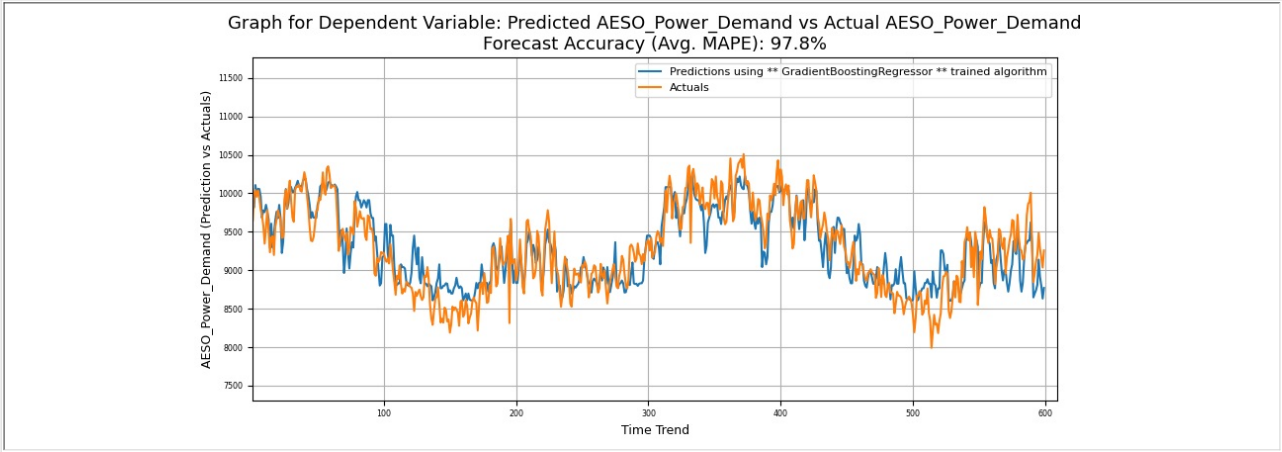


Multi-Agent AutoML Report For OTICS

Generated On: 2024-04-11 20:56:37 (EDT)

Best Model(s) Report For admin_aesopowerdemand_csv



| MODEL DESCRIPTION | PREDICTION VARIABLE STATS | ACTUAL VARIABLE STATS |
|--|--|--|
| <p>Model Trained On: 2024/04/11</p> <p>Training Start Time: 2053</p> <p>Training End Time: 2056</p> <p>Was Data Normalized: Yes</p> <p>Was Data Shuffled: Yes</p> <p>Deep Analysis: No</p> <p>Total Training Data Set: 947</p> <p>Training Data Percentage: 75%</p> <p>Total Test Data Set: 319</p> <p>Total # of Variables: 4</p> <p>Adjusted for Seasonality: N</p> <p>Total Algorithms Run: 3600</p> <p>Removed Outliers: Y</p> <p>Best Distribution FOR ACTUAL Y: VONMISES</p> <p>Dependent Variable: AESO POWER DEMAND</p> <p>Independent Variables: ['Calgary_Weather', 'Edmonton_Weather', 'FtMac_Weather']</p> | <p>Mean: 9293.373</p> <p>STD: 476.794</p> <p>Kurtosis: -1.220</p> <p>Skewness: 0.356</p> <p>Coef. of Variation: 0.051</p> <p>Shapiro Test for Normality: 0.920</p> <p>Jarque-Bera Goodness of Fit: 49.887</p> <p>Anderson: 15.794</p> <p>KStat: 227712.484</p> <p>KStatvar: 67438735.002</p> <p>Wilcox: 0.000</p> <p>Theil Slope: -0.553</p> | <p>Mean: 9281.250</p> <p>STD: 545.222</p> <p>Kurtosis: -0.891</p> <p>Skewness: 0.098</p> <p>Coef. of Variation: 0.059</p> <p>Shapiro Test for Normality: 0.981</p> <p>Jarque-Bera Goodness of Fit: 20.836</p> <p>Anderson: 2.876</p> <p>KStat: 297763.223</p> <p>KStatvar: 164138770.163</p> <p>Wilcox: 0.000</p> <p>Theil Slope: -0.302</p> |
| Statistics Showing Comparison Between Prediction and Actuals | | |
| <p>Mood(actuals,predictions): 3.548</p> <p>Pearson(actuals,predictions): 0.879</p> <p>Kendall Tau(actuals,predictions): 0.693</p> <p>Ansari(actuals,predictions): 174164.000</p> <p>Jaccard_distance(actuals,predictions): 1.000</p> <p>Minkowski_distance(actuals,predictions): 119601.793</p> <p>Euclidean_distance(actuals,predictions): 6378.622</p> | | |

IMPORTANT FILE PATHS FOR RAW AND OUTPUT DATA

NOTE: These are DOCKER CONTAINER Paths. You can view these files inside the container by using the command: `docker exec -it {container id} bash` If you have re-run the container, these files will be GONE but they exist on your HOST machine. The HOST MACHINE location is based on the volumes you mapped when you ran the Docker container. The Docker RUN Volume Mappings are :: (For example here is the docker run command (use multiple -v for multiple mappings):

DOCKER RUN COMMAND: `docker run -d -p 5595:5595 -p 5495:5495 -p 10000:10000 -v {HOST MACHINE FOLDER}:{CONTAINER FOLDER}:z --env TRAININGPORT=5595 --env PREDICTIONPORT=5495 --env ABORTPORT=10000 --env COMPANYNAME=MYCOMPANY --env MAXRUNTIME=20 --env MAINHOST=127.0.0.1 maadsdocker/maads-batch-automi-otics`

