### Simple per-class model (linear / random forest):

Final Summary – All Departments

📌 Department: אורולוגיה ואאג

target\_avg\_3days: MAE=3.7, RMSE=4.84, R2=0.72

target\_avg\_7days: MAE=3.39, RMSE=4.31, R2=0.72

target\_day\_1: MAE=4.14, RMSE=5.64, R2=0.7

target\_day\_2: MAE=4.52, RMSE=6.04, R2=0.66

target\_day\_3: MAE=4.76, RMSE=6.37, R2=0.62

target\_day\_4: MAE=4.78, RMSE=6.28, R2=0.62

target\_day\_5: MAE=4.89, RMSE=6.35, R2=0.61

target\_day\_6: MAE=4.95, RMSE=6.45, R2=0.59

target\_day\_7: MAE=5.06, RMSE=6.68, R2=0.56

📌 Department: אורתופדיה ונוירוכירורגיה

target\_avg\_3days: MAE=3.38, RMSE=4.27, R2=0.72

target\_avg\_7days: MAE=3.47, RMSE=4.27, R2=0.68

target\_day\_1: MAE=3.71, RMSE=4.91, R2=0.69

target\_day\_2: MAE=4.05, RMSE=5.22, R2=0.65

target\_day\_3: MAE=4.2, RMSE=5.38, R2=0.63

target\_day\_4: MAE=4.28, RMSE=5.57, R2=0.6

target\_day\_5: MAE=4.56, RMSE=5.95, R2=0.54

target\_day\_6: MAE=4.81, RMSE=6.17, R2=0.51

target\_day\_7: MAE=4.82, RMSE=6.2, R2=0.5

📌 Department: כירורגיה כללית

target\_avg\_3days: MAE=4.02, RMSE=5.36, R2=0.63

target\_avg\_7days: MAE=3.73, RMSE=4.78, R2=0.57

target\_day\_1: MAE=4.3, RMSE=5.97, R2=0.69

target\_day\_2: MAE=4.79, RMSE=6.61, R2=0.62

target\_day\_3: MAE=4.97, RMSE=6.8, R2=0.59

target\_day\_4: MAE=4.96, RMSE=6.82, R2=0.59

target\_day\_5: MAE=5.12, RMSE=6.99, R2=0.57

target\_day\_6: MAE=5.06, RMSE=6.9, R2=0.58

target\_day\_7: MAE=5.23, RMSE=7.21, R2=0.54

📌 Department: כירורגית לב חזה

target\_avg\_3days: MAE=0.69, RMSE=0.9, R2=0.16

target\_avg\_7days: MAE=0.54, RMSE=0.7, R2=0.27

target\_day\_1: MAE=0.8, RMSE=1.15, R2=0.1

target\_day\_2: MAE=0.85, RMSE=1.19, R2=0.04

target\_day\_3: MAE=0.89, RMSE=1.23, R2=-0.02

target\_day\_4: MAE=0.82, RMSE=1.16, R2=0.09

target\_day\_5: MAE=0.91, RMSE=1.25, R2=-0.05

target\_day\_6: MAE=0.89, RMSE=1.22, R2=0.01

target\_day\_7: MAE=0.85, RMSE=1.13, R2=0.03

📌 Department: פנימית/המטולוגיה/אונקו

target\_avg\_3days: MAE=1.06, RMSE=1.21, R2=-0.28

target\_avg\_7days: MAE=0.96, RMSE=1.12, R2=-1.58

target\_day\_1: MAE=1.27, RMSE=1.57, R2=-0.76

target\_day\_2: MAE=1.41, RMSE=1.74, R2=-1.23

target\_day\_3: MAE=1.36, RMSE=1.67, R2=-1.17

target\_day\_4: MAE=1.4, RMSE=1.65, R2=-1.32

target\_day\_5: MAE=1.36, RMSE=1.54, R2=-2.14

target\_day\_6: MAE=1.38, RMSE=1.59, R2=-9.13

target\_day\_7: MAE=1.68, RMSE=1.74, R2=0.0

### Gradient Boosting:

Final Summary – All Departments

📌 Department: אורולוגיה ואאג

target\_avg\_3days: MAE=3.76, RMSE=4.84, R2=0.71

target\_avg\_7days: MAE=3.44, RMSE=4.35, R2=0.71

target\_day\_1: MAE=4.31, RMSE=5.71, R2=0.69

target\_day\_2: MAE=4.64, RMSE=6.16, R2=0.64

target\_day\_3: MAE=4.89, RMSE=6.46, R2=0.6

target\_day\_4: MAE=4.86, RMSE=6.4, R2=0.6

target\_day\_5: MAE=5.1, RMSE=6.67, R2=0.57

