

Supplementary Material

Table S1. Summary results of LSTM models' performance in different Malaysian states and different look-back values.

Look-back (no. of months)	Group attributes added	Performance (RMSE)			
		LSTM	S-LSTM	A-LSTM	SA-LSTM
1	Selangor	8.77	8.772	8.363	8.301
	Kelantan	1.269	1.208	0.762	0.671
	Johor	4.498	4.493	4.007	4.111
	Pulau Pinang	2.241	2.234	1.841	1.786
	Melaka	2.019	1.937	1.418	1.463
2	Selangor	7.905	7.863	7.355	7.452
	Kelantan	1.463	1.386	0.958	0.971
	Johor	4.682	4.919	4.212	4.219
	Pulau Pinang	1.807	1.831	1.275	1.285
	Melaka	2.018	2.099	1.699	1.694
3	Selangor	10.076	10.342	9.794	9.529
	Kelantan	1.437	1.413	0.881	0.87
	Johor	6.275	6.288	5.815	5.839
	Pulau Pinang	2.639	2.67	2.111	2.209
	Melaka	4.878	4.85	4.342	4.336
4	Selangor	6.223	6.515	5.674	6.021

	Kelantan	2.725	2.756	2.236	2.264
	Johor	5.27	5.293	4.774	5.15
	Pulau Pinang	2.276	2.278	1.839	1.862
	Melaka	2.244	2.44	1.664	1.808
	Selangor	8.374	7.765	7.417	7.514
5	Kelantan	1.336	1.198	0.875	0.64
	Johor	5.628	5.76	5.243	5.222
	Pulau Pinang	2.225	2.294	1.775	1.916
	Melaka	2.391	2.247	1.805	1.528
	Selangor	9.653	8.814	8.952	8.905
6	Kelantan	2.738	2.495	2.066	2.088
	Johor	5.92	6.096	5.808	5.719
	Pulau Pinang	1.782	1.923	1.599	1.599
	Melaka	3.851	3.817	3.319	3.252
	Selangor	9.653	8.814	8.952	8.905

Table S2. Summary results of the benchmark model performance in different Malaysian states and different look-back values.

Look-back (no. of months)	Performance (RMSE) Group attributes added					
		LSVM	RBFSVM	DT	S- ANN	D-ANN
1	Selangor	10.292	7.471	7.569	12.623	8.300
	Kelantan	2.504	2.615	3.128	2.536	2.629
	Johor	4.370	4.280	4.010	4.535	4.587
	Pulau Pinang	2.544	2.623	4.181	2.552	2.771
	Melaka	5.210	5.252	5.230	5.123	5.017
2	Selangor	10.358	7.529	8.973	12.863	8.422
	Kelantan	2.571	2.567	2.993	2.387	2.419
	Johor	4.828	4.946	5.410	4.752	4.497
	Pulau Pinang	3.490	3.631	4.911	3.416	3.404
	Melaka	3.310	3.201	5.616	3.200	3.394
3	Selangor	12.458	10.838	11.108	14.615	9.895
	Kelantan	2.476	2.398	2.479	2.441	2.484
	Johor	4.722	4.706	4.689	4.599	4.436
	Pulau Pinang	2.413	2.632	4.101	2.465	2.670
	Melaka	3.137	3.261	5.639	3.039	3.194
4	Selangor	9.566	8.453	11.893	12.314	8.649

	Kelantan	2.719	2.524	3.160	2.415	2.393
	Johor	4.148	4.174	4.740	4.135	4.110
	Pulau Pinang	2.544	2.888	4.106	2.657	2.826
	Melaka	4.237	4.205	5.771	4.132	4.167
	Selangor	9.410	8.853	11.231	11.842	9.202
5	Kelantan	2.622	2.591	2.813	2.436	2.732
	Johor	3.960	3.948	4.682	3.954	3.984
	Pulau Pinang	2.729	2.844	4.618	2.697	2.944
	Melaka	5.096	5.134	5.151	4.957	4.950
	Selangor	9.457	8.039	8.454	11.996	8.400
6	Kelantan	2.188	2.349	2.802	2.332	3.167
	Johor	4.251	4.218	4.203	4.114	4.057
	Pulau Pinang	4.225	4.227	4.095	4.123	4.011
	Melaka	5.473	5.511	5.262	5.372	5.380
	Selangor	9.457	8.039	8.454	11.996	8.400