Docker Volume Mappings:

1. {HOST MACHINE FOLDER}/csvuploads:/mnt/c/maads/agentfilesdocker/dist/maadsweb/csvuploads:z

2. {HOST MACHINE FOLDER}/pdfreports:/mnt/c/maads/agentfilesdocker/dist/maadsweb/pdfreports:z

3. {HOST MACHINE FOLDER}/autofeatures:/mnt/c/maads/agentfilesdocker/dist/maadsweb/autofeatures:z

4. {HOST MACHINE FOLDER}/outliers:/mnt/c/maads/agentfilesdocker/dist/maadsweb/outliers:z

5. {HOST MACHINE FOLDER}/sqlloads:/mnt/c/maads/agentfilesdocker/dist/maadsweb/sqlloads:z

6. {HOST MACHINE FOLDER}/networktemp:/mnt/c/maads/agentfilesdocker/dist/maadsweb/networktemp:z

7. {HOST MACHINE FOLDER}/networks:/mnt/c/maads/agentfilesdocker/networks:z

8. {HOST MACHINE FOLDER}/exception:/mnt/c/maads/agentfilesdocker/dist/maadsweb/exception:z

9. {HOST MACHINE FOLDER}/staging:/mnt/c/maads/agentfilesdocker/dist/staging:z

Path for Training Dataset File: `/mnt/c/maads/agentfilesdocker/dist/maadsweb/csvuploads/aesopowerdemand.csv`

Path for PDF Report (i.e. this file): `/mnt/c/maads/agentfilesdocker/dist/maadsweb/pdfreports/admin_aesopowerdemand_csv_no_seasons.pdf`

Path for AutoFeature File: `/mnt/c/maads/agentfilesdocker/dist/maadsweb/autofeatures/admin_aesopowerdemand_csv_csv`

Path for Outliers File: `/mnt/c/maads/agentfilesdocker/dist/maadsweb/outliers/admin_aesopowerdemand_csv.csv`

Path for Algo JSON File: `/mnt/c/maads/agentfilesdocker/dist/maadsweb/exception/admin_aesopowerdemand_csv_trained_algo_no_seasons.json`

Folder Path for MySQL Scripts: `/mnt/c/maads/agentfilesdocker/dist/maadsweb/sqlloads/`

Path for Detailed Prediction File: `/mnt/c/maads/agentfilesdocker/dist/maadsweb/csvuploads/admin_aesopowerdemand_csv_prediction_details.csv`

Path for Algorithm Zip File (i.e pickle files): `/mnt/c/maads/agentfilesdocker/dist/maadsweb/networktemp/admin_aesopowerdemand_csv.zip`

Path for Algorithm Pickle Files:

- `/mnt/c/maads/agentfilesdocker/networks/otics_ADMIN_AESOPOWERDEMAND_CSVALLEASON_AG1_4_GradientBoostingRegressor_normal_947_0.100_300_3_ensemble_pkl`
- `/mnt/c/maads/agentfilesdocker/networks/otics_ADMIN_AESOPOWERDEMAND_CSVALLEASON_AG1_4_GradientBoostingRegressor_normal_947_0.100_300_3_ensemble_scalerx_pkl`
- `/mnt/c/maads/agentfilesdocker/networks/otics_ADMIN_AESOPOWERDEMAND_CSVALLEASON_AG1_4_GradientBoostingRegressor_normal_947_0.100_300_3_ensemble_scalery_pkl`

DESCRIPTIVE STATISTICS

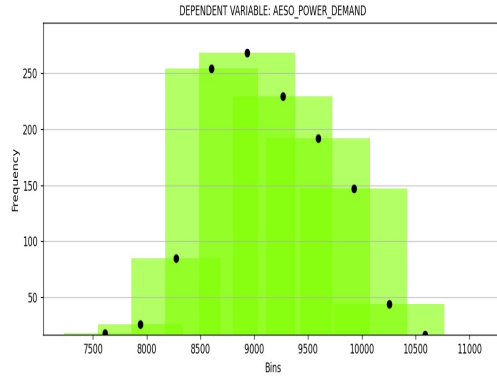
| Variables | T-Statistic | Count | Mean | STD | MIN | 25% | 50% | 75% | MAX |
|-------------------|-------------|-------|----------|--------|---------|--------|--------|--------|---------|
| Calgary_Weather | -35.442 | 947.0 | 5.793 | -27.75 | 10.139 | -0.45 | 6.85 | 14.0 | 23.85 |
| Edmonton_Weather | -38.8 | 947.0 | 5.824 | -26.64 | 11.798 | -2.36 | 7.0 | 16.105 | 25.75 |
| FtMac_Weather | -40.088 | 947.0 | 2.228 | -32.4 | 13.732 | -7.91 | 3.94 | 14.86 | 23.85 |
| AESO_POWER_DEMAND | NA | 947.0 | 9242.263 | 7857.0 | 558.895 | 8802.5 | 9232.0 | 9664.5 | 10510.0 |