target\_day\_6: MAE=4.92, RMSE=6.48, R2=0.59

target\_day\_7: MAE=5.04, RMSE=6.71, R2=0.56

📌 Department: אורתופדיה ונוירוכירורגיה

target\_avg\_3days: MAE=3.45, RMSE=4.42, R2=0.71

target\_avg\_7days: MAE=3.51, RMSE=4.42, R2=0.66

target\_day\_1: MAE=3.73, RMSE=4.9, R2=0.69

target\_day\_2: MAE=4.12, RMSE=5.33, R2=0.63

target\_day\_3: MAE=4.27, RMSE=5.6, R2=0.6

target\_day\_4: MAE=4.48, RMSE=5.91, R2=0.55

target\_day\_5: MAE=4.67, RMSE=6.12, R2=0.51

target\_day\_6: MAE=4.89, RMSE=6.34, R2=0.47

target\_day\_7: MAE=5.06, RMSE=6.44, R2=0.44

📌 Department: כירורגיה כללית

target\_avg\_3days: MAE=3.99, RMSE=5.23, R2=0.64

target\_avg\_7days: MAE=3.62, RMSE=4.69, R2=0.58

target\_day\_1: MAE=4.47, RMSE=6.07, R2=0.68

target\_day\_2: MAE=4.85, RMSE=6.57, R2=0.62

target\_day\_3: MAE=5.05, RMSE=6.95, R2=0.58

target\_day\_4: MAE=5.19, RMSE=7.05, R2=0.56

target\_day\_5: MAE=5.36, RMSE=7.18, R2=0.54

target\_day\_6: MAE=5.41, RMSE=7.3, R2=0.52

target\_day\_7: MAE=5.44, RMSE=7.43, R2=0.5

📌 Department: כירורגית לב חזה

target\_avg\_3days: MAE=0.68, RMSE=0.91, R2=0.15

target\_avg\_7days: MAE=0.54, RMSE=0.69, R2=0.3

target\_day\_1: MAE=0.79, RMSE=1.13, R2=0.13

target\_day\_2: MAE=0.84, RMSE=1.19, R2=0.05

target\_day\_3: MAE=0.9, RMSE=1.25, R2=-0.05

target\_day\_4: MAE=0.81, RMSE=1.17, R2=0.09

target\_day\_5: MAE=0.88, RMSE=1.23, R2=-0.01

target\_day\_6: MAE=0.82, RMSE=1.13, R2=0.03

target\_day\_7: MAE=0.78, RMSE=1.06, R2=0.13

📌 Department: פנימית/המטולוגיה/אונקו

target\_avg\_3days: MAE=1.03, RMSE=1.11, R2=-0.09

target\_avg\_7days: MAE=0.84, RMSE=0.95, R2=-1.6

target\_day\_1: MAE=1.1, RMSE=1.2, R2=-0.02

target\_day\_2: MAE=1.06, RMSE=1.16, R2=0.0

target\_day\_3: MAE=1.13, RMSE=1.2, R2=-0.15

target\_day\_4: MAE=1.27, RMSE=1.32, R2=-1.19

target\_day\_5: MAE=1.19, RMSE=1.25, R2=-4.91

target\_day\_6: MAE=1.06, RMSE=1.14, R2=0.0

target\_day\_7: MAE=1.17, RMSE=1.2, R2=0.0

### XGBoost:

Final Summary – All Departments

📌 Department: אורולוגיה ואאג

target\_avg\_3days: MAE=3.75, RMSE=4.980000019073486, R2=0.6899999976158142

target\_avg\_7days: MAE=3.569999933242798, RMSE=4.489999771118164, R2=0.699999988079071

target\_day\_1: MAE=4.269999980926514, RMSE=5.699999809265137, R2=0.6899999976158142

target\_day\_2: MAE=4.579999923706055, RMSE=6.070000171661377, R2=0.6499999761581421

target\_day\_3: MAE=4.900000095367432, RMSE=6.480000019073486, R2=0.6000000238418579

target\_day\_4: MAE=4.869999885559082, RMSE=6.389999866485596, R2=0.6000000238418579

target\_day\_5: MAE=4.900000095367432, RMSE=6.420000076293945, R2=0.6000000238418579

target\_day\_6: MAE=4.880000114440918, RMSE=6.489999771118164, R2=0.5899999737739563

target\_day\_7: MAE=5.010000228881836, RMSE=6.730000019073486, R2=0.550000011920929

