

Prognoza pogody w Hiszpanii w 2012 roku

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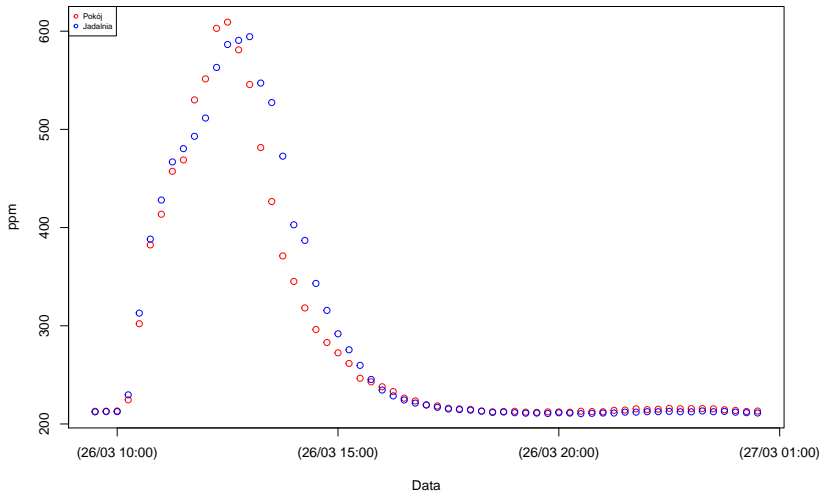
Prezentacja danych

Zbiór zawiera dane pochodzące z pewnego domostwa w Hiszpanii zapisywane przez system monitorujący. Dane pobierane były co minutę, a następnie zostały wygładzone w 15 minutowych odstępach za pomocą średniej.

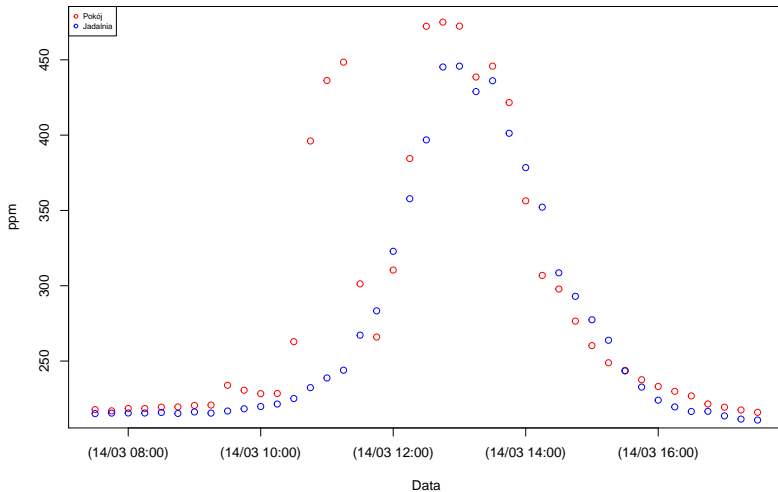
Prezentacja danych

- ▶ Temperatura w pokoju oraz jadalni
- ▶ Prognozę temperatury na zewnątrz
- ▶ Zawartość CO₂ (dwutlenku węgla) w pokoju oraz jadalni
- ▶ Względna wilgotność powietrza w pokoju oraz jadalni
- ▶ Natężenie oświetlenia
- ▶ Opady deszczu
- ▶ Prędkość wiatru
- ▶ Oświetlenie mieszkania
- ▶ Promieniowanie słoneczne
- ▶ Rzeczywista temperatura na zewnątrz
- ▶ Rzeczywista względna wilgotność powietrza
- ▶ Dzień tygodnia

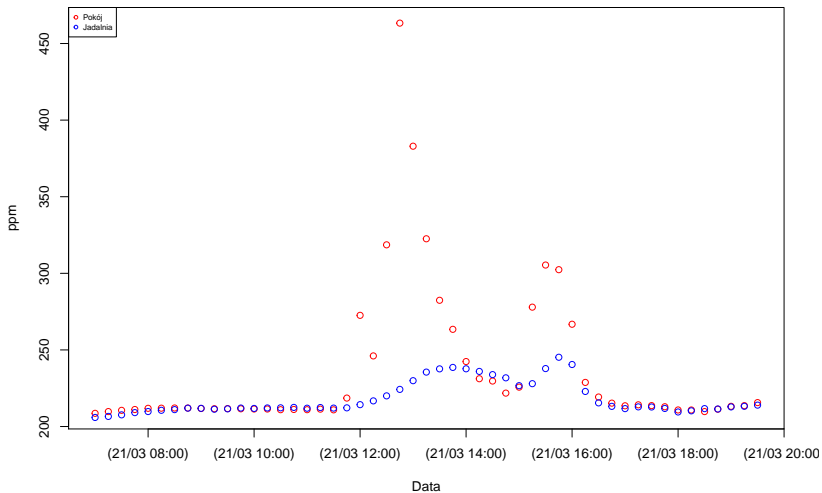
Zmiany zawartości CO₂ w powietrzu 26 marca



