

# Eksploratori dan Analisis Data COVID-19 Berdasarkan *Time Series Analysis*

## Deskripsi

COVID-19 merupakan virus yang menjadi pandemi pada tahun 2020 di Indonesia. Dalam kasus ini, berdasarkan data yang ada, dilakukanlah analisis dan prediksi untuk mendapatkan informasi mengenai data COVID-19 dan memprediksi pergerakan kasus COVID-19 dimasa yang akan datang.

We heal together.  
Stay home.  
Stay safe.

## Dataset

|     | Date     | Afghanistan | Albania | Algeria | Andorra | Angola | Antigua and Barbuda | Argentina | Armenia | Australia | ... | Uruguay | Uzbekistan | Vanuatu | Venezuela | Vietnam |
|-----|----------|-------------|---------|---------|---------|--------|---------------------|-----------|---------|-----------|-----|---------|------------|---------|-----------|---------|
| 1   | 1/23/20  | 0.0         | 0.0     | 0.0     | 0.0     | 0.0    | 0.0                 | 0.0       | 0.0     | 0.0       | ... | 0.0     | 0.0        | 0.0     | 0.0       | 0.0     |
| 2   | 1/24/20  | 0.0         | 0.0     | 0.0     | 0.0     | 0.0    | 0.0                 | 0.0       | 0.0     | 0.0       | ... | 0.0     | 0.0        | 0.0     | 0.0       | 0.0     |
| 3   | 1/25/20  | 0.0         | 0.0     | 0.0     | 0.0     | 0.0    | 0.0                 | 0.0       | 0.0     | 0.0       | ... | 0.0     | 0.0        | 0.0     | 0.0       | 0.0     |
| 4   | 1/26/20  | 0.0         | 0.0     | 0.0     | 0.0     | 0.0    | 0.0                 | 0.0       | 0.0     | 0.0       | ... | 0.0     | 0.0        | 0.0     | 0.0       | 0.0     |
| 5   | 1/27/20  | 0.0         | 0.0     | 0.0     | 0.0     | 0.0    | 0.0                 | 0.0       | 0.0     | 0.0       | ... | 0.0     | 0.0        | 0.0     | 0.0       | 0.0     |
| ... | ...      | ...         | ...     | ...     | ...     | ...    | ...                 | ...       | ...     | ...       | ... | ...     | ...        | ...     | ...       | ...     |
| 308 | 11/25/20 | 210.0       | 644.0   | 1025.0  | 77.0    | 79.0   | 1.0                 | 8593.0    | 1563.0  | 0.0       | ... | 118.0   | 242.0      | 0.0     | 319.0     | 5.0     |
| 309 | 11/26/20 | 226.0       | 656.0   | 1085.0  | 106.0   | 99.0   | 1.0                 | 9043.0    | 1785.0  | 1.0       | ... | 129.0   | 182.0      | 0.0     | 398.0     | 10.0    |
| 310 | 11/27/20 | 123.0       | 645.0   | 1058.0  | 76.0    | 88.0   | 0.0                 | 7846.0    | 1476.0  | 1.0       | ... | 186.0   | 104.0      | 0.0     | 309.0     | 8.0     |
| 311 | 11/28/20 | 127.0       | 545.0   | 1044.0  | 0.0     | 79.0   | 0.0                 | 6098.0    | 1248.0  | 0.0       | ... | 208.0   | 205.0      | 0.0     | 236.0     | 2.0     |
| 312 | 11/29/20 | 249.0       | 835.0   | 1009.0  | 102.0   | 16.0   | 0.0                 | 5432.0    | 1174.0  | 0.0       | ... | 205.0   | 152.0      | 0.0     | 280.0     | 2.0     |