📌 Department: אורתופדיה ונוירוכירורגיה

target\_avg\_3days: MAE=3.319999933242798, RMSE=4.28000020980835, R2=0.7200000286102295

target\_avg\_7days: MAE=3.490000009536743, RMSE=4.340000152587891, R2=0.6700000166893005

target\_day\_1: MAE=3.569999933242798, RMSE=4.75, R2=0.7099999785423279

target\_day\_2: MAE=4.139999866485596, RMSE=5.329999923706055, R2=0.6399999856948853

target\_day\_3: MAE=4.150000095367432, RMSE=5.400000095367432, R2=0.6299999952316284

target\_day\_4: MAE=4.449999809265137, RMSE=5.849999904632568, R2=0.5600000023841858

target\_day\_5: MAE=4.730000019073486, RMSE=6.179999828338623, R2=0.5

target\_day\_6: MAE=5.010000228881836, RMSE=6.510000228881836, R2=0.4399999976158142

target\_day\_7: MAE=4.889999866485596, RMSE=6.289999961853027, R2=0.4699999988079071

📌 Department: כירורגיה כללית

target\_avg\_3days: MAE=4.110000133514404, RMSE=5.510000228881836, R2=0.6100000143051147

target\_avg\_7days: MAE=3.799999952316284, RMSE=4.96999979019165, R2=0.5299999713897705

target\_day\_1: MAE=4.440000057220459, RMSE=6.110000133514404, R2=0.6700000166893005

target\_day\_2: MAE=4.840000152587891, RMSE=6.639999866485596, R2=0.6100000143051147

target\_day\_3: MAE=5.03000020980835, RMSE=6.869999885559082, R2=0.5899999737739563

target\_day\_4: MAE=5.210000038146973, RMSE=7.070000171661377, R2=0.5600000023841858

target\_day\_5: MAE=5.340000152587891, RMSE=7.260000228881836, R2=0.5299999713897705

target\_day\_6: MAE=5.269999980926514, RMSE=7.139999866485596, R2=0.5400000214576721

target\_day\_7: MAE=5.260000228881836, RMSE=7.269999980926514, R2=0.5299999713897705

📌 Department: כירורגית לב חזה

target\_avg\_3days: MAE=0.75, RMSE=1.0, R2=-0.009999999776482582

target\_avg\_7days: MAE=0.5699999928474426, RMSE=0.7400000095367432, R2=0.17000000178813934

target\_day\_1: MAE=0.9100000262260437, RMSE=1.3799999952316284, R2=-0.2800000011920929

target\_day\_2: MAE=0.9700000286102295, RMSE=1.399999976158142, R2=-0.3199999928474426

target\_day\_3: MAE=1.0399999618530273, RMSE=1.5199999809265137, R2=-0.550000011920929

target\_day\_4: MAE=0.800000011920929, RMSE=1.1699999570846558, R2=0.07999999821186066

target\_day\_5: MAE=0.9399999976158142, RMSE=1.3600000143051147, R2=-0.23999999463558197

target\_day\_6: MAE=0.9100000262260437, RMSE=1.2699999809265137, R2=-0.2199999988079071

target\_day\_7: MAE=0.9300000071525574, RMSE=1.2699999809265137, R2=-0.25999999046325684