Zmiany zawartości CO₂ w powietrzu 14 marca



Zmiany zawartości CO₂ w powietrzu 21 marca



Model regresji wielorakiej dla temperatury w jadalni

| 3:Temperature Comedor Sensor | | | |
|--|---------------|---------------|--------|
| Predictors | Estimates | CI | p |
| (Intercept) | 1.07 | 0.85 – 1.30 | <0.001 |
| `4:Temperature_Habitacion_Sensor` | 0.94 | 0.93 – 0.96 | <0.001 |
| `6:CO2_Comedor_Sensor` | 0.01 | 0.01 – 0.01 | <0.001 |
| `7:CO2_Habitacion_Sensor` | -0.01 | -0.01 – -0.01 | <0.001 |
| `8:Humedad_Comedor_Sensor` | -0.01 | -0.02 – -0.00 | 0.001 |
| `9:Humedad_Habitacion_Sensor` | 0.02 | 0.01 – 0.03 | <0.001 |
| `10:Lighting_Comedor_Sensor` | 0.00 | 0.00 – 0.01 | 0.005 |
| `11:Lighting_Habitacion_Sensor` | -0.00 | -0.00 – 0.00 | 0.054 |
| `12:Precipitacion` | 0.01 | -0.06 – 0.09 | 0.746 |
| `14:Meteo_Exterior_Viento` | -0.07 | -0.09 – -0.05 | <0.001 |
| `15:Meteo_Exterior_Sol_Oest` | 0.00 | 0.00 – 0.00 | <0.001 |
| `16:Meteo_Exterior_Sol_Est` | 0.00 | 0.00 – 0.00 | 0.018 |
| `17:Meteo_Exterior_Sol_Sud` | -0.00 | -0.00 – 0.00 | 0.253 |
| `18:Meteo_Exterior_Piranometro` | -0.00 | -0.00 – -0.00 | <0.001 |
| `22:Temperature_Exterior_Sensor` | 0.05 | 0.03 – 0.06 | <0.001 |
| `23:Humedad_Exterior_Sensor` | -0.01 | -0.01 – -0.01 | <0.001 |
| `24:Day_Of_Week` | 0.01 | 0.01 – 0.02 | <0.001 |
| Observations | 2764 | | |
| R ² / adjusted R ² | 0.988 / 0.988 | | |

| 3:Temperature Comedor Sensor | | | |
|--|---------------|---------------|--------|
| Predictors | Estimates | CI | p |
| (Intercept) | 1.46 | 0.97 – 1.94 | <0.001 |
| `4:Temperature_Habitacion_Sensor` | 0.95 | 0.93 – 0.97 | <0.001 |
| `6:CO2_Comedor_Sensor` | 0.02 | 0.01 – 0.03 | <0.001 |
| `7:CO2_Habitacion_Sensor` | -0.02 | -0.03 – -0.01 | <0.001 |
| `8:Humedad_Comedor_Sensor` | -0.01 | -0.02 – -0.00 | 0.005 |
| `9:Humedad_Habitacion_Sensor` | 0.02 | 0.01 – 0.03 | <0.001 |
| `11:Lighting_Habitacion_Sensor` | -0.00 | -0.01 – -0.00 | 0.026 |
| `14:Meteo_Exterior_Viento` | -0.08 | -0.10 – -0.06 | <0.001 |
| `22:Temperature_Exterior_Sensor` | 0.05 | 0.03 – 0.06 | <0.001 |
| `23:Humedad_Exterior_Sensor` | -0.01 | -0.01 – -0.01 | <0.001 |
| `24:Day_Of_Week` | 0.01 | 0.01 – 0.02 | <0.001 |
| Observations | 1947 | | |
| R ² / R ² adjusted | 0.990 / 0.990 | | |

Wybór modelu dla jadalni

```
## Warning: package 'Metrics' was built under R version 3.5
```

```
## [1] 0.2094367
```

```
## [1] 0.238235
```

```
## Warning in BIC.default(model_3, model_ob_7): models are  
## the same number of observations
```

```
##           df      BIC
```

```
## model_3    16 1601.3333
```

```
## model_ob_7 12  860.7316
```

```
## Warning in AIC.default(model_3, model_ob_7): models are  
## the same number of observations
```

```
##           df      AIC
```

```
## model_3    16 1506.542
```

```
## model_ob_7 12  793.843
```


