

# CV-scores for extra/missing observations

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*7/15/2019*

Since CV scores on wili-jfk and wili-ny-upstate series are not consistent in most of the models, it is difficult to select models which give small values of RMSE in both series. Therefore, I chose three combinations of dummy variables and transformation with consistently good performance in wili-jfk and fitted models of these three combinations with series that have extra observations in wiki data.

1) Local level + cycle of 52,26,13 + no\_dummy + log transformation

| ##   | wili_jfk  | wili_ny_upstate | wiki_common_cold | wiki_cough | wiki_influenza |
|------|-----------|-----------------|------------------|------------|----------------|
| ## 1 | 0.4004570 | 1.027307        | 2.334201         | 3.239656   | 4.059182       |
| ## 2 | 0.4038837 | 1.119522        | 2.591170         | 3.288637   | 4.205636       |
| ## 3 | 0.3996668 | 1.194427        | 2.914875         | 3.357438   | 4.446806       |
| ## 4 | 0.3999014 | 1.255096        | 3.309160         | 3.437782   | 4.700462       |

2) Local level + cycle of 52,26,13 + dummy(christmas) + log transformation

| ##   | wili_jfk  | wili_ny_upstate | wiki_common_cold | wiki_cough | wiki_influenza |
|------|-----------|-----------------|------------------|------------|----------------|
| ## 1 | 0.4096997 | 1.037412        | 2.347054         | 3.264272   | 4.092824       |
| ## 2 | 0.4209748 | 1.154853        | 2.555451         | 3.333080   | 4.300388       |
| ## 3 | 0.4194373 | 1.223985        | 2.721100         | 3.390955   | 4.474170       |
| ## 4 | 0.4166563 | 1.283235        | 2.885335         | 3.447898   | 4.634839       |

3) Local level + cycle of 52,26,13 + dummy(christmas) + power transformation

| ##   | wili_jfk  | wili_ny_upstate | wiki_common_cold | wiki_cough | wiki_influenza |
|------|-----------|-----------------|------------------|------------|----------------|
| ## 1 | 0.4032197 | 0.9443007       | 1.682936         | 3.169696   | 3.498489       |
| ## 2 | 0.4069215 | 1.0415070       | 1.770947         | 3.205884   | 3.670216       |
| ## 3 | 0.4087534 | 1.0990717       | 1.843811         | 3.231353   | 3.853432       |
| ## 4 | 0.4093688 | 1.1479414       | 1.920251         | 3.255304   | 3.988834       |