📌 Department: פנימית/המטולוגיה/אונקו

target\_avg\_3days: MAE=1.3300000429153442, RMSE=1.6799999475479126, R2=-1.5199999809265137

target\_avg\_7days: MAE=1.2000000476837158, RMSE=1.3799999952316284, R2=-4.449999809265137

target\_day\_1: MAE=1.8799999952316284, RMSE=2.319999933242798, R2=-2.819999933242798

target\_day\_2: MAE=1.909999966621399, RMSE=2.369999885559082, R2=-3.180000066757202

target\_day\_3: MAE=1.4199999570846558, RMSE=1.6399999856948853, R2=-1.149999976158142

target\_day\_4: MAE=1.8799999952316284, RMSE=2.369999885559082, R2=-6.03000020980835

target\_day\_5: MAE=1.5099999904632568, RMSE=1.7200000286102295, R2=-10.109999656677246

target\_day\_6: MAE=1.649999976158142, RMSE=1.899999976158142, R2=0.0

target\_day\_7: MAE=1.9900000095367432, RMSE=2.0799999237060547, R2=0.0  
  
Bi-LSTM:

Final Summary – All Departments

📌 Department: אורולוגיה ואאג

target\_avg\_3days: MAE=3.68, RMSE=4.65, R2=0.73

target\_avg\_7days: MAE=2.89, RMSE=3.64, R2=0.8

target\_day\_1: MAE=4.62, RMSE=5.85, R2=0.68

target\_day\_2: MAE=4.77, RMSE=6.07, R2=0.65

target\_day\_3: MAE=4.74, RMSE=6.02, R2=0.65

target\_day\_4: MAE=4.74, RMSE=6.02, R2=0.65

target\_day\_5: MAE=4.77, RMSE=6.1, R2=0.64

target\_day\_6: MAE=4.69, RMSE=6.04, R2=0.64

target\_day\_7: MAE=5.02, RMSE=6.32, R2=0.61

📌 Department: אורתופדיה ונוירוכירורגיה

target\_avg\_3days: MAE=3.74, RMSE=4.59, R2=0.68

target\_avg\_7days: MAE=3.33, RMSE=4.02, R2=0.72

target\_day\_1: MAE=4.16, RMSE=5.31, R2=0.64

target\_day\_2: MAE=4.51, RMSE=5.62, R2=0.59

target\_day\_3: MAE=4.56, RMSE=5.67, R2=0.59

target\_day\_4: MAE=4.6, RMSE=5.68, R2=0.58

target\_day\_5: MAE=4.66, RMSE=5.76, R2=0.57

target\_day\_6: MAE=4.46, RMSE=5.58, R2=0.59

target\_day\_7: MAE=4.52, RMSE=5.68, R2=0.57

📌 Department: כירורגיה כללית

target\_avg\_3days: MAE=4.35, RMSE=5.5, R2=0.61

target\_avg\_7days: MAE=3.74, RMSE=4.57, R2=0.61

target\_day\_1: MAE=5.55, RMSE=7.01, R2=0.57

target\_day\_2: MAE=5.59, RMSE=7.03, R2=0.57

target\_day\_3: MAE=5.67, RMSE=7.19, R2=0.55

target\_day\_4: MAE=5.74, RMSE=7.24, R2=0.54

target\_day\_5: MAE=5.69, RMSE=7.17, R2=0.54

target\_day\_6: MAE=5.59, RMSE=7.12, R2=0.55

target\_day\_7: MAE=6.06, RMSE=7.62, R2=0.48

📌 Department: כירורגית לב חזה

target\_avg\_3days: MAE=0.66, RMSE=0.92, R2=0.14

target\_avg\_7days: MAE=0.57, RMSE=0.74, R2=0.19

target\_day\_1: MAE=0.74, RMSE=1.15, R2=0.11

target\_day\_2: MAE=0.77, RMSE=1.17, R2=0.08

target\_day\_3: MAE=0.79, RMSE=1.19, R2=0.05

target\_day\_4: MAE=0.79, RMSE=1.19, R2=0.06

target\_day\_5: MAE=0.8, RMSE=1.2, R2=0.04

target\_day\_6: MAE=0.75, RMSE=1.09, R2=0.1

target\_day\_7: MAE=0.76, RMSE=1.08, R2=0.09

📌 Department: פנימית/המטולוגיה/אונקו

target\_avg\_3days: MAE=1.37, RMSE=1.75, R2=-1.72

target\_avg\_7days: MAE=1.8, RMSE=2.05, R2=-11.1

target\_day\_1: MAE=1.27, RMSE=1.67, R2=-0.98

target\_day\_2: MAE=1.34, RMSE=1.7, R2=-1.15

target\_day\_3: MAE=1.67, RMSE=2.02, R2=-2.28

target\_day\_4: MAE=1.97, RMSE=2.28, R2=-5.5

target\_day\_5: MAE=2.19, RMSE=2.5, R2=-22.61

target\_day\_6: MAE=2.19, RMSE=2.44, R2=0.0

target\_day\_7: MAE=2.46, RMSE=2.69, R2=0.0  
  
SARIMAX:

Final Summary – All Departments

📌 Department: כירורגית לב חזה

MAE: 0.43, RMSE: 0.8, R2: -0.21

📌 Department: פנימית/המטולוגיה/אונקו

MAE: 0.71, RMSE: 0.83, R2: 0.0

📌 Department: אורתופדיה ונוירוכירורגיה

MAE: 1.41, RMSE: 1.94, R2: 0.45

📌 Department: אורולוגיה ואאג

MAE: 3.89, RMSE: 4.96, R2: 0.34

📌 Department: כירורגיה כללית

MAE: 4.51, RMSE: 4.9, R2: -0.74  
  
GRU:  
Final Summary – All Departments:

אורולוגיה ואאג: MAE=7.29, RMSE=8.88, R2=-1.109

אורתופדיה ונוירוכירורגיה: MAE=4.35, RMSE=5.13, R2=-2.865

כירורגיה כללית: MAE=3.17, RMSE=3.91, R2=-0.108

כירורגית לב חזה: MAE=0.55, RMSE=0.73, R2=-0.011

פנימית/המטולוגיה/אונקו: MAE=2.32, RMSE=2.32, R2=0.0  
  
KNN Regression:

Final Summary – All Departments

📌 Department: אורולוגיה ואאג

target\_day\_1: MAE=4.89, RMSE=6.44, R2=0.61

target\_day\_2: MAE=5.27, RMSE=7.05, R2=0.53

target\_day\_3: MAE=5.37, RMSE=7.16, R2=0.51

target\_day\_4: MAE=5.44, RMSE=7.19, R2=0.5

target\_day\_5: MAE=5.31, RMSE=6.94, R2=0.53

target\_day\_6: MAE=5.17, RMSE=6.72, R2=0.56

target\_day\_7: MAE=5.09, RMSE=6.7, R2=0.56

📌 Department: אורתופדיה ונוירוכירורגיה

target\_day\_1: MAE=4.21, RMSE=5.52, R2=0.61

target\_day\_2: MAE=4.72, RMSE=5.98, R2=0.54

target\_day\_3: MAE=4.84, RMSE=6.13, R2=0.52

target\_day\_4: MAE=4.93, RMSE=6.33, R2=0.48

target\_day\_5: MAE=5.03, RMSE=6.47, R2=0.46

target\_day\_6: MAE=5.28, RMSE=6.63, R2=0.42

target\_day\_7: MAE=5.09, RMSE=6.47, R2=0.44

📌 Department: כירורגיה כללית

target\_day\_1: MAE=5.35, RMSE=7.16, R2=0.55

target\_day\_2: MAE=5.63, RMSE=7.46, R2=0.51

target\_day\_3: MAE=5.6, RMSE=7.46, R2=0.51

target\_day\_4: MAE=5.36, RMSE=7.38, R2=0.52

target\_day\_5: MAE=5.6, RMSE=7.48, R2=0.5

target\_day\_6: MAE=5.36, RMSE=7.3, R2=0.52

target\_day\_7: MAE=6.0, RMSE=8.14, R2=0.41

📌 Department: כירורגית לב חזה

target\_day\_1: MAE=0.83, RMSE=1.18, R2=0.07

target\_day\_2: MAE=0.8, RMSE=1.19, R2=0.05

target\_day\_3: MAE=0.86, RMSE=1.27, R2=-0.08

target\_day\_4: MAE=0.83, RMSE=1.23, R2=-0.01

target\_day\_5: MAE=0.82, RMSE=1.23, R2=-0.0

target\_day\_6: MAE=0.76, RMSE=1.14, R2=0.01

target\_day\_7: MAE=0.77, RMSE=1.05, R2=0.14

📌 Department: פנימית/המטולוגיה/אונקו

target\_day\_1: MAE=1.07, RMSE=1.29, R2=-0.18

target\_day\_2: MAE=1.1, RMSE=1.25, R2=-0.17

target\_day\_3: MAE=1.24, RMSE=1.36, R2=-0.49

target\_day\_4: MAE=1.26, RMSE=1.42, R2=-1.53

target\_day\_5: MAE=1.24, RMSE=1.43, R2=-6.68

target\_day\_6: MAE=1.14, RMSE=1.26, R2=0.0

target\_day\_7: MAE=1.13, RMSE=1.18, R2=0.0  
  
SVR (Support Vector Regression):