| BEST ALGORITHM FOUND FOR THIS DATASET | | | | | |
|--|---|---|----------|-----------------|-----------|
| (Note: This trained model will be used to predict AESO_POWER_DEMAND) | | | | | |
| Algorithm | Description | Model Results | Accuracy | Forecast Months | Season |
| GradientBoostingRegressor | Gradient Boosting for regression.: GB builds an additive model in a forward stage-wise fashion; it allows for the optimization of arbitrary differentiable loss functions. In each stage a regression tree is fit on the negative gradient of the given loss function. (Info) | <div>GradientBoostingRegressor(alpha=0.04709115500459103, learning_rate=0.06758979852846976, loss='huber', max_depth=2, random_state=20)</div> <div>R-square: 0.772 Mean Squared Error (MSE): 67811.370 Skewness: -0.553 Kurtosis: 3.611 Mean Square Model (MSM): 136487962.972 F-Statistic (F): 2012.759 Jarque-Bera (JB): 39.903 Explained Variance (EV): 0.772</div> | 0.978 | 1 - 12 | allseason |
| | | <div>Multicollinearity Test (Avg. VIF): 19.321 Heteroscedasticity Test (Avg P-Value): -1.000 (Based on White Test, there seems to be heteroscedasticity in the model) Autocorrelation (Durbin-Watson) Test: 0.727 (Based on DW Test - there seems to be autocorrelation in your model)</div> | | | |

| TOP 10 ALGORITHMS FOR ALLSEASON | | | | | |
|---------------------------------|---------------------------|----------|--|-----------|--|
| Num | Algorithm | Accuracy | Details | Season | Description |
| 1 | GradientBoostingRegressor | 0.6627 | R-square: 0.772 Explained Variance (EV): 0.772 MSE: 67811.37 MSM: 136487962.972 Skewness: -0.553 Kurtosis: 3.611 F: 2012.759 DW: 0.727 JB: 39.903 | allseason | GRADIENT BOOSTING FOR REGRESSION.: GB builds an additive model in a forward stage-wise fashion; it allows for the optimization of arbitrary differentiable loss functions. In each stage a regression tree is fit on the negative gradient of the given loss function. URL= http://scikit-learn.org/stable/modules/generated/sklearn.ensemble.GradientBoostingRegressor.html |
| 2 | NuSVR | 0.6618 | R-square: 0.752 Explained Variance (EV): 0.752 MSE: 73766.751 MSM: 138650991.536 Skewness: -0.28 Kurtosis: 2.914 F: 1879.587 DW: 0.67 JB: 8.032 | allseason | NU SUPPORT VECTOR REGRESSION.: Similar to NuSVC, for regression, uses a parameter nu to control the number of support vectors. However, unlike NuSVC, where nu replaces C, here nu replaces the parameter epsilon of epsilon-SVR. URL= http://scikit-learn.org/stable/modules/generated/sklearn.svm.NuSVR.html |
| 3 | ADABoostRegressor | 0.6264 | R-square: 0.83 Explained Variance (EV): 0.833 MSE: 50493.469 MSM: 154115030.019 Skewness: 0.282 Kurtosis: 2.561 F: 3052.178 DW: 0.691 JB: 12.772 | allseason | ADABOOST REGRESSOR: Ada boost URL= http://scikit-learn.org/stable/modules/generated/sklearn.ensemble.AdaboostRegressor.html |
| 4 | DecisionTreeRegressor | 0.6140 | R-square: 0.729 Explained Variance (EV): 0.73 MSE: 80669.487 MSM: 143174021.422 Skewness: 0.004 Kurtosis: 3.048 F: 1774.823 DW: 0.851 JB: 0.06 | allseason | DECISION TREE REGRESSOR: Decision Tree Regressor URL= http://scikit-learn.org/stable/modules/generated/sklearn.tree.DecisionTreeRegressor.html |
| 5 | SVR | 0.6095 | R-square: 0.711 Explained Variance (EV): 0.712 MSE: 85941.79 MSM: 128383625.669 Skewness: -0.215 Kurtosis: 2.872 F: 1493.844 DW: 0.546 JB: 5.038 | allseason | EPSILON-SUPPORT VECTOR REGRESSION.: The method of Support Vector Classification can be extended to solve regression problems. This method is called Support Vector Regression. URL= http://scikit-learn.org/stable/modules/generated/sklearn.svm.SVR.html |
| 6 | RANSACRegressor | 0.4682 | R-square: 0.501 Explained Variance (EV): 0.502 MSE: 148452.867 MSM: 137972795.205 Skewness: 0.342 Kurtosis: 3.377 F: 929.405 DW: 0.387 JB: 15.277 | allseason | RANSAC (RANDOM SAMPLE CONSENSUS) ALGORITHM.: RANSAC is an iterative algorithm for the robust estimation of parameters from a subset of inliers from the complete data set. More information can be found in the general documentation of linear models. URL= http://scikit-learn.org/stable/modules/generated/sklearn.linear_model.RANSACRegressor.html |
| 7 | LinearSVR | 0.4446 | R-square: 0.497 Explained Variance (EV): 0.497 MSE: 149639.986 MSM: 135405616.601 Skewness: 0.623 Kurtosis: 3.625 F: 904.876 DW: 0.38 JB: 48.57 | allseason | LINEAR SUPPORT VECTOR REGRESSION.: Similar to SVR with parameter kernel='linear', but implemented in terms of liblinear rather than libsvm, so it has more flexibility in the choice of penalties and loss functions and should scale better to large numbers of samples. URL= http://scikit-learn.org/stable/modules/generated/sklearn.svm.LinearSVR.html |
| 8 | HuberRegressor | 0.4412 | R-square: 0.495 Explained Variance (EV): 0.496 MSE: 149984.685 MSM: 136698344.639 Skewness: 0.632 Kurtosis: 3.64 F: 911.415 DW: 0.385 JB: 50.155 | allseason | HUBER REGRESSOR: Linear regression model that is robust to outliers. URL= http://scikit-learn.org/stable/modules/generated/sklearn.linear_model.HuberRegressor.html |
| 9 | ARDRegression | 0.4397 | R-square: 0.519 Explained Variance (EV): 0.52 MSE: 143063.036 MSM: 112970893.37 Skewness: 0.489 Kurtosis: 3.319 F: 789.658 DW: 0.385 JB: 26.449 | allseason | BAYESIAN ARD: Fit the weights of a regression model, using an ARD prior. The weights of the regression model are assumed to be in Gaussian distributions. Also estimate the parameters lambda (precisions of the distributions of the weights) and alpha (precision of the distribution of the noise). The estimation is done by an iterative procedures (Evidence Maximization) URL= http://scikit-learn.org/stable/modules/generated/sklearn.linear_model.ARDRegression.html |
| 10 | BayesianRidge | 0.4397 | R-square: 0.519 Explained Variance (EV): 0.52 MSE: 143043.648 MSM: 113028517.92 Skewness: 0.489 Kurtosis: 3.319 F: 790.168 DW: 0.385 JB: 26.422 | allseason | BAYESIAN RIDGE REGRESSION: Fit a Bayesian ridge model and optimize the regularization parameters lambda (precision of the weights) and alpha (precision of the noise). URL= http://scikit-learn.org/stable/modules/generated/sklearn.linear_model.BayesianRidge.html |

