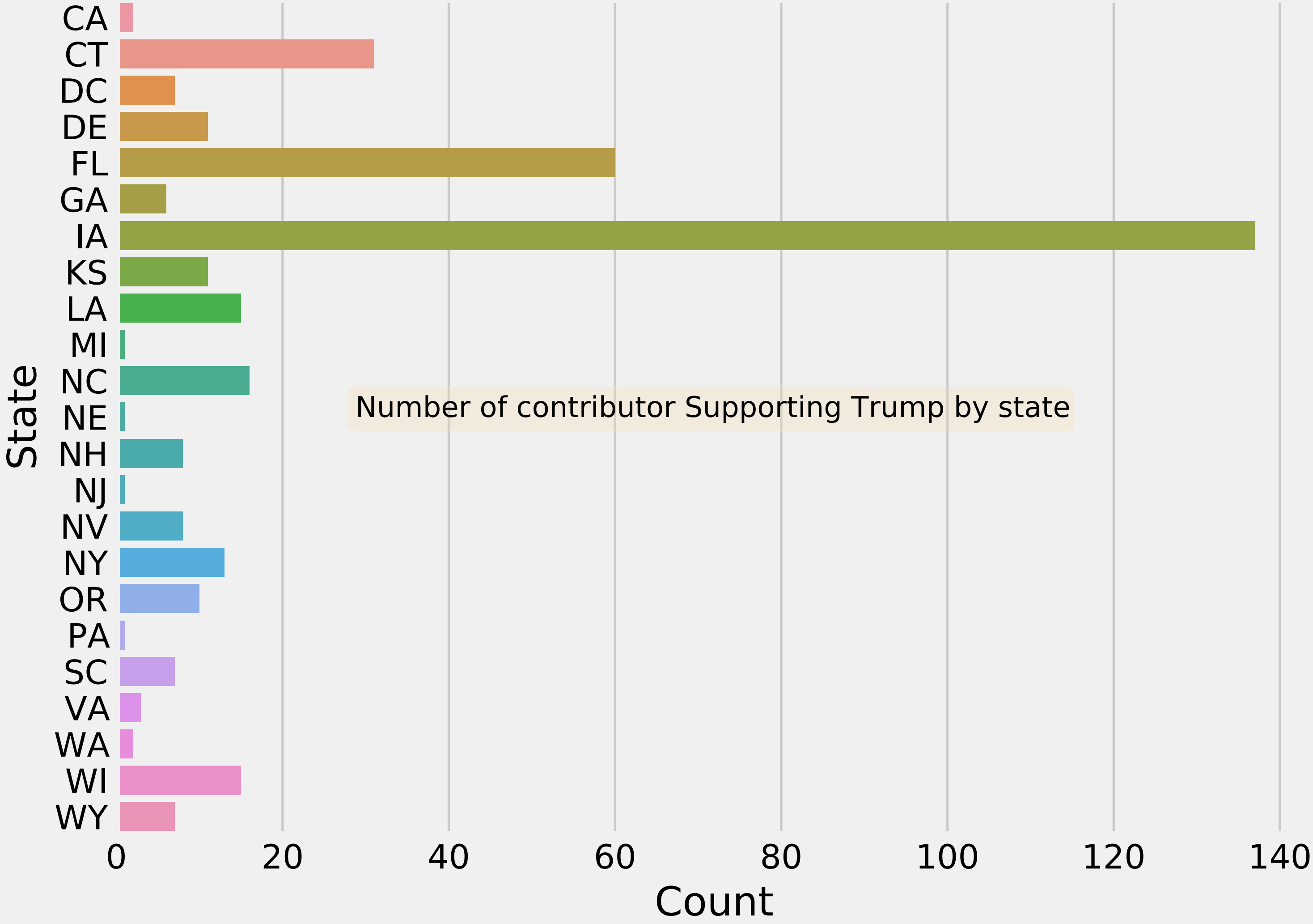

Top Ten UOCAVA Ballot Rejection by State (2008 -2018)
State
ID
ME
NY
MD
MN
IN
LA
KY
CA
VA
0.00%
0.10%
0.20%
0.30%
0.40%
0.50%
0.60%
0.70%
0.80%
UOCAVA ballot Rejection Rate

