

Table S1. Performance metrics of all investigated configurations

Normalization	Feature set	Optimizer target	Weight	MAPE	MSE	MAE
Percentile	Amenities only	Δp_i MSE	Mean	6.193	8.471×10^7	3345
	Pop. dens. w/ amenities	Δp_i MSE	Mean	6.195	8.465×10^7	3344
	Pop. w/ amenities	Δp_i MSE	Mean	6.199	8.477×10^7	3347
	Pop., pop. dens. w/ amenities	Δp_i MSE	Mean	6.201	8.468×10^7	3346
	Pop. dens. w/ filtered amenities	Δp_i MSE	Mean	6.225	8.414×10^7	3348
None	Pop. dens. only	Δp_i MSE	Mean	6.310	8.255×10^7	3403
Percentile	Pop. dens. w/ primary amenities	Δp_i MSE	Mean	6.371	8.506×10^7	3396
	Pop. dens. w/ merged amenities	Δp_i MSE	Mean	6.376	8.435×10^7	3391
	Amenities only	$\log p_i$ MSE	Mean	6.431	8.341×10^7	3374
	Pop. dens. w/ amenities	$\log p_i$ MSE	Mean	6.433	8.330×10^7	3372
	Pop., pop. dens. w/ amenities	$\log p_i$ MSE	Mean	6.442	8.337×10^7	3375
Min-max	Pop. w/ amenities	$\log p_i$ MSE	Mean	6.449	8.353×10^7	3380
	Pop. dens. w/ filtered amenities	$\log p_i$ MSE	Mean	6.509	8.335×10^7	3395
	Pop. w/ amenities	Δp_i MSE	Mean	6.517	9.513×10^7	3529
	Pop. dens. w/ amenities	Δp_i MSE	Mean	6.521	9.501×10^7	3529
	Pop. dens. only	$\log p_i$ MSE	Mean	6.540	8.037×10^7	3424
Percentile	Pop. dens. w/ merged amenities	$\log p_i$ MSE	Mean	6.638	8.347×10^7	3433
	Pop. dens. w/ primary amenities	$\log p_i$ MSE	Mean	6.646	8.417×10^7	3439
None	Population only	Δp_i MSE	Mean	6.709	9.530×10^7	3690
Min-max	Pop. w/ amenities	$\log p_i$ MSE	Mean	6.793	9.145×10^7	3567
	Pop. dens. w/ amenities	$\log p_i$ MSE	Mean	6.796	9.169×10^7	3571
Adj. X-score	Pop. dens. w/ amenities	Δp_i MSE	Mean	6.827	1.074×10^8	3791
	Pop. w/ amenities	Δp_i MSE	Mean	6.850	1.061×10^8	3782
None	Population only	$\log p_i$ MSE	Mean	6.979	8.796×10^7	3696
Adj. X-score	Pop. dens. w/ amenities	$\log p_i$ MSE	Mean	7.082	1.024×10^8	3812
	Pop. w/ amenities	$\log p_i$ MSE	Mean	7.100	1.011×10^8	3803
Percentile	Pop., pop. dens. w/ amenities	p_i MSE	Mean	7.195	9.943×10^7	3805
	Pop. dens. w/ amenities	p_i MSE	Mean	7.210	9.962×10^7	3809
	Amenities only	p_i MSE	Mean	7.228	9.978×10^7	3812
	Pop. w/ amenities	p_i MSE	Mean	7.247	9.991×10^7	3817
	Pop. dens. w/ filtered amenities	p_i MSE	Mean	7.265	9.921×10^7	3811
	Pop. dens. w/ primary amenities	p_i MSE	Mean	7.300	9.939×10^7	3828
	Pop. dens. w/ merged amenities	p_i MSE	Mean	7.310	9.889×10^7	3819
	Pop. dens. only	p_i MSE	Mean	7.319	1.001×10^8	3863
Min-max	Pop. dens. w/ amenities	p_i MSE	Mean	7.409	1.139×10^8	3952
	Pop. w/ amenities	p_i MSE	Mean	7.436	1.144×10^8	3961
Adj. X-score	Pop. dens. w/ amenities	p_i MSE	Mean	7.859	1.354×10^8	4298
	Pop. w/ amenities	p_i MSE	Mean	7.999	1.372×10^8	4356
None	Population only	p_i MSE	Mean	8.327	1.748×10^8	4586
	Pop. dens. only	Δp_i MSE	Median	11.799	1.837×10^8	5913
Percentile	Amenities only	Δp_i MSE	Median	11.873	1.445×10^8	5775
	Pop. dens. w/ amenities	Δp_i MSE	Median	11.881	1.443×10^8	5775
	Pop. w/ amenities	Δp_i MSE	Median	11.883	1.447×10^8	5781
	Pop., pop. dens. w/ amenities	Δp_i MSE	Median	11.890	1.444×10^8	5780
	Pop. dens. w/ filtered amenities	Δp_i MSE	Median	12.014	1.422×10^8	5779
	Pop. dens. w/ primary amenities	Δp_i MSE	Median	12.196	1.441×10^8	5862
	Pop. dens. only	$\log p_i$ MSE	Median	12.196	1.813×10^8	5926
Percentile	Amenities only	$\log p_i$ MSE	Median	12.228	1.407×10^8	5782
	Pop. dens. w/ amenities	$\log p_i$ MSE	Median	12.235	1.403×10^8	5777
	Pop., pop. dens. w/ amenities	$\log p_i$ MSE	Median	12.251	1.405×10^8	5784
	Pop. w/ amenities	$\log p_i$ MSE	Median	12.264	1.410×10^8	5795
	Pop. dens. w/ merged amenities	Δp_i MSE	Median	12.276	1.419×10^8	5833
	Pop. dens. w/ filtered amenities	$\log p_i$ MSE	Median	12.431	1.397×10^8	5818
	Pop. w/ amenities	Δp_i MSE	Median	12.493	1.943×10^8	6257
Min-max	Pop. dens. w/ amenities	Δp_i MSE	Median	12.494	1.931×10^8	6248