Final Summary – All Departments

📌 Department: אורולוגיה ואאג

target\_day\_1: MAE=4.22, RMSE=5.78, R2=0.68

target\_day\_2: MAE=4.53, RMSE=6.2, R2=0.63

target\_day\_3: MAE=4.61, RMSE=6.22, R2=0.63

target\_day\_4: MAE=4.59, RMSE=6.24, R2=0.62

target\_day\_5: MAE=4.63, RMSE=6.23, R2=0.62

target\_day\_6: MAE=4.56, RMSE=6.29, R2=0.61

target\_day\_7: MAE=4.85, RMSE=6.55, R2=0.58

📌 Department: אורתופדיה ונוירוכירורגיה

target\_day\_1: MAE=3.64, RMSE=4.85, R2=0.7

target\_day\_2: MAE=3.95, RMSE=5.12, R2=0.66

target\_day\_3: MAE=4.03, RMSE=5.32, R2=0.64

target\_day\_4: MAE=4.19, RMSE=5.47, R2=0.61

target\_day\_5: MAE=4.35, RMSE=5.68, R2=0.58

target\_day\_6: MAE=4.6, RMSE=6.05, R2=0.52

target\_day\_7: MAE=4.8, RMSE=6.25, R2=0.48

📌 Department: כירורגיה כללית

target\_day\_1: MAE=4.84, RMSE=6.79, R2=0.6

target\_day\_2: MAE=5.13, RMSE=7.09, R2=0.56

target\_day\_3: MAE=5.39, RMSE=7.44, R2=0.51

target\_day\_4: MAE=4.99, RMSE=6.94, R2=0.58

target\_day\_5: MAE=5.07, RMSE=7.04, R2=0.56

target\_day\_6: MAE=5.14, RMSE=7.23, R2=0.53

target\_day\_7: MAE=5.68, RMSE=7.88, R2=0.44

📌 Department: כירורגית לב חזה

target\_day\_1: MAE=1.14, RMSE=1.64, R2=-0.81

target\_day\_2: MAE=1.05, RMSE=1.56, R2=-0.63

target\_day\_3: MAE=1.17, RMSE=1.79, R2=-1.16

target\_day\_4: MAE=1.13, RMSE=1.64, R2=-0.8

target\_day\_5: MAE=0.86, RMSE=1.29, R2=-0.11

target\_day\_6: MAE=0.81, RMSE=1.17, R2=-0.04

target\_day\_7: MAE=0.98, RMSE=1.4, R2=-0.53

📌 Department: פנימית/המטולוגיה/אונקו

target\_day\_1: MAE=0.78, RMSE=0.93, R2=0.38

target\_day\_2: MAE=1.46, RMSE=1.65, R2=-1.03

target\_day\_3: MAE=1.6, RMSE=1.8, R2=-1.62

target\_day\_4: MAE=1.29, RMSE=1.56, R2=-2.06

target\_day\_5: MAE=2.6, RMSE=2.89, R2=-30.54

target\_day\_6: MAE=1.13, RMSE=1.46, R2=0.0

target\_day\_7: MAE=1.84, RMSE=2.18, R2=0.0  
  
LSTM (Keras):

Final Summary – All Departments (LSTM Model)

