TABLE 1. Model Configurations

Model		**RNN**	**LSTM**	**GCN-LSTM**
Layer Configuration	RNN	[48, 88]	N/A	N/A
	GCN	N/A	N/A	[10, 24]
	LSTM	N/A	[128, 56, 64]	[108, 104]
Activation Function		ReLU	ReLU	ReLU
Learning Rate		0.0282	0.0032	0.0042
Dropout Rate		0.0123	0.2858	0.2255
Batch Size		4	4	4
Optimizer		Adam	Adam	Adam
Look Back		9	2	7

TABLE 2. ARIMA Parameters

Parameter	**Value**
Order (*p, d, q*)	(0, 1, 1)
Seasonal Order (*P, D, Q, m*)	(0, 1, 0, 52)

TABLE 3. Model Performance

Model	Persistence		ARIMA		RNN		LSTM		GCN-LSTM	
Metric	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE
Performance	5.4317	5.28%	3.8612	3.92%	3.6978	3.26%	4.7324	3.90%	2.7637	2.72%

TABLE 4. Model Performance Improvement

Model	Persistence/ARIMA		Persistence/RNN		Persistence/LSTM		Persistence/GCN-LSTM		LSTM/GCN-LSTM	
Metric	RMSE	MAPE	RMSE	MAPE	RMSE	MAPE	RMSE	MAPE	RMSE	MAPE
Performance Improvement	-28.91%	-25.81%	-31.92%	-38.27%	-12.87%	-26.16%	-49.12%	-48.44%	-41.60%	-30.18%

TABLE 3. Model Performance

Model	Persistence		ARIMA		RNN		LSTM		GCN-LSTM	
Metric	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE	RMSE (10^6 Miles)	MAPE
Performance	5.4317	5.28%	3.8612	3.92%	3.6978	3.26%	4.7324	3.90%	2.7637	2.72%

TABLE 4. Model Performance Improvement (MAPE)

Model	Persistence	ARIMA	RNN	LSTM	GCN-LSTM
Persistence	0.00%	-25.81%	-38.27%	-26.16%	-48.44%
ARIMA	34.79%	0.00%	-16.79%	-0.46%	-30.50%
RNN	61.99%	20.18%	0.00%	19.62%	-16.48%
LSTM	35.42%	0.46%	-16.40%	0.00%	-30.18%
GCN-LSTM	93.96%	43.89%	19.73%	43.23%	0.00%

TABLE 5. Model Performance Improvement (RMSE)

Model	Persistence	ARIMA	RNN	LSTM	GCN-LSTM
Persistence	0.00%	-28.91%	-31.92%	-12.87%	-49.12%
ARIMA	40.67%	0.00%	-4.23%	22.56%	-28.42%
RNN	46.89%	4.42%	0.00%	27.98%	-25.26%
LSTM	14.78%	-18.41%	-21.86%	0.00%	-41.60%
GCN-LSTM	96.53%	39.71%	33.80%	71.23%	0.00%