**INFORME DE RESULTADOS**

El periodo de predicción va a ser de 2021-01-01 a 2021-12-31. Todas las métricas globales van a ser evaluadas en este proceso.

**VARIABLES**

Var 1 🡪 df1 con lag 24 y sin demanda, eólica\_fotov y festivos

Var 2 🡪 Todas + lag24, 48 y 1 semana

Var 3 🡪 Todas + lag24, 48 y 1 semana, menos Brent, Demanda, Eolica, Festivo Regional, Humedad\_Relativa, Radiacion y Precipitacion

Var 4 🡪 Todas + lag24, menos Brent, Demanda, Eolica, Festivo Regional, Humedad\_Relativa, Radiacion y Precipitacion

**BASELINE**

Lo primero es la realización de un modelo baseline a partir del cual mejorar los subsecuentes posibles modelos.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| MODELO | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
| BASELINE | **16.07** | **8.92** | **85.53** | **14.36** | **27.38** | **74.84** |

**REGRESIÓN LINEAL**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
| Var 2 | No | 11.54 | 7.16 | 143.97 | 10.31 | 19.83 | 83.81 |
| Var 2 | 7 | 21.21 | 11 | 100.23 | 18.95 | 44.5 | 80.39 |
| Var 2 | 14 | 38.45 | 15.49 | 67.99 | 34.35 | 86 | 81.86 |
| Var 2 | 30 | 12.7 | 8.36 | 87.91 | 11.35 | 20.2 | 84.05 |
| Var 2 | 60 | 10.89 | 7.24 | 117.13 | 9.73 | 17.02 | 84.45 |
| Var 2 | 90 | 10.41 | 7.1 | 104.89 | 9.30 | 16.4 | 84.29 |
| Var 2 | 150 | 10.27 | 6.76 | 120.6 | 9.17 | 16.46 | 84.29 |
| Var 2 | **220** | **10.21** | **6.78** | **122.39** | **9.12** | **16.59** | **83.99** |
| Var 2 | 365 | 10.76 | 6.68 | 132.38 | 9.61 | 18.13 | 83.56 |
| Var 3 | No | 12.02 | 8.06 | 125.88 | 10.74 | 19.99 | 82.76 |
| Var 3 | 90 | 10.52 | 7.37 | 116.75 | 9.40 | 16.45 | 83.26 |
| Var 4 | 90 | 10.67 | 7.39 | 118.88 | 9.53 | 16.53 | 83.25 |
| Var 5 | 150 | 10.49 | 6.96 | 135.09 | 9.37 | 16.72 | 84.24 |

**REGRESIÓN LINEAL + SARIMA DE LOS RESIDUOS**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
| Var 2 | No |  |  |  |  |  |  |
| Var 2 | 7 | 10.43 | 6.81 | 123.48 | 9.31 | 17.05 | 83.43 |
| Var 2 | 14 | 10.33 | 6.72 | 123.12 | 9.23 | 16.99 | 83.62 |
| Var 2 | 30 |  |  |  |  |  |  |
| Var 2 | 60 |  |  |  |  |  |  |
| Var 2 | 90 |  |  |  |  |  |  |
| Var 2 | 150 |  |  |  |  |  |  |
| Var 2 | **220** |  |  |  |  |  |  |
| Var 2 | 365 |  |  |  |  |  |  |
| Var 3 | No |  |  |  |  |  |  |
| Var 3 | 90 |  |  |  |  |  |  |
| Var 4 | 90 |  |  |  |  |  |  |
| Var 5 | 150 |  |  |  |  |  |  |

**REGRESIÓN RIDGE**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
| Todas | No | 11.7 | 7.28 | 154.06 | 10.45 | 20.11 | 83.81 |
| Todas | 30 | 12.18 | 8.17 | 100.46 | 10.88 | 19.28 | 83.63 |
| Todas | 45 | 11.11 | 7.24 | 96.83 | 9.92 | 17.58 | 83.89 |
| Todas | 60 | 10.81 | 7.37 | 118.35 | 9.66 | 16.93 | 84.22 |
| Todas | 90 | 10.49 | 7.28 | 113.72 | 9.38 | 16.53 | 84.12 |
| Todas | 120 | 10.48 | 7.13 | 123.5 | 9.36 | 16.68 | 84.25 |
| Todas | 150 | 10.54 | 7.15 | 133.41 | 9.41 | 16.74 | 84.20 |
| Todas | **220** | **10.43** | **7.07** | **137.1** | **9.32** | **16.81** | **84.09** |
| Todas | 365 | 10.94 | 6.96 | 143.27 | 9.77 | 18.47 | 83.91 |

**REGRESIÓN LASSO**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**RANDOM FOREST**

Conf\_1 = (n\_estimators = 150, criterion = "mae",max\_depth = None,max\_features = X\_train.shape[1] -1, n\_jobs = -1, random\_state = 123)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
| Conf\_1 | No |  |  |  |  |  |  |
| Conf\_1 | 7 | 10.45 | 6.16 | 62.07 | 9.33 | 17.88 | 82.09 |
| Conf\_1 | 14 | 10.22 | 5.94 | 63.79 | 9.13 | 17.67 | 83.08 |
| Conf\_1 | 30 | 10.36 | 6.18 | 71.16 | 9.26 | 16.95 | 83.00 |
| Conf\_1 | 60 | 10.60 | 6.31 | 112.93 | 9.47 | 17.49 | 83.29 |
| Conf\_1 | 90 | 10.54 | 6.39 | 194.88 | 9.42 | 17.09 | 83.19 |
| Conf\_1 | 120 | 10.51 | 6.44 | 168.13 | 9.39 | 17.24 | 83.01 |
| Conf\_1 | 150 |  |  |  |  |  |  |
| Conf\_1 | 220 |  |  |  |  |  |  |
| Conf\_1 | 365 |  |  |  |  |  |  |

**XGBOOST**

(n\_estimators=1000,max\_depth=None,eta=0.1,subsample=0.7,colsample\_bytree=0.8)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
|  | None |  |  |  |  |  |  |
|  | 7 | 10.64 | 6.27 | 58.4 | 9.51 | 17.78 | 78.89 |
|  | 14 | 10.03 | 6.11 | 56.59 | 8.96 | 16.45 | 79.77 |
| 0.03 eta | 14 | 10.01 | 5.99 | 61.29 | 8.95 | 16.58 | 81.33 |
|  | 30 | 10.15 | 6.39 | 77.19 | 9.07 | 16.33 | 79.75 |
|  | 60 | 10.19 | 6.35 | 90.54 | 9.1 | 16.15 | 80.24 |

**SARIMA**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Rolling window | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |

**LSTM**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| LSTM, DROPOUT | Training | Retrain / steps\_epochs | MAE | MAE (median) | MAPE | WMAPE | RMSE | % TREND |
| (64,32,16; 0.2) | (100, 100) | (1, 24) | 14.02 | 8.05 | 200.75 | 12.53 | 23.45 | 81.63 |
| (64,32,16; 0.1) | (100, 100) | (3, 24) | 13.63 | 7.52 | 94.65 | 12.16 | 23.27 | 81.67 |
| (124, 64,32; 0.1) | (150, 100) | (5,24) | 13.67 | 7.45 | 64.96 | 12.19 | 23.29 | 81.75 |