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Interstate infection interaction

Modeling and evaluation

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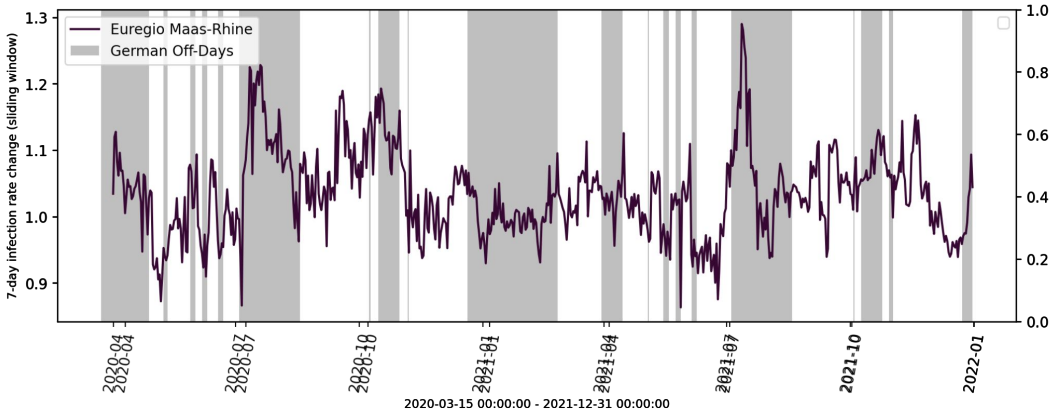
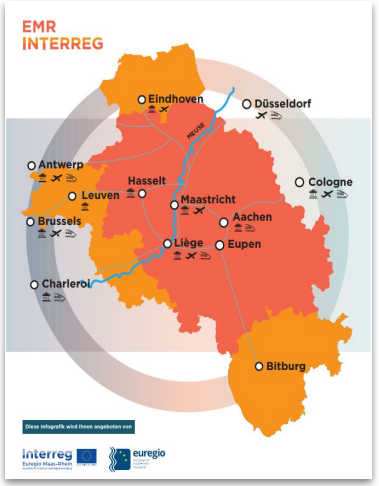
Premise

Look at states but not EMR





https://euregio-mr.info/

Hypothesis

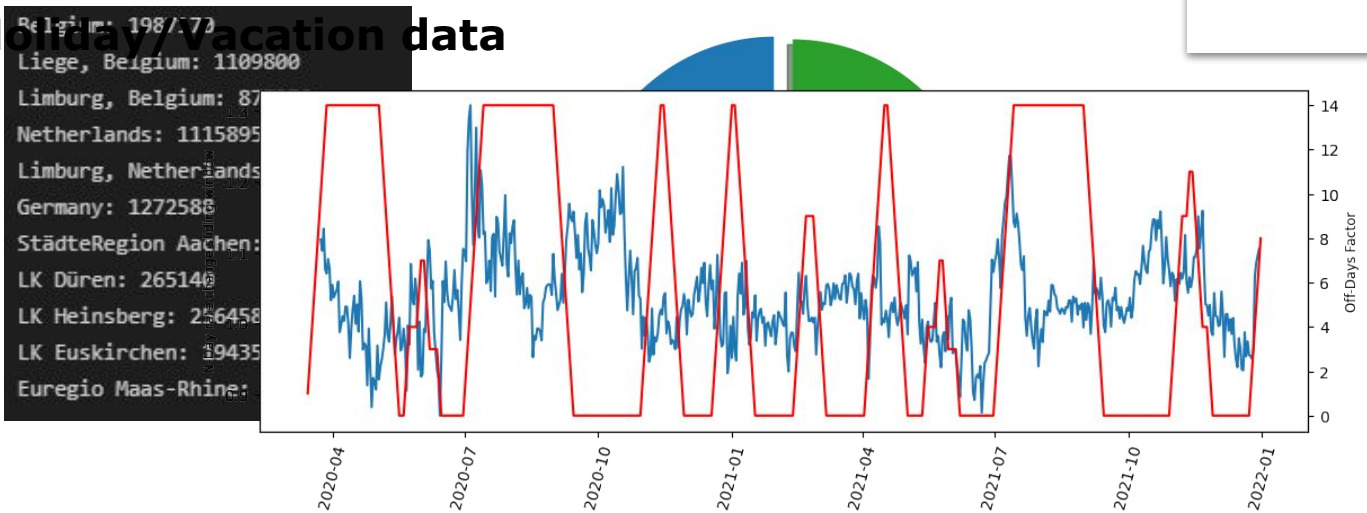
Vacations and holidays have a visible impact on infections statewise, crossborder and the EMR as a whole.

