/usr/local/lib/python3.12/dist-packages/statsmodels/stats/outliers_influence.py:197:
RuntimeWarning: divide by zero encountered in scalar divide

  vif = 1. / (1. - r_squared_i)

[VIF] Dropped 'is_weekend' (VIF=inf). Remaining cols: 46

ADF Statistic: -9.6707, p-value: 0.0000

Any object dtypes in X? -> False

Remaining NaNs in X? -> 0

X columns used: 18

Checked order (0, 1, 0) x (0, 1, 0, 7), AIC=77821.95, LB p10=0.000, p20=0.000

Checked order (0, 1, 1) x (0, 1, 0, 7), AIC=77225.53, LB p10=0.000, p20=0.000

Checked order (1, 1, 0) x (0, 1, 0, 7), AIC=77450.78, LB p10=0.000, p20=0.000

Checked order (1, 1, 1) x (0, 1, 0, 7), AIC=76714.24, LB p10=0.000, p20=0.000

Selected by AIC (no full LB pass): order=(1, 1, 1), seasonal=(0, 1, 0, 7), AIC=76714.24

SARIMAX Results

==

Dep. Variable:	daily_active_users	No. Observations:	4631
Model:	SARIMAX(1, 1, 1)x(0, 1, [], 7)	Log Likelihood	-38354.118
Date:	Fri, 14 Nov 2025	AIC	76714.236
Time:	05:09:39	BIC	76733.551
Sample:	08-01-2012	HQIC	76721.033
	- 04-05-2025		

Covariance Type: oim

==

            coef   std err   z   P>|z| [0.025   0.975]

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ar.L1   0.5620   0.014   41.516   0.000   0.535   0.589