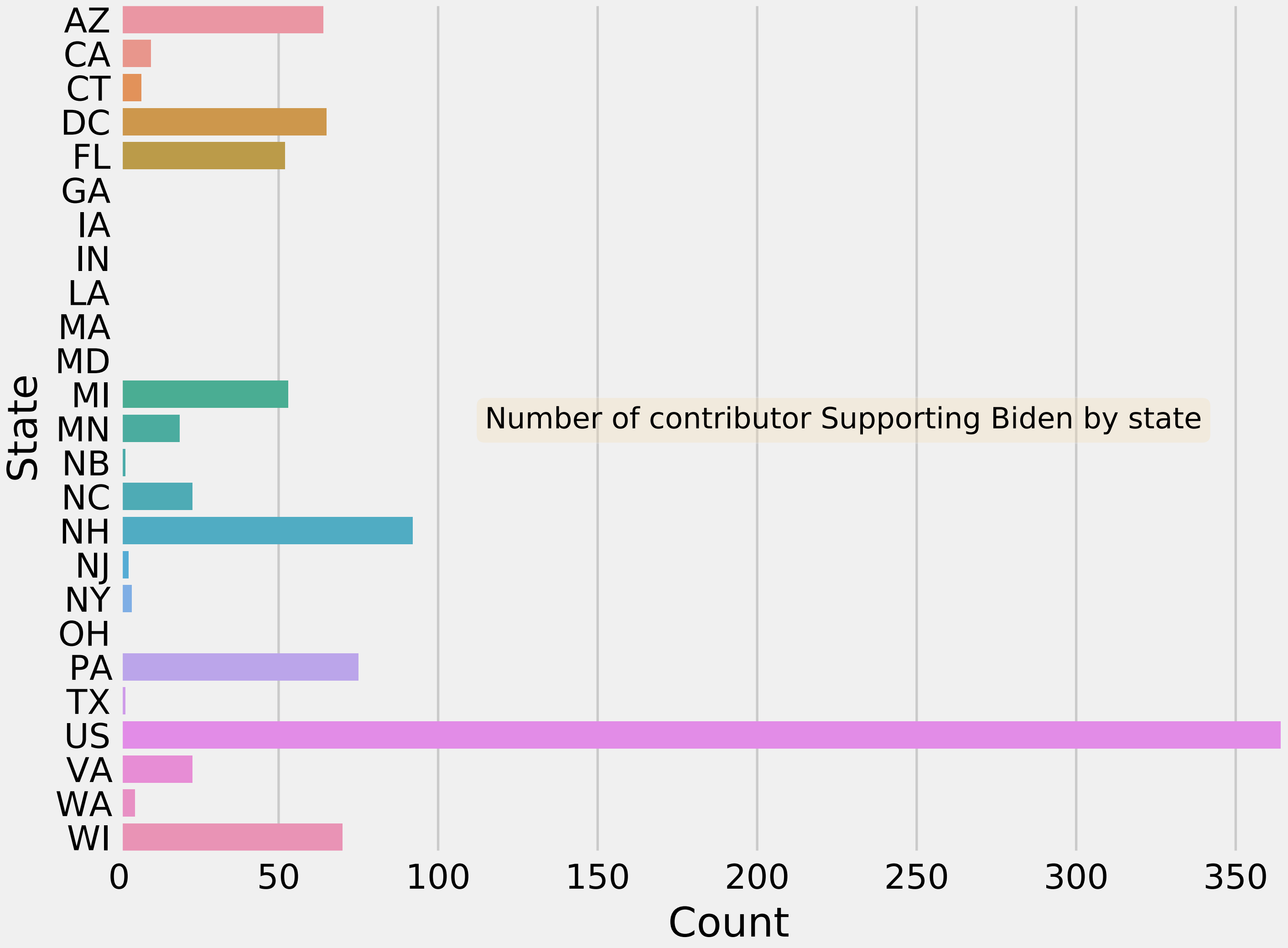

Top Ten Absentee Ballot Rejection by State (2008 -2018)
WA
CA
OR
CO
AZ
IA
UT
KS
HI
OH
State
0.00%
0.01%
0.02%
0.03%
0.04%
0.05%
0.06%
Absentee ballot Rejection Rate