Data Preparation

Infection data from
RKI, Sciensano Epistat, Rivm

Population numbers

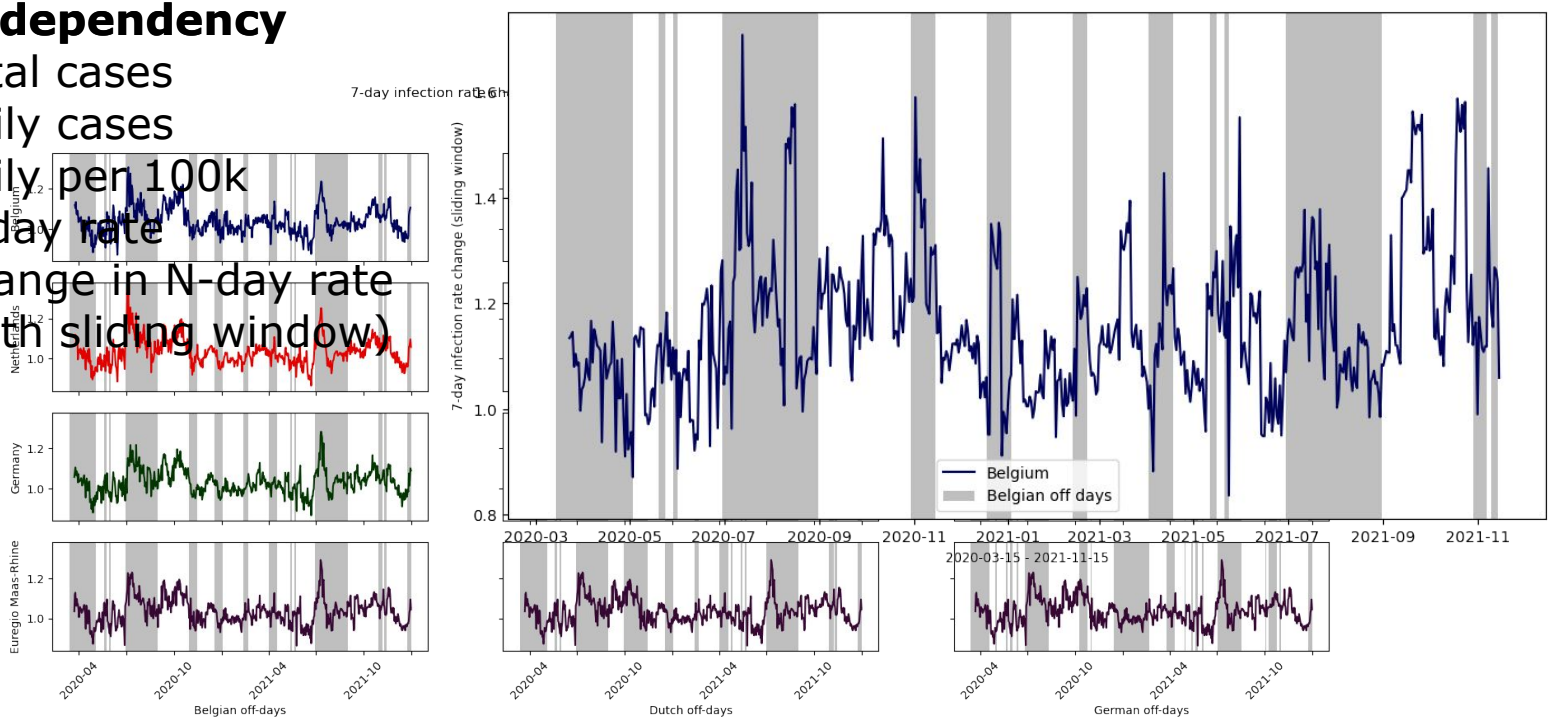
Holiday/Vacation data



Visualization

Visual dependency

- Total cases
- Daily cases
- Daily per 100k
- N-day rate
- Change in N-day rate
- (with sliding window)