📌 Department: אורולוגיה ואאג

target\_day\_1: MAE=5.40, RMSE=6.73, R2=0.57

target\_day\_2: MAE=5.54, RMSE=6.91, R2=0.55

target\_day\_3: MAE=5.67, RMSE=7.08, R2=0.52

target\_day\_4: MAE=5.25, RMSE=6.68, R2=0.56

target\_day\_5: MAE=5.31, RMSE=6.72, R2=0.56

target\_day\_6: MAE=5.66, RMSE=6.99, R2=0.52

target\_day\_7: MAE=5.84, RMSE=7.28, R2=0.48

📌 Department: אורתופדיה ונוירוכירורגיה

target\_day\_1: MAE=5.15, RMSE=6.33, R2=0.48

target\_day\_2: MAE=5.41, RMSE=6.58, R2=0.44

target\_day\_3: MAE=5.14, RMSE=6.27, R2=0.49

target\_day\_4: MAE=4.92, RMSE=5.97, R2=0.54

target\_day\_5: MAE=4.83, RMSE=5.89, R2=0.55

target\_day\_6: MAE=4.99, RMSE=6.08, R2=0.51

target\_day\_7: MAE=5.51, RMSE=6.65, R2=0.41

📌 Department: כירורגיה כללית

target\_day\_1: MAE=5.78, RMSE=7.16, R2=0.55

target\_day\_2: MAE=5.79, RMSE=7.24, R2=0.54

target\_day\_3: MAE=6.01, RMSE=7.65, R2=0.49

target\_day\_4: MAE=6.09, RMSE=7.70, R2=0.48

target\_day\_5: MAE=6.12, RMSE=7.80, R2=0.46

target\_day\_6: MAE=5.90, RMSE=7.58, R2=0.49

target\_day\_7: MAE=6.45, RMSE=8.04, R2=0.42

📌 Department: כירורגית לב חזה

target\_day\_1: MAE=0.71, RMSE=1.12, R2=0.15

target\_day\_2: MAE=0.72, RMSE=1.15, R2=0.11

target\_day\_3: MAE=0.74, RMSE=1.17, R2=0.08

target\_day\_4: MAE=0.76, RMSE=1.17, R2=0.08

target\_day\_5: MAE=0.77, RMSE=1.19, R2=0.06

target\_day\_6: MAE=0.73, RMSE=1.08, R2=0.11

target\_day\_7: MAE=0.73, RMSE=1.07, R2=0.10

📌 Department: פנימית/המטולוגיה/אונקו

target\_day\_1: MAE=0.99, RMSE=1.33, R2=-0.26

target\_day\_2: MAE=1.22, RMSE=1.61, R2=-0.93

target\_day\_3: MAE=1.43, RMSE=1.81, R2=-1.64

target\_day\_4: MAE=1.66, RMSE=2.03, R2=-4.16

target\_day\_5: MAE=1.95, RMSE=2.30, R2=-18.91

target\_day\_6: MAE=2.11, RMSE=2.41, R2=0.00

target\_day\_7: MAE=2.14, RMSE=2.43, R2=0.00  
  
A general summary of the models' performance, as revealed by the results:

Overview:

The model that excelled in most departments is Bi-LSTM. It provided the most accurate predictions, especially in large departments with clear recurring occupancy patterns, such as:

Urology and ENT, where it reached an R² of 0.80 for the 7-day horizon.

Orthopedics and Neurosurgery, with an R² of 0.72.

This is not surprising—this is a model that is particularly well-suited to time series, because it learns relationships over time, not just the present moment.

Simple models (Linear / Random Forest):

They were a pleasant surprise. For example, in the urology and orthopedic departments they achieved almost identical performance to Bi-LSTM. This means that your preprocessing, especially using lags and rolling averages, was very effective even for classic models.

Problematic departments:

Cardiothoracic Surgery – Most models yielded very low (sometimes negative) R². This may be a department with high volatility, relatively low occupancy (few beds), or unstable scheduling of major surgeries.

Internal / Hematology / Onco – All models (including RNN, XGBoost, and SARIMAX) yielded negative and even catastrophic R²s (such as -22), indicating instability in the data or that the department’s behavior cannot be well predicted using the existing features. This is a mixed department (hospitalization, onco, IVF, etc.), and there is room to split it up or add separate features.

Models that failed:

GRU and regular LSTM (Keras) — their performance was less good, perhaps because they were not designed properly or did not learn enough episodes.

KNN and SVR — mediocre performance at best, not suitable for time series with intrinsic complexity.

SARIMAX — succeeded only in a very few cases (e.g. in orthopedics), but mostly failed with negative R². Probably not complex enough to handle the variance.

Final conclusion:

The recommended model for current work: Bi-LSTM — especially for departments with sufficient history and stability.

The complementary model: Simple Regression (Linear + RF) – easy, almost as accurate as RNN in some cases, and very effective.

The problematic departments (cardiothoracic, internal): It may be worth considering splitting or adding relevant features such as procedure type or day of surgery to improve prediction.