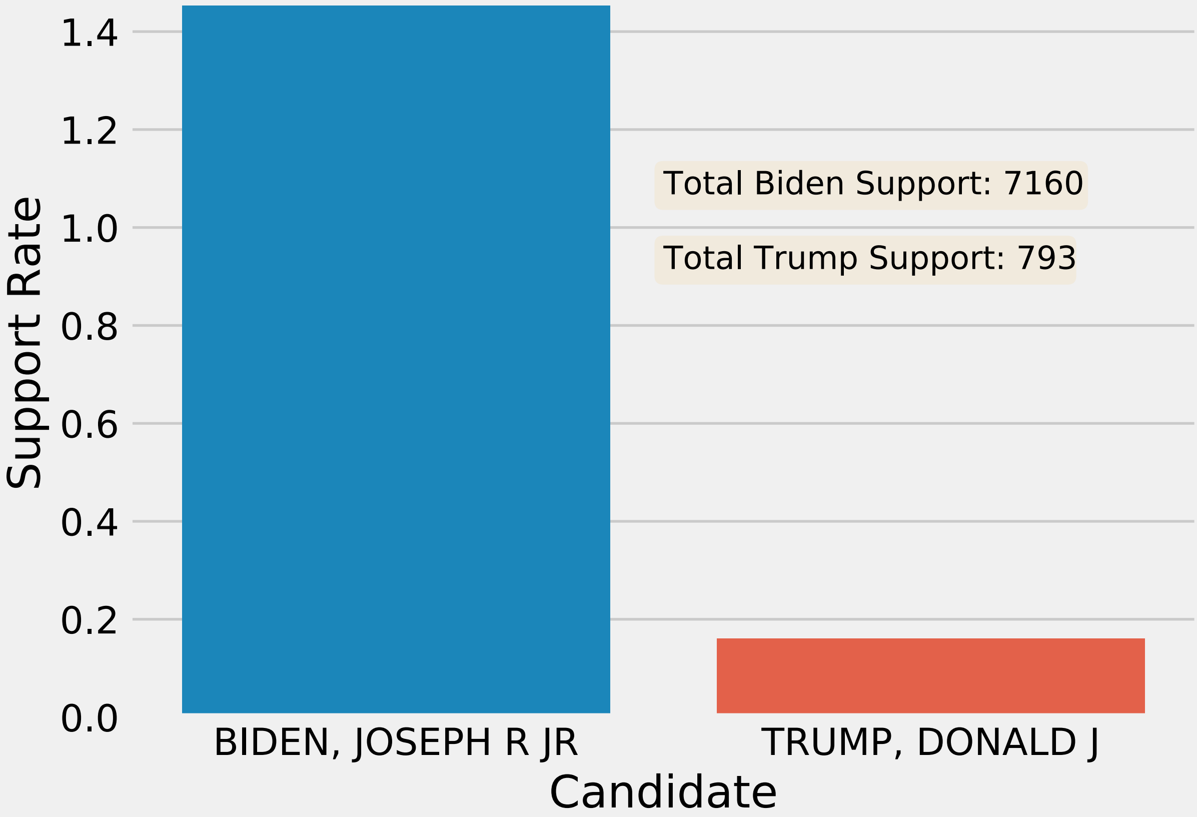

Top Ten Provisional Ballot Rejection by State (2008 -2018)
State
AZ
CA
KS
DC
NY
NC
UT
TX
OH
NE
0.00%
0.01%
0.02%
0.03%
0.04%
0.05%
0.06%
Provisional ballot Rejection Rate