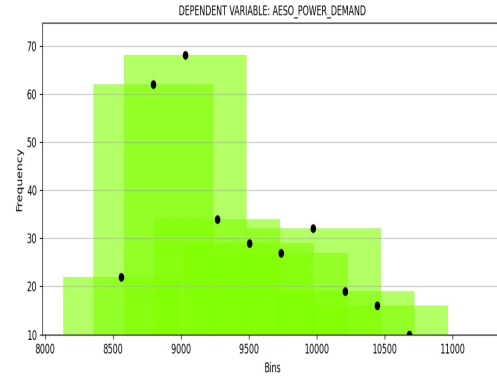
Detailed Histograms of Training and Test Data Sets

TRAINING VARIABLES



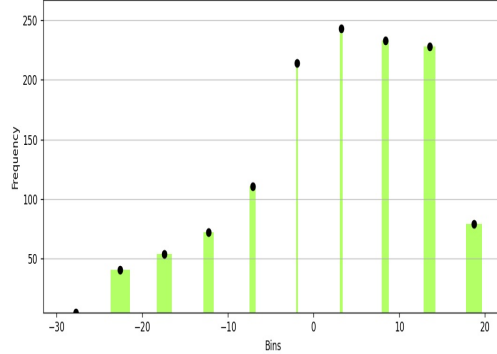
| Bins | [7.61e+03, 7.94e+03] | [7.94e+03, 8.27e+03] | [8.27e+03, 8.60e+03] | [8.60e+03, 8.93e+03] | [8.93e+03, 9.26e+03] | [9.26e+03, 9.59e+03] |
|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Count | 18 | 26 | 85 | 254 | 268 | 229 |
| Share | 1.0% | 2.0% | 7.0% | 20.0% | 21.0% | 18.0% |
| Total Rows | 1280 | 1280 | 1280 | 1280 | 1280 | 1280 |
| Min | 7.61e+03 | 7.61e+03 | 7.61e+03 | 7.61e+03 | 7.61e+03 | 7.61e+03 |
| Max | 1.09e+04 | 1.09e+04 | 1.09e+04 | 1.09e+04 | 1.09e+04 | 1.09e+04 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

TEST VARIABLES



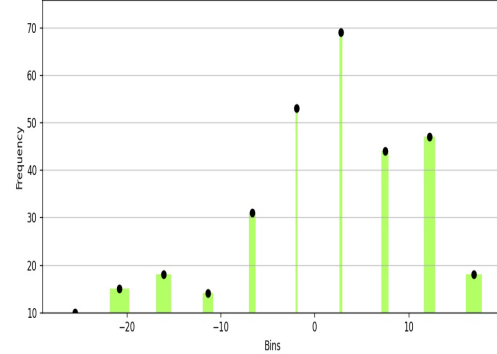
| Bins | [8.56e+03, 8.79e+03] | [8.79e+03, 9.03e+03] | [9.03e+03, 9.27e+03] | [9.27e+03, 9.50e+03] | [9.50e+03, 9.74e+03] | [9.74e+03, 9.97e+03] |
|----------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Count | 22 | 62 | 68 | 34 | 29 | 27 |
| Share | 7.0% | 19.0% | 21.0% | 11.0% | 9.0% | 8.0% |
| Total Rows | 319 | 319 | 319 | 319 | 319 | 319 |
| Min | 8.56e+03 | 8.56e+03 | 8.56e+03 | 8.56e+03 | 8.56e+03 | 8.56e+03 |
| Max | 1.09e+04 | 1.09e+04 | 1.09e+04 | 1.09e+04 | 1.09e+04 | 1.09e+04 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