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Regression Training

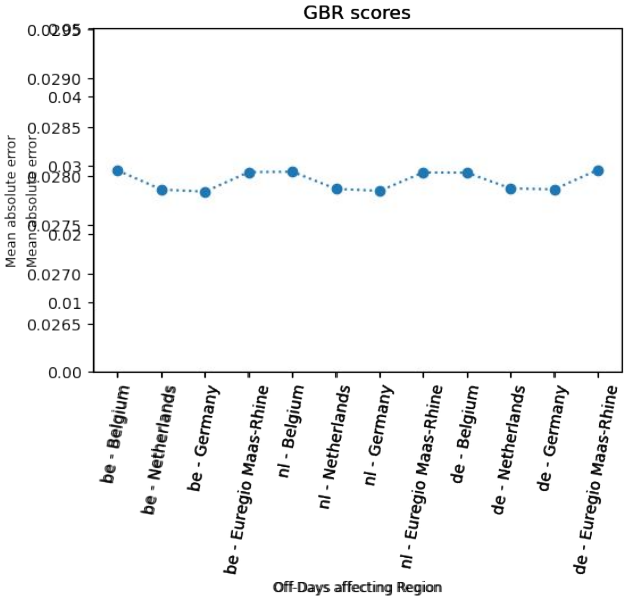
F(Off-Days, NDRC_Yesterday) = NDRC_Today

NDRC = N-day rate change (sliding window)

Comparison of

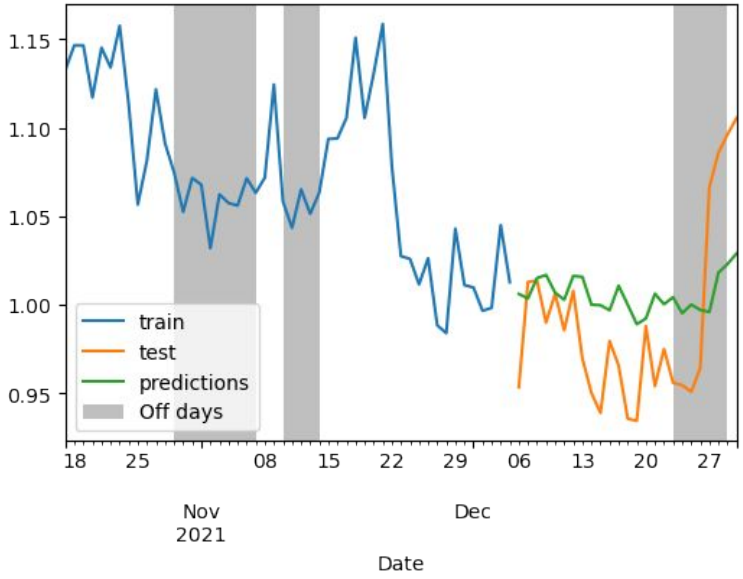
- Ridge Regression
- Support Vector Machine
- Gradient Boosted Regressor