Spirit of Reforming America
Spirit of Reforming America, Jason
Waterfront Strategies
GREAT AMERICAN MEDIA
MAIN STREET MEDIA GROUP
NATIONAL MEDIA RESEARCH PLANNING & PLACEMENT LLC
WATERFRONT STRATEGIES
CROSSROADS MEDIA LLC
MENTZER MEDIA SERVICES
MENTZER MEDIA SERVICES, INC.
Payee Name
Top Ten Payee
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
1e9
Expenditure Amount

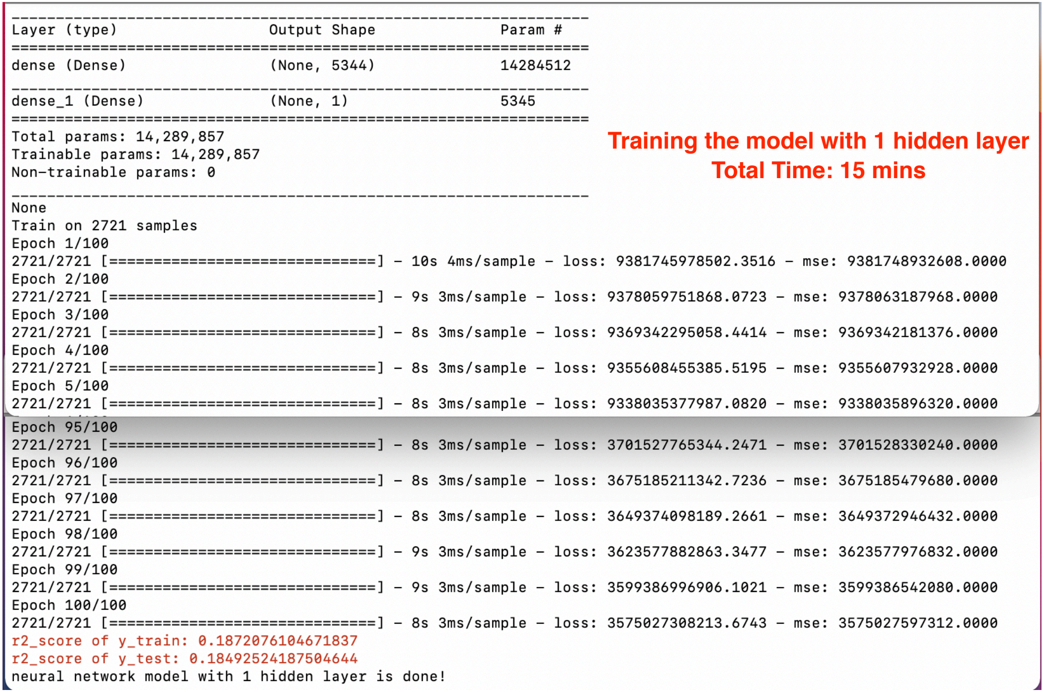

Spirit of Reforming America: Advertising
Advertising Expenses
Ad Buy (Estimate)
Media Buy
TV/MEDIA PLACEMENT
Media Buy - Estimate
MEDIA
Television Advertising - Estimate
PLACED MEDIA: TV
MEDIA PLACEMENT
Category
Top Ten Category vs Expenditure Amount
0.0
0.5
1.0
1.5
2.0
2.5
1e9
Expenditure Amount


Number of contributor Supporting Trump by state
State
CA
CT
DC
DE
FL
GA
IA
KS
LA
MI
NC
NE
NH
NJ
NV
NY
OR
PA
SC
VA
WA
WI
WY
0
20
40
60
80
100
120
140
Count


AZ
CA
CT
DC
FL
GA
IA
IN
LA
MA
MD
MI
MN
NB
NC
NH
NJ
NY
OH
PA
TX
US
VA
WA
WI
State
0
50
100
150
200
250
300
350
Count
Number of contributor Supporting Biden by state


Support Rate
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Total Biden Support: 7160
Total Trump Support: 793
BIDEN, JOSEPH R JR
TRUMP, DONALD J
Candidate