INDEPENDENT VARIABLE: CALGARY_WEATHER



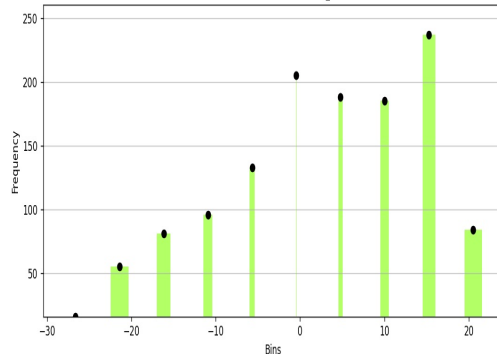
| Bins | [-2.78e+01, -2.26e+01] | [-2.26e+01, -1.74e+01] | [-1.74e+01, -1.23e+01] | [-1.23e+01, -7.11e+00] | [-7.11e+00, -1.95e+00] | [-1.95e+00, 3.21e+00] |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|
| Count | 5 | 41 | 54 | 72 | 111 | 214 |
| Share | 0.0% | 3.0% | 4.0% | 6.0% | 9.0% | 17.0% |
| Total Rows | 1280 | 1280 | 1280 | 1280 | 1280 | 1280 |
| Min | -2.70e+01 | -2.70e+01 | -2.70e+01 | -2.70e+01 | -2.70e+01 | -2.70e+01 |
| Max | 2.30e+01 | 2.30e+01 | 2.30e+01 | 2.30e+01 | 2.30e+01 | 2.30e+01 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

INDEPENDENT VARIABLE: CALGARY_WEATHER

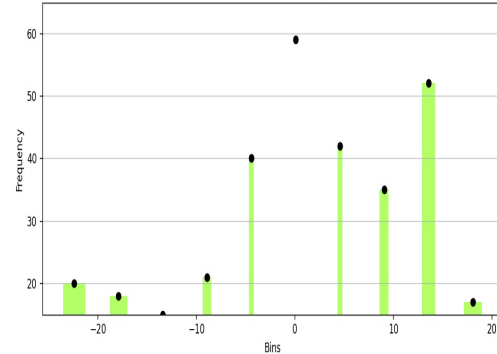


| Bins | [-2.55e+01, -2.08e+01] | [-2.08e+01, -1.61e+01] | [-1.61e+01, -1.14e+01] | [-1.14e+01, -6.64e+00] | [-6.64e+00, -1.93e+00] | [-1.93e+00, 2.79e+00] |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|
| Count | 10 | 15 | 18 | 14 | 31 | 53 |
| Share | 3.0% | 5.0% | 6.0% | 4.0% | 10.0% | 17.0% |
| Total Rows | 319 | 319 | 319 | 319 | 319 | 319 |
| Min | -2.50e+01 | -2.50e+01 | -2.50e+01 | -2.50e+01 | -2.50e+01 | -2.50e+01 |
| Max | 2.10e+01 | 2.10e+01 | 2.10e+01 | 2.10e+01 | 2.10e+01 | 2.10e+01 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

INDEPENDENT VARIABLE: EDMONTON_WEATHER

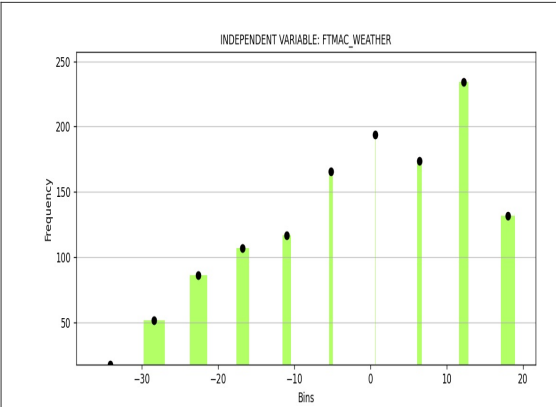


INDEPENDENT VARIABLE: EDMONTON_WEATHER

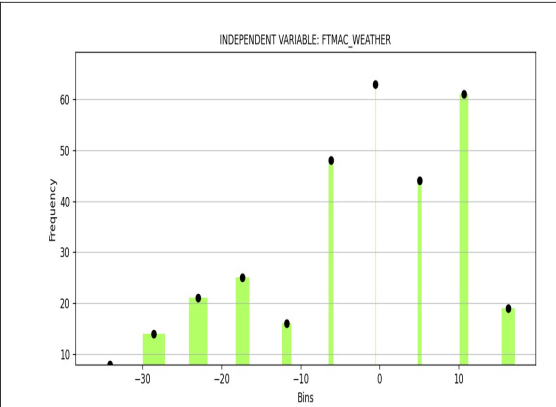


| Bins | [-2.66e+01, -2.14e+01] | [-2.14e+01, -1.62e+01] | [-1.62e+01, -1.09e+01] | [-1.09e+01, -5.68e+00] | [-5.68e+00, -4.45e-01] | [-4.45e-01, 4.79e+00] |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|
| Count | 16 | 55 | 81 | 96 | 133 | 205 |
| Share | 1.0% | 4.0% | 6.0% | 8.0% | 10.0% | 16.0% |
| Total Rows | 1280 | 1280 | 1280 | 1280 | 1280 | 1280 |
| Min | -2.60e+01 | -2.60e+01 | -2.60e+01 | -2.60e+01 | -2.60e+01 | -2.60e+01 |
| Max | 2.50e+01 | 2.50e+01 | 2.50e+01 | 2.50e+01 | 2.50e+01 | 2.50e+01 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

| Bins | [-2.24e+01, -1.79e+01] | [-1.79e+01, -1.34e+01] | [-1.34e+01, -8.91e+00] | [-8.91e+00, -4.42e+00] | [-4.42e+00, 7.50e-02] | [7.50e-02, 4.57e+00] |
|----------------|------------------------|------------------------|------------------------|------------------------|-----------------------|----------------------|
| Count | 20 | 18 | 15 | 21 | 40 | 59 |
| Share | 6.0% | 6.0% | 5.0% | 7.0% | 13.0% | 18.0% |
| Total Rows | 319 | 319 | 319 | 319 | 319 | 319 |
| Min | -2.20e+01 | -2.20e+01 | -2.20e+01 | -2.20e+01 | -2.20e+01 | -2.20e+01 |
| Max | 2.20e+01 | 2.20e+01 | 2.20e+01 | 2.20e+01 | 2.20e+01 | 2.20e+01 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

