Summary of training phase forecasting results: German flu forecasting

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Overview

This document summarizes the performance of time-series forecasting models developed by UMass-Amherst Biostatistics PhD students for a PhD Seminar. The goal was to create forecasting models that accurately forecasted influenza incidence in Germany. We used as the gold-standard data a time series obtained from the Robert Koch Institut (RKI), a national public health agency in Germany. The training dataset is shown below.

Results across all regions

model	avg_bias	ci50_cov	ci80_cov	ci90_cov
DL4EPI	0.37	0.60	0.76	0.79
hetGPModel	-0.33	0.39	0.66	0.70
sarima	-1.85	0.48	0.78	0.86
seasonalGAM	-0.97	0.73	0.88	0.90
SIRS_EAKF_model	-0.92	0.18	0.41	0.50

Results by region

location	DL4EPI	hetGPModel	sarima	seasonalGAM	SIRS_EAKF_model
Baden-Württemberg	0.81	0.63	-0.50	0.04	0.85
Bavaria	1.41	0.98	-0.55	0.27	1.59
Berlin	-0.05	-0.67	-2.05	-1.32	-0.53
Brandenburg	0.22	-0.34	-2.48	-1.46	-0.93
Bremen	0.25	0.12	-0.20	-0.01	-0.16
Hamburg	-0.13	-2.26	-3.15	-2.01	-1.44
Hesse	0.23	0.07	-0.55	-0.27	-0.05
Lower Saxony	0.52	0.12	-0.58	-0.18	0.30
Mecklenburg-Vorpommern	-0.06	-1.74	-4.58	-2.75	-2.76
North Rhine-Westphalia	0.15	-0.26	-0.58	-0.33	-0.27
Rhineland-Palatinate	0.66	0.28	-1.17	-0.43	0.32
Saarland	0.29	-0.03	-0.38	-0.11	0.18
Saxony	1.31	1.26	-3.33	-1.39	-2.96
Saxony-Anhalt	0.54	-2.31	-4.64	-2.50	-4.98
Schleswig-Holstein	0.14	-0.10	-0.93	-0.56	0.03
Thuringia	-0.40	-1.00	-3.94	-2.45	-3.95