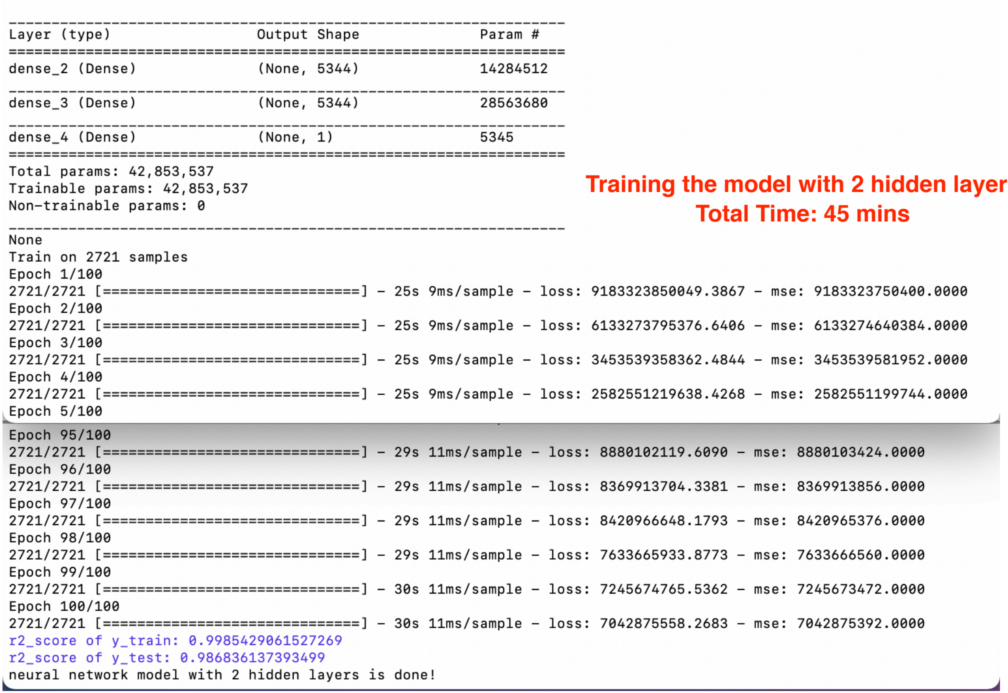
y = df['totalvotes'].values



```
_________________________________________________________________
Layer (type)                 Output Shape              Param #   
=================================================================
dense (Dense)                (None, 5344)              14284512  
_________________________________________________________________
dense_1 (Dense)              (None, 1)                 5345      
=================================================================
Total params: 14,289,857
Trainable params: 14,289,857
Non-trainable params: 0
_________________________________________________________________
None
Train on 2721 samples
Epoch 1/100
2721/2721 [==============================] - 10s 4ms/sample - loss: 9381745978502.3516 - mse: 9381748932608.0000
Epoch 2/100
2721/2721 [==============================] - 9s 3ms/sample - loss: 9378059751868.0723 - mse: 9378063187968.0000
Epoch 3/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 9369342295058.4414 - mse: 9369342181376.0000
Epoch 4/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 9355608455385.5195 - mse: 9355607932928.0000
Epoch 5/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 9338035377987.0820 - mse: 9338035896320.0000
Epoch 95/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 3701527765344.2471 - mse: 3701528330240.0000
Epoch 96/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 3675185211342.7236 - mse: 3675185479680.0000
Epoch 97/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 3649374098189.2661 - mse: 3649372946432.0000
Epoch 98/100
2721/2721 [==============================] - 9s 3ms/sample - loss: 3623577882863.3477 - mse: 3623577976832.0000
Epoch 99/100
2721/2721 [==============================] - 9s 3ms/sample - loss: 3599386996906.1021 - mse: 3599386542080.0000
Epoch 100/100
2721/2721 [==============================] - 8s 3ms/sample - loss: 3575027308213.6743 - mse: 3575027597312.0000
r2_score of y_train: 0.1872076104671837
r2_score of y_test: 0.18492524187504644
neural network model with 1 hidden layer is done!
```