Used as a benchmark for predictability

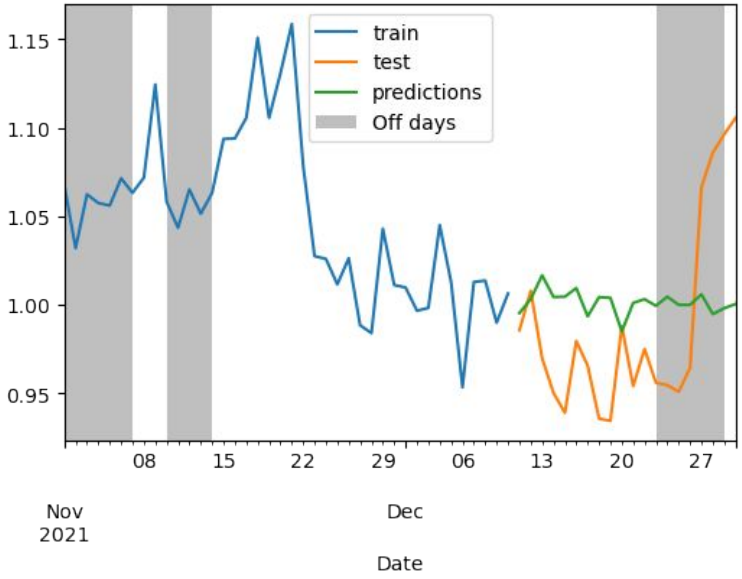


Forecasting

skforecast
Real case data supported
(day to day)

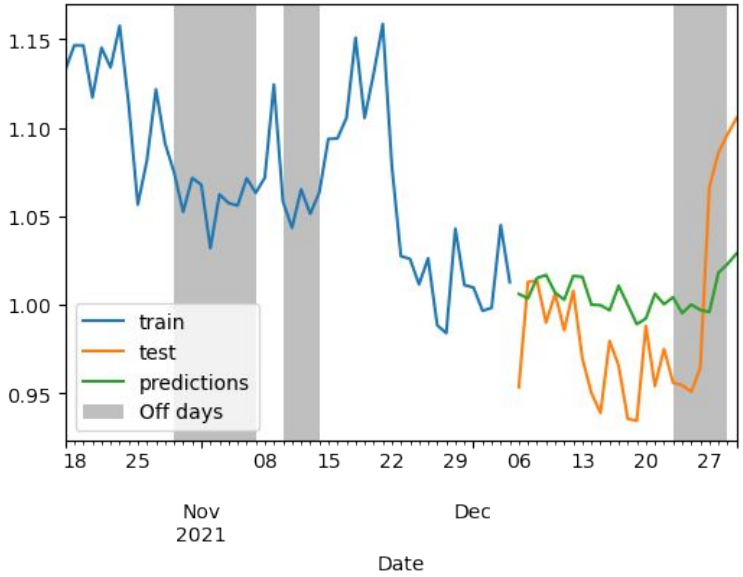


skforecast
No real case data in training

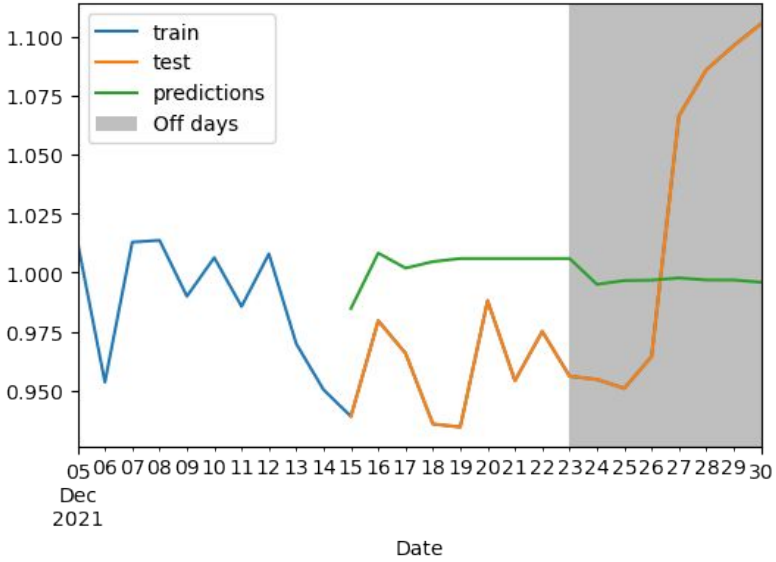


Forecasting

skforecast
Real data supported (day to day)



manual forecast
learned data propagation



Conclusion

Good tendencies on day-to-day prediction

Decent forecast range up to 2-3 days

One of multiple impacting factors

Not usable as a sole factor, but a good addition to any forecasting attempt combining factors from different areas.