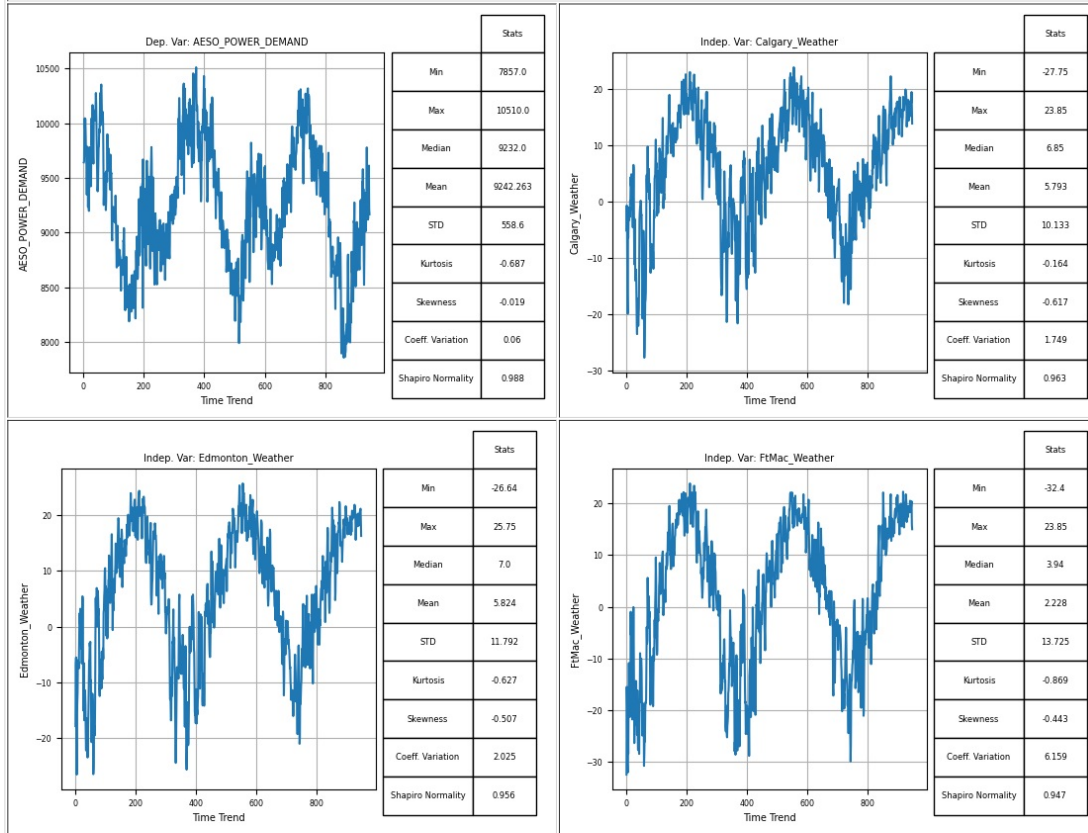


| Bins | [-3.41e+01, -2.83e+01] | [-2.83e+01, -2.25e+01] | [-2.25e+01, -1.68e+01] | [-1.68e+01, -1.09e+01] | [-1.09e+01, -5.15e+00] | [-5.15e+00, 6.50e-01] |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|-----------------------|
| Count | 18 | 52 | 86 | 107 | 117 | 166 |
| Share | 1.0% | 4.0% | 7.0% | 8.0% | 9.0% | 13.0% |
| Total Rows | 1280 | 1280 | 1280 | 1280 | 1280 | 1280 |
| Min | -3.40e+01 | -3.40e+01 | -3.40e+01 | -3.40e+01 | -3.40e+01 | -3.40e+01 |
| Max | 2.30e+01 | 2.30e+01 | 2.30e+01 | 2.30e+01 | 2.30e+01 | 2.30e+01 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

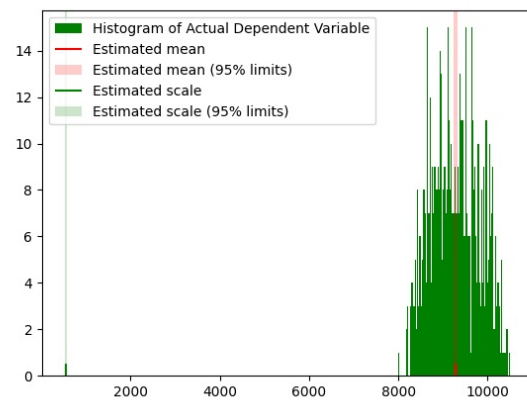
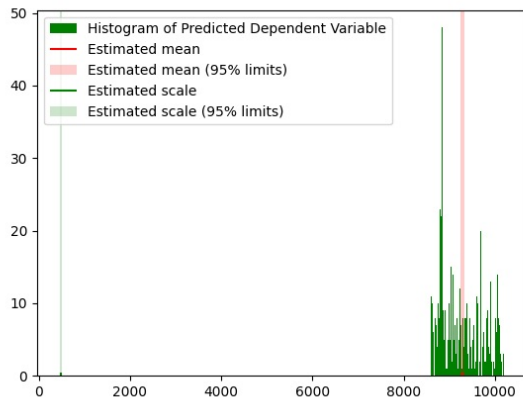