Training the model with 1 hidden layer
Total Time: 15 mins

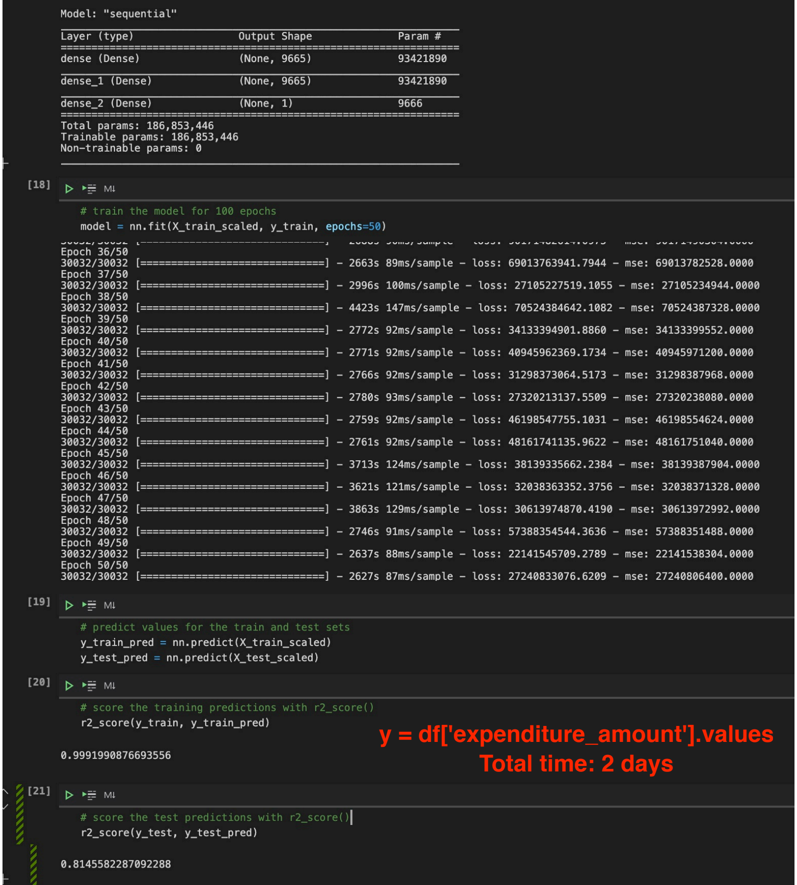
y = df['totalvotes'].values



```
_________________________________________________________________
Layer (type)                 Output Shape              Param #   
=================================================================
dense_2 (Dense)              (None, 5344)              14284512  
_________________________________________________________________
dense_3 (Dense)              (None, 5344)              28563680  
_________________________________________________________________
dense_4 (Dense)              (None, 1)                 5345      
=================================================================
Total params: 42,853,537
Trainable params: 42,853,537
Non-trainable params: 0
_________________________________________________________________
None
Train on 2721 samples
Epoch 1/100
2721/2721 [==============================] - 25s 9ms/sample - loss: 9183323850049.3867 - mse: 9183323750400.0000
Epoch 2/100
2721/2721 [==============================] - 25s 9ms/sample - loss: 6133273795376.6406 - mse: 6133274640384.0000
Epoch 3/100
2721/2721 [==============================] - 25s 9ms/sample - loss: 3453539358362.4844 - mse: 3453539581952.0000
Epoch 4/100
2721/2721 [==============================] - 25s 9ms/sample - loss: 2582551219638.4268 - mse: 2582551199744.0000
Epoch 5/100
```

```
Epoch 95/100
2721/2721 [==============================] - 29s 11ms/sample - loss: 8880102119.6090 - mse: 8880103424.0000
Epoch 96/100
2721/2721 [==============================] - 29s 11ms/sample - loss: 8369913704.3381 - mse: 8369913856.0000
Epoch 97/100
2721/2721 [==============================] - 29s 11ms/sample - loss: 8420966648.1793 - mse: 8420965376.0000
Epoch 98/100
2721/2721 [==============================] - 29s 11ms/sample - loss: 7633665933.8773 - mse: 7633666560.0000
Epoch 99/100
2721/2721 [==============================] - 30s 11ms/sample - loss: 7245674765.5362 - mse: 7245673472.0000
Epoch 100/100
2721/2721 [==============================] - 30s 11ms/sample - loss: 7042875558.2683 - mse: 7042875392.0000
r2_score of y_train: 0.9985429061527269
r2_score of y_test: 0.986836137393499
neural network model with 2 hidden layers is done!
```