ma.L1   -0.9999   0.036   -28.119   0.000   -1.070   -0.930

sigma2   1.073e+06 4.03e+04   26.606   0.000   9.94e+05   1.15e+06

==

Ljung-Box (L1) (Q):   8.49   Jarque-Bera (JB):   1180950.20

Prob(Q):   0.00   Prob(JB):   0.00

Heteroskedasticity (H):   1.08   Skew: 0.05

Prob(H) (two-sided):   0.15   Kurtosis: 81.32

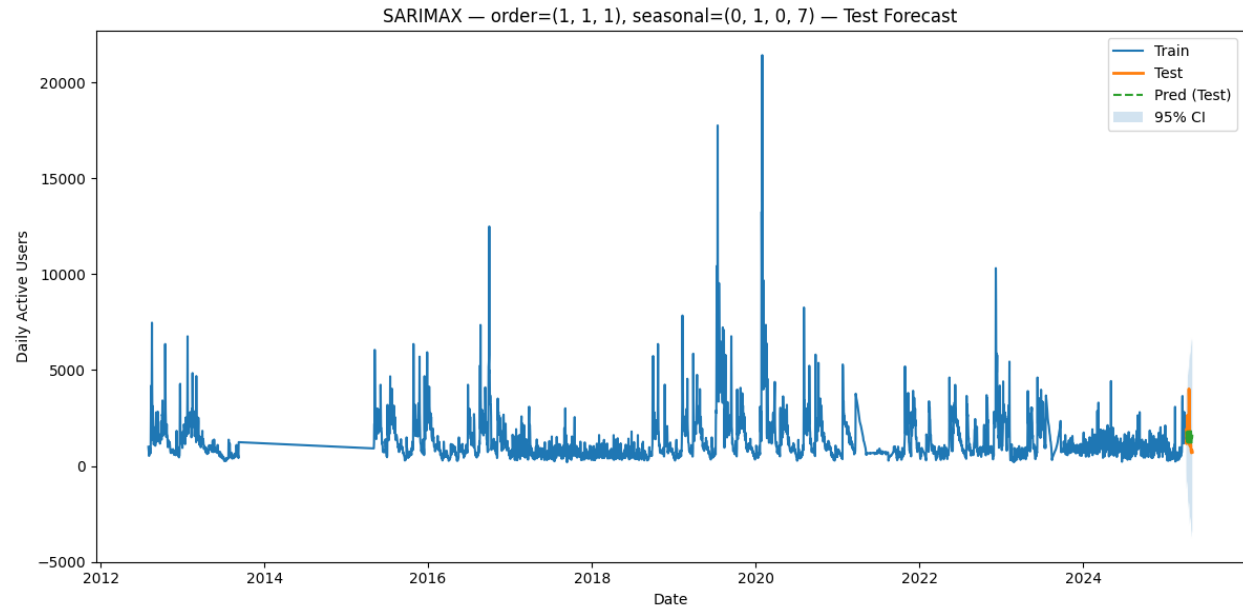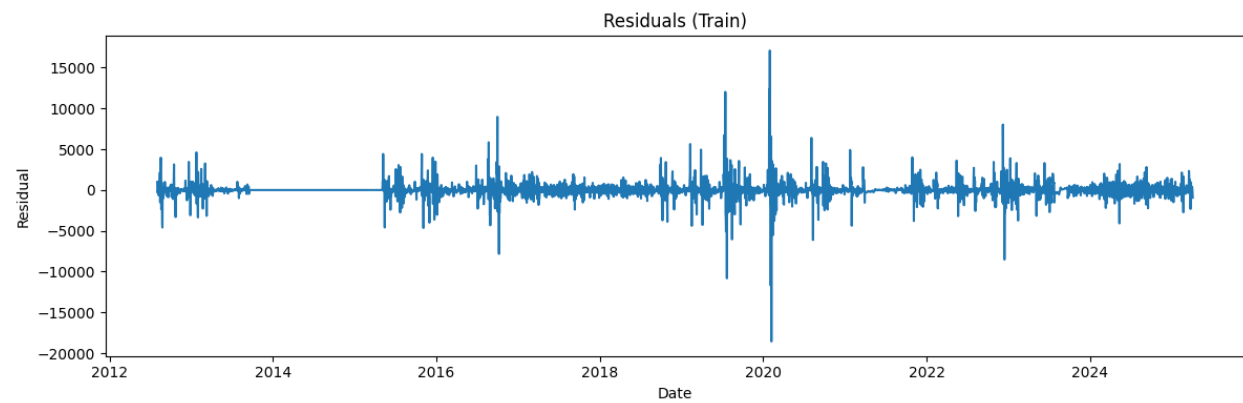==

Warnings:

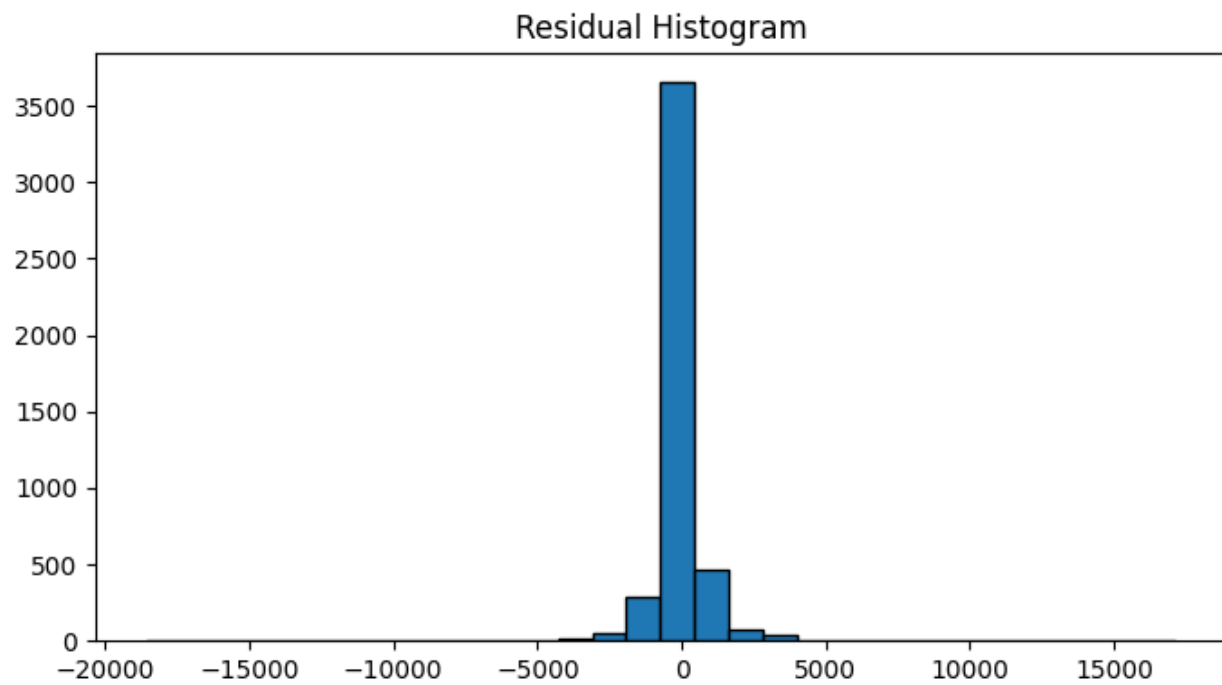[1] Covariance matrix calculated using the observed information matrix (complex-step) described in Harvey (1989).