Model regresji wielorakiej dla temperatury w pokoju

| 4:Temperature Habitación Sensor | | | |
|--|------------------|---------------|----------|
| <i>Predictors</i> | <i>Estimates</i> | <i>CI</i> | <i>p</i> |
| (Intercept) | 0.40 | 0.18 – 0.62 | <0.001 |
| `3:Temperature_Comedor_Sensor` | 0.90 | 0.88 – 0.91 | <0.001 |
| `6:CO2_Comedor_Sensor` | -0.01 | -0.01 – -0.01 | <0.001 |
| `7:CO2_Habitacion_Sensor` | 0.01 | 0.01 – 0.01 | <0.001 |
| `8:Humedad_Comedor_Sensor` | 0.03 | 0.03 – 0.04 | <0.001 |
| `9:Humedad_Habitacion_Sensor` | -0.06 | -0.07 – -0.05 | <0.001 |
| `11:Lighting_Habitacion_Sensor` | 0.00 | 0.00 – 0.00 | 0.005 |
| `12:Precipitacion` | -0.15 | -0.23 – -0.08 | <0.001 |
| `14:Meteo_Exterior_Viento` | 0.03 | 0.01 – 0.05 | 0.005 |
| `15:Meteo_Exterior_Sol_Oest` | -0.00 | -0.00 – -0.00 | <0.001 |
| `16:Meteo_Exterior_Sol_Est` | -0.00 | -0.00 – -0.00 | 0.021 |
| `22:Temperature_Exterior_Sensor` | 0.08 | 0.06 – 0.09 | <0.001 |
| `23:Humedad_Exterior_Sensor` | 0.02 | 0.02 – 0.02 | <0.001 |
| `24:Day_Of_Week` | -0.01 | -0.02 – -0.01 | <0.001 |
| Observations | 2764 | | |
| R ² / R ² adjusted | 0.988 / 0.988 | | |

| 4:Temperature Habitación Sensor | | | |
|--|------------------|---------------|----------|
| <i>Predictors</i> | <i>Estimates</i> | <i>CI</i> | <i>p</i> |
| (Intercept) | 1.21 | 0.73 – 1.70 | <0.001 |
| `3:Temperature_Comedor_Sensor` | 0.87 | 0.85 – 0.89 | <0.001 |
| `6:CO2_Comedor_Sensor` | -0.03 | -0.04 – -0.03 | <0.001 |
| `7:CO2_Habitacion_Sensor` | 0.03 | 0.03 – 0.04 | <0.001 |
| `8:Humedad_Comedor_Sensor` | 0.04 | 0.03 – 0.04 | <0.001 |
| `9:Humedad_Habitacion_Sensor` | -0.06 | -0.07 – -0.06 | <0.001 |
| `10:Lighting_Comedor_Sensor` | -0.01 | -0.01 – -0.00 | 0.027 |
| `12:Precipitacion` | -0.16 | -0.23 – -0.09 | <0.001 |
| `14:Meteo_Exterior_Viento` | 0.03 | 0.01 – 0.06 | 0.003 |
| `17:Meteo_Exterior_Sol_Sud` | 0.00 | 0.00 – 0.00 | 0.015 |
| `18:Meteo_Exterior_Piranometro` | -0.00 | -0.00 – -0.00 | 0.003 |
| `22:Temperature_Exterior_Sensor` | 0.09 | 0.08 – 0.11 | <0.001 |
| `23:Humedad_Exterior_Sensor` | 0.02 | 0.02 – 0.02 | <0.001 |
| `24:Day_Of_Week` | -0.01 | -0.02 – -0.01 | <0.001 |
| Observations | 1947 | | |
| R ² / R ² adjusted | 0.991 / 0.991 | | |

Wybór modelu dla pokoju

```
## [1] 0.1706739
```

```
## [1] 0.5654549
```

```
## Warning in BIC.default(model_p_3, model_p_ob_4): models  
## to the same number of observations
```

| ## | df | BIC |
|-----------------|----|-----------|
| ## model_p_3 | 15 | 1472.5583 |
| ## model_p_ob_4 | 15 | 699.3859 |

```
## Warning in AIC.default(model_p_3, model_p_ob_4): models  
## to the same number of observations
```

| ## | df | AIC |
|-----------------|----|-----------|
| ## model_p_3 | 15 | 1383.6918 |
| ## model_p_ob_4 | 15 | 615.7752 |