Training the model with 2 hidden layers
Total Time: 45 mins



```
Model: "sequential"
_________________________________________________________________
Layer (type)                 Output Shape              Param #
=================================================================
dense (Dense)                (None, 9665)              93421890
_________________________________________________________________
dense_1 (Dense)              (None, 9665)              93421890
_________________________________________________________________
dense_2 (Dense)              (None, 1)                 9666
=================================================================
Total params: 186,853,446
Trainable params: 186,853,446
Non-trainable params: 0
_________________________________________________________________
```

[18]

```
# train the model for 100 epochs
model = nn.fit(X_train_scaled, y_train, epochs=50)
```

```
Epoch 36/50
30032/30032 [==============================] - 2663s 89ms/sample - loss: 69013763941.7944 - mse: 69013782528.0000
Epoch 37/50
30032/30032 [==============================] - 2996s 100ms/sample - loss: 27105227519.1055 - mse: 27105234944.0000
Epoch 38/50
30032/30032 [==============================] - 4423s 147ms/sample - loss: 70524384642.1082 - mse: 70524387328.0000
Epoch 39/50
30032/30032 [==============================] - 2772s 92ms/sample - loss: 34133394901.8860 - mse: 34133399552.0000
Epoch 40/50
30032/30032 [==============================] - 2771s 92ms/sample - loss: 40945962369.1734 - mse: 40945971200.0000
Epoch 41/50
30032/30032 [==============================] - 2766s 92ms/sample - loss: 31298373064.5173 - mse: 31298387968.0000
Epoch 42/50
30032/30032 [==============================] - 2780s 93ms/sample - loss: 27320213137.5509 - mse: 27320238080.0000
Epoch 43/50
30032/30032 [==============================] - 2759s 92ms/sample - loss: 46198547755.1031 - mse: 46198554624.0000
Epoch 44/50
30032/30032 [==============================] - 2761s 92ms/sample - loss: 48161741135.9622 - mse: 48161751040.0000
Epoch 45/50
30032/30032 [==============================] - 3713s 124ms/sample - loss: 38139335662.2384 - mse: 38139387904.0000
Epoch 46/50
30032/30032 [==============================] - 3621s 121ms/sample - loss: 32038363352.3756 - mse: 32038371328.0000
Epoch 47/50
30032/30032 [==============================] - 3863s 129ms/sample - loss: 30613974870.4190 - mse: 30613972992.0000
Epoch 48/50
30032/30032 [==============================] - 2746s 91ms/sample - loss: 57388354544.3636 - mse: 57388351488.0000
Epoch 49/50
30032/30032 [==============================] - 2637s 88ms/sample - loss: 22141545709.2789 - mse: 22141538304.0000
Epoch 50/50
30032/30032 [==============================] - 2627s 87ms/sample - loss: 27240833076.6209 - mse: 27240806400.0000
```

[19]

```
# predict values for the train and test sets
y_train_pred = nn.predict(X_train_scaled)
y_test_pred = nn.predict(X_test_scaled)
```

[20]

```
# score the training predictions with r2_score()
r2_score(y_train, y_train_pred)
```

```
0.9991990876693556
```

y = df['expenditure_amount'].values
Total time: 2 days

[21]

```
# score the test predictions with r2_score()
r2_score(y_test, y_test_pred)
```

```
0.8145582287092288
```