Test MAE: 686.786
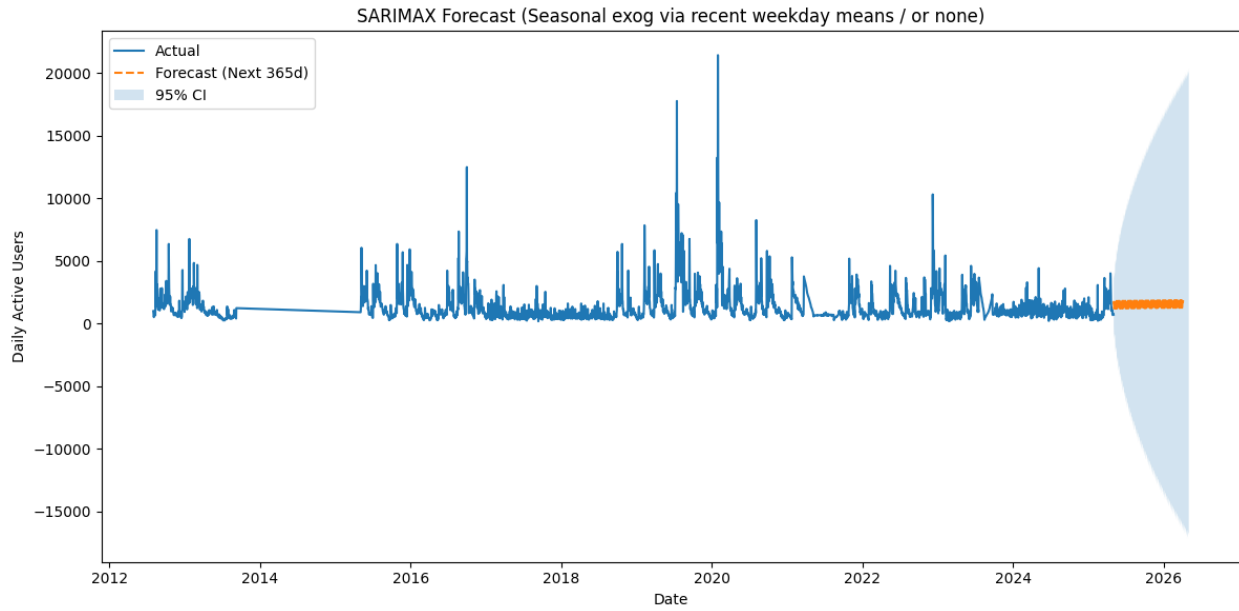
Test RMSE: 873.892

Test MAPE: 47.84%

SARIMAX — order=(1, 1, 1), seasonal=(0, 1, 0, 7) — Test Forecast

Residuals (Train)

Residual Histogram

Ljung-Box stats & p-values (train):

	lb_stat	lb_pvalue
10	1344.923531	7.702155e-283
20	1382.229065	7.155560e-281

SARIMAX Forecast (Seasonal exog via recent weekday means / or none)

Accuracy (100 - MAPE): 52.16%

MAPE: 47.84%   sMAPE: 42.29%

MAE: 686.786   RMSE: 873.892   R²: -0.034

MASE (vs naive-1): 2.113

Directional Accuracy: 53.57%