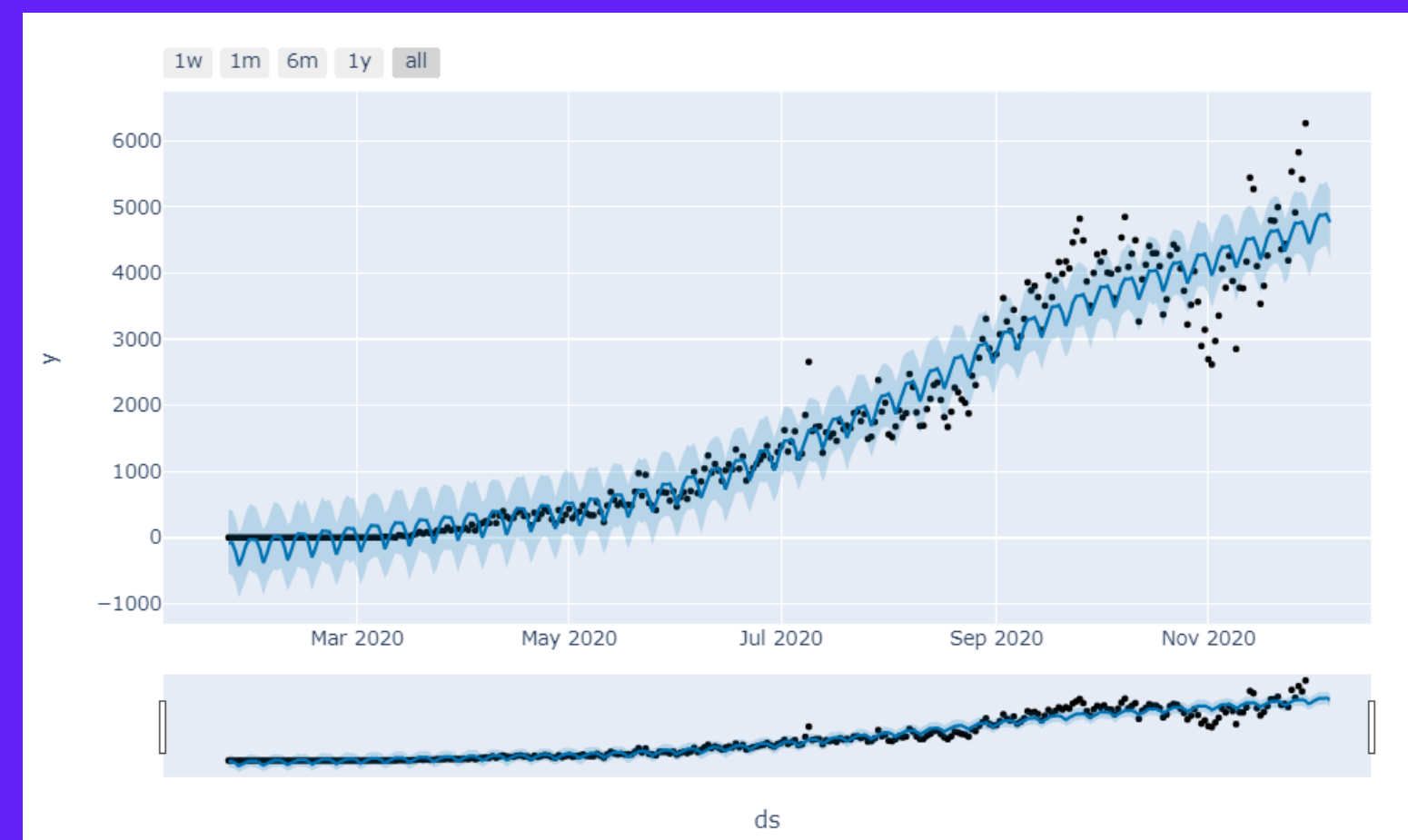
312 rows × 272 columns

## Pemodelan Prediksi

|     | ds         | trend       | weekly      | yhat        | yhat_lower  | yhat_upper  |
|-----|------------|-------------|-------------|-------------|-------------|-------------|
| 0   | 2020-01-24 | -194.460623 | 110.930298  | -83.530325  | -558.790533 | 425.939462  |
| 1   | 2020-01-25 | -188.427997 | 110.041711  | -78.386286  | -560.840361 | 379.680318  |
| 2   | 2020-01-26 | -182.395371 | -32.504228  | -214.899600 | -721.533791 | 245.949695  |
| 3   | 2020-01-27 | -176.362746 | -250.220180 | -426.582926 | -912.426085 | 5.540018    |
| 4   | 2020-01-28 | -170.330120 | -118.055732 | -288.385852 | -799.755710 | 172.944132  |
| ... | ...        | ...         | ...         | ...         | ...         | ...         |
| 313 | 2020-12-02 | 4730.930873 | 49.167902   | 4780.098775 | 4311.539312 | 5297.923501 |
| 314 | 2020-12-03 | 4748.184064 | 130.640230  | 4878.824294 | 4427.377874 | 5361.385824 |
| 315 | 2020-12-04 | 4765.437255 | 110.930298  | 4876.367552 | 4383.624596 | 5361.696720 |
| 316 | 2020-12-05 | 4782.690445 | 110.041711  | 4892.732156 | 4416.240963 | 5351.398433 |
| 317 | 2020-12-06 | 4799.943636 | -32.504228  | 4767.439408 | 4261.565791 | 5237.002332 |

318 rows × 6 columns

## Hasil Prediksi



## Hasil Evaluasi

|   | horizon | mse           | rmse       | mae        | mape     | mdape    | smape    | coverage |
|---|---------|---------------|------------|------------|----------|----------|----------|----------|
| 0 | 1 days  | 617901.955201 | 786.067399 | 629.040452 | 0.216304 | 0.154827 | 0.190449 | 0.222222 |
| 1 | 2 days  | 362953.308041 | 602.456063 | 467.701220 | 0.152805 | 0.101302 | 0.139356 | 0.277778 |
| 2 | 3 days  | 372688.374103 | 610.482083 | 495.906318 | 0.141138 | 0.159153 | 0.139777 | 0.222222 |
| 3 | 4 days  | 340849.945022 | 583.823556 | 467.826202 | 0.123452 | 0.101549 | 0.124870 | 0.333333 |
| 4 | 5 days  | 668157.994425 | 817.409319 | 673.948707 | 0.178928 | 0.165923 | 0.177119 | 0.222222 |
| 5 | 6 days  | 560335.673146 | 748.555725 | 654.638673 | 0.180107 | 0.147940 | 0.177975 | 0.111111 |
| 6 | 7 days  | 761073.873919 | 872.395480 | 641.204671 | 0.185137 | 0.167070 | 0.175625 | 0.388889 |