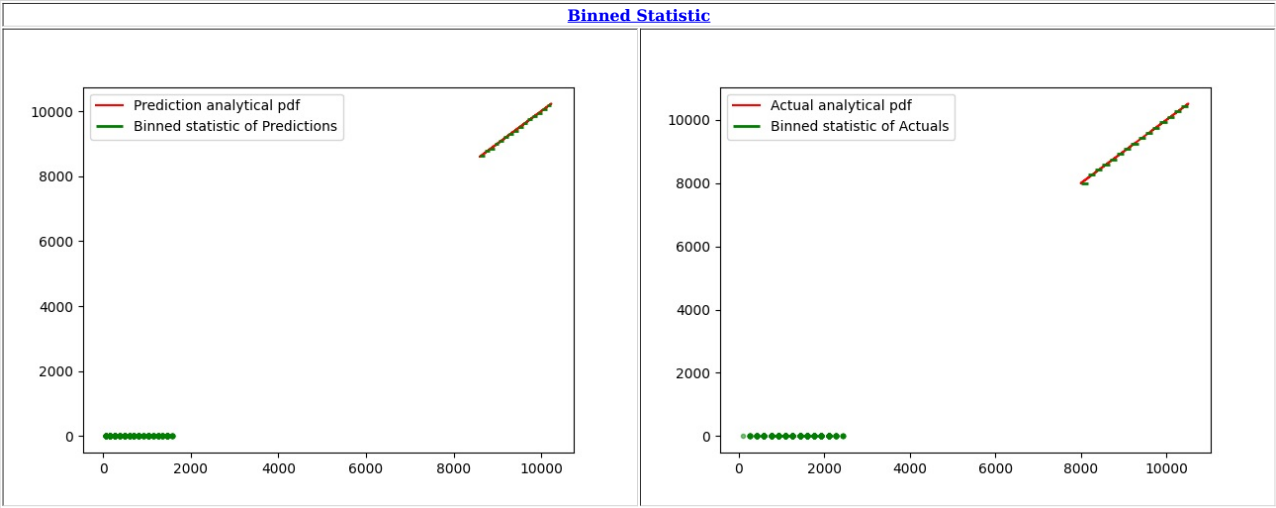
| Bins | [-3.41e+01, -2.85e+01] | [-2.85e+01, -2.29e+01] | [-2.29e+01, -1.74e+01] | [-1.74e+01, -1.18e+01] | [-1.18e+01, -6.15e+00] | [-6.15e+00, -5.50e-01] |
|----------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| Count | 8 | 14 | 21 | 25 | 16 | 48 |
| Share | 3.0% | 4.0% | 7.0% | 8.0% | 5.0% | 15.0% |
| Total Rows | 319 | 319 | 319 | 319 | 319 | 319 |
| Min | -3.40e+01 | -3.40e+01 | -3.40e+01 | -3.40e+01 | -3.40e+01 | -3.40e+01 |
| Max | 2.10e+01 | 2.10e+01 | 2.10e+01 | 2.10e+01 | 2.10e+01 | 2.10e+01 |
| Number of Bins | 6 | 6 | 6 | 6 | 6 | 6 |

Detailed Graphs of Variables Against Time



Bayesian Distribution

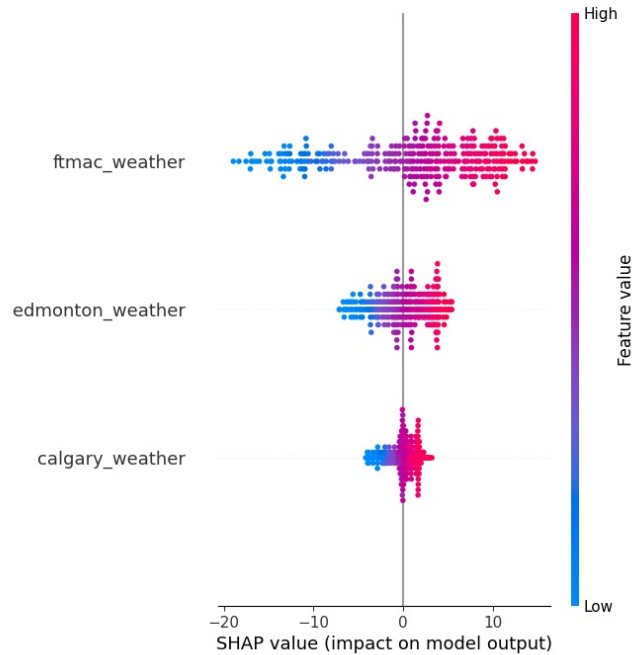




OUTLIERS REMOVED FROM TRAINING DATA: admin_aesopowerdemand_csv

| Date | X | Y |
|-----------|---------------------|---------|
| 8/11/2015 | [21.6 22.78 20.86] | 9861.0 |
| 8/12/2015 | [21.75 22.14 20.7] | 9891.0 |
| 8/13/2015 | [23.35 23.14 19.56] | 10008.0 |
| 5/8/2016 | [12.5 13.6 12.6] | 7611.0 |
| 5/9/2016 | [6.55 7.65 6.4] | 7852.0 |
| 5/10/2016 | [6.25 8.55 6.9] | 7833.0 |
| 5/11/2016 | [7.15 8.6 4.2] | 7804.0 |
| 5/12/2016 | [4.45 6.6 6.] | 7900.0 |
| 5/13/2016 | [4.4 7.9 7.8] | 7850.0 |
| 5/14/2016 | [6.15 11.1 10.35] | 7759.0 |
| 5/21/2016 | [4.4 4.9 10.15] | 7764.0 |
| 5/23/2016 | [6.35 8.5 11.3] | 7802.0 |
| 5/28/2016 | [8.6 12.5 14.35] | 7660.0 |
| 6/11/2016 | [14.1 12.25 13.45] | 7832.0 |