Continued on next page

Table S1. Performance metrics of all investigated configurations

Normalization	Feature set	Optimizer target	Weight	MAPE	MSE	MAE
Percentile	Pop. dens. w/ primary amenities	$\log p_i$ MSE	Median	12.594	1.412×10^8	5886
	Pop. dens. w/ merged amenities	$\log p_i$ MSE	Median	12.681	1.394×10^8	5870
Min-max	Pop. dens. w/ amenities	$\log p_i$ MSE	Median	12.857	1.872×10^8	6284
	Pop. w/ amenities	$\log p_i$ MSE	Median	12.869	1.860×10^8	6271
None	Population only	Δp_i MSE	Median	12.890	2.323×10^8	6559
Adj. X -score	Pop. dens. w/ amenities	Δp_i MSE	Median	13.064	2.438×10^8	6869
	Pop. w/ amenities	Δp_i MSE	Median	13.131	2.389×10^8	6843
None	Population only	$\log p_i$ MSE	Median	13.209	2.243×10^8	6524
Adj. X -score	Pop. dens. w/ amenities	$\log p_i$ MSE	Median	13.383	2.296×10^8	6846
	Pop. w/ amenities	$\log p_i$ MSE	Median	13.485	2.251×10^8	6822
Percentile	Pop. dens. w/ amenities	p_i MSE	Median	13.669	1.838×10^8	6582
	Amenities only	p_i MSE	Median	13.692	1.848×10^8	6591
	Pop., pop. dens. w/ amenities	p_i MSE	Median	13.699	1.841×10^8	6592
	Pop. w/ amenities	p_i MSE	Median	13.751	1.863×10^8	6613
	Pop. dens. w/ filtered amenities	p_i MSE	Median	13.824	1.836×10^8	6595
None	Pop. dens. only	p_i MSE	Median	13.870	2.423×10^8	6946
Percentile	Pop. dens. w/ primary amenities	p_i MSE	Median	13.909	1.818×10^8	6623
	Pop. dens. w/ merged amenities	p_i MSE	Median	13.976	1.808×10^8	6607
Min-max	Pop. dens. w/ amenities	p_i MSE	Median	14.176	2.447×10^8	7084
	Pop. w/ amenities	p_i MSE	Median	14.229	2.474×10^8	7113
Adj. X -score	Pop. dens. w/ amenities	p_i MSE	Median	15.102	3.219×10^8	7847
	Pop. w/ amenities	p_i MSE	Median	15.377	3.291×10^8	7956
None	Population only	p_i MSE	Median	15.732	4.833×10^8	8430