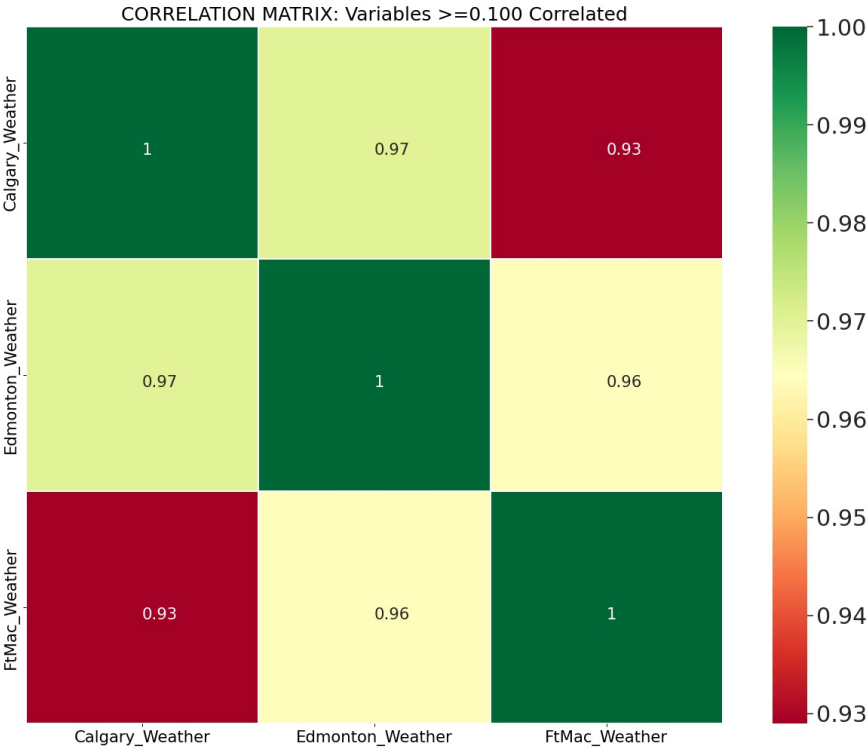
MODEL EXPLANATION



- The x-axis represents the model's output values of **AESO_POWER_DEMAND**
- The plot is centered on the x-axis at `explainer.expected_value`.
- All values are relative to the model's expected value like a linear model's effects are relative to the intercept.
- The y-axis lists the model's features. By default, the features are ordered by descending importance.
- The importance is calculated over the observations plotted. This is usually different than the importance ordering for the entire dataset.
- In addition to feature importance ordering, the decision plot also supports hierarchical cluster feature ordering and user-defined feature ordering.
- Each observation's prediction is represented by a colored line.
- At the top of the plot, each line strikes the x-axis at its corresponding observation's predicted value. This value determines the color of the line on a spectrum.
- Moving from the bottom of the plot to the top, SHAP values for each feature are added to the model's base value.
- This shows how each feature contributes to the overall prediction.
- At the bottom of the plot, the observations converge at `explainer.expected_value`.
- The points in the graph are the values of the feature in the training dataset.

| FEATURE SELECTION | |
|--|--------|
| RFE Variable (Most important to Least Important) | Value |
| AESO_Power_Demand | 0.307 |
| Calgary_Weather | 0.234 |
| Edmonton_Weather | 0.232 |
| FtMac_Weather | 0.227 |
| Best Variable(s) From Genetic Algorithm | |
| AESO_Power_Demand | |
| Calgary_Weather | |
| FtMac_Weather | |
| Excluded Variable(s) | |
| Edmonton_Weather | |
| PCA for Best Variable(s) | Value |
| AESO_Power_Demand_pca_1 | 0.542 |
| AESO_Power_Demand_pca_2 | 0.836 |
| AESO_Power_Demand_pca_3 | -0.081 |
| Calgary_Weather_pca_1 | -0.590 |
| Calgary_Weather_pca_2 | 0.448 |
| Calgary_Weather_pca_3 | 0.672 |
| FtMac_Weather_pca_1 | -0.599 |
| FtMac_Weather_pca_2 | 0.316 |
| FtMac_Weather_pca_3 | -0.736 |
| PCA Explained Variance | Value |
| PCA1 | 0.863 |
| PCA2 | 0.114 |
| PCA3 | 0.023 |
| <ul style="list-style-type: none">• Feature selection shows which variables were more influential than other variables• It uses two core algorithms: Recursive Feature Elimination (RFE) and Genetic Algorithm to determine influence• It also performs PCA (principal component analysis) analysis to determine the influence of the best variables in the model• These results should be used in conjunction with other information as well as theory to establish relevance and confidence in the chosen model formulation | |

CORRELATION MATRIX



| CORRELATED FEATURES | | | |
|---------------------|------------------|------------------|----------------------|
| | Feature(s) | Feature(s) | Correlation >= 0.100 |
| 0 | Calgary_Weather | FtMac_Weather | 0.929 |
| 1 | Edmonton_Weather | FtMac_Weather | 0.964 |
| 2 | Calgary_Weather | Edmonton_Weather | 0.970 |
| 3 | Calgary_Weather | Calgary_Weather | NaN |

| SUGGESTED CORRELATED FEATURES TO DELETE | | |
|---|------------------------|-------------|
| | 2 Feature(s) to Delete | Correlation |
| 0 | Calgary_Weather | 0.929 |
| 1 | Edmonton_Weather | 0.964 |

END OF REPORT