A comparison of design-based and model-based approaches for finite population spatial data – Supporting information.

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Recall the four sampling-analysis combinations from the simulated and real data: simple random sampling with design-based inference (SRS-DB), simple random sapling with model-based inference (SRS-MB), GRTS sampling with design-based inference (GRTS-DB), and GRTS sampling with model-based inference (GRTS-MB).

1. Simulated Data

For the simulated data, we considered 36 parameter configurations – the crossing of three sample sizes ($n = 50$, $n = 100$, $n = 200$), two location layouts (random and gridded), three proportions of dependent random error (DRE) (0%, 50%, 90%), and two response types (normal and skewed).

Next we present tables summarizing mean bias, RMSE, and interval coverage for all 36 simulation scenarios.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	0%	50	0.0004	0.1922	0.9345
SRS-MB	Gridded	Normal	0%	50	-0.0112	0.1930	0.9420
GRTS-DB	Gridded	Normal	0%	50	0.0005	0.1914	0.9170
GRTS-MB	Gridded	Normal	0%	50	-0.0112	0.1905	0.9490

Table 1: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 1.

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Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	0%	50	0.0004	0.1965	0.8955
SRS-MB	Gridded	Skewed	0%	50	-0.0110	0.2055	0.9045
GRTS-DB	Gridded	Skewed	0%	50	0.0025	0.1947	0.8710
GRTS-MB	Gridded	Skewed	0%	50	-0.0048	0.1988	0.9110

Table 2: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 2.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	0%	50	-0.0002	0.1964	0.9295
SRS-MB	Random	Normal	0%	50	0.0045	0.1953	0.9395
GRTS-DB	Random	Normal	0%	50	-0.0004	0.1951	0.9065
GRTS-MB	Random	Normal	0%	50	0.0031	0.1940	0.9425

Table 3: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 3.

2. National Lakes Assessment (Real) Data

Next we present tables summarizing mean bias, RMSE, and interval coverage for ZMMI and Hg ppb data.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	0%	50	0.0016	0.1941	0.8985
SRS-MB	Random	Skewed	0%	50	-0.0059	0.1932	0.9130
GRTS-DB	Random	Skewed	0%	50	0.0041	0.1910	0.8740
GRTS-MB	Random	Skewed	0%	50	0.0000	0.1861	0.9225

Table 4: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 4.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	50%	50	-0.0031	0.1472	0.9400
SRS-MB	Gridded	Normal	50%	50	-0.0007	0.1617	0.9355
GRTS-DB	Gridded	Normal	50%	50	-0.0030	0.1501	0.9205
GRTS-MB	Gridded	Normal	50%	50	-0.0013	0.1775	0.9460

Table 5: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 5.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	50%	50	-0.0060	0.1605	0.9085
SRS-MB	Gridded	Skewed	50%	50	-0.0083	0.1787	0.8990
GRTS-DB	Gridded	Skewed	50%	50	-0.0041	0.1610	0.8995
GRTS-MB	Gridded	Skewed	50%	50	-0.0047	0.1891	0.9100

Table 6: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 6.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	50%	50	-0.0097	0.1507	0.9315
SRS-MB	Random	Normal	50%	50	0.0042	0.1615	0.9350
GRTS-DB	Random	Normal	50%	50	-0.0092	0.1513	0.9165
GRTS-MB	Random	Normal	50%	50	0.0061	0.1744	0.9445

Table 7: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 7.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	50%	50	-0.0021	0.1624	0.9000
SRS-MB	Random	Skewed	50%	50	-0.0051	0.1808	0.9065
GRTS-DB	Random	Skewed	50%	50	0.0021	0.1618	0.8880
GRTS-MB	Random	Skewed	50%	50	0.0014	0.1804	0.9195

Table 8: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 8.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	90%	50	-0.0037	0.0960	0.9400
SRS-MB	Gridded	Normal	90%	50	0.0044	0.1137	0.9435
GRTS-DB	Gridded	Normal	90%	50	-0.0021	0.1072	0.9280
GRTS-MB	Gridded	Normal	90%	50	0.0055	0.1621	0.9355

Table 9: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 9.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	90%	50	-0.0039	0.1039	0.9205
SRS-MB	Gridded	Skewed	90%	50	-0.0011	0.1217	0.9130
GRTS-DB	Gridded	Skewed	90%	50	-0.0017	0.1129	0.9180
GRTS-MB	Gridded	Skewed	90%	50	0.0007	0.1546	0.9345

Table 10: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 10.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	90%	50	-0.0011	0.0940	0.9410
SRS-MB	Random	Normal	90%	50	0.0045	0.1093	0.9445
GRTS-DB	Random	Normal	90%	50	-0.0017	0.1054	0.9295
GRTS-MB	Random	Normal	90%	50	0.0058	0.1575	0.9470

Table 11: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 11.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	90%	50	-0.0026	0.1127	0.9225
SRS-MB	Random	Skewed	90%	50	-0.0046	0.1301	0.9180
GRTS-DB	Random	Skewed	90%	50	-0.0026	0.1250	0.9175
GRTS-MB	Random	Skewed	90%	50	-0.0022	0.1772	0.9305

Table 12: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 12.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	0%	100	-0.0010	0.1352	0.9445
SRS-MB	Gridded	Normal	0%	100	-0.0026	0.1362	0.9405
GRTS-DB	Gridded	Normal	0%	100	-0.0011	0.1345	0.9210
GRTS-MB	Gridded	Normal	0%	100	-0.0028	0.1352	0.9475

Table 13: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 13.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	0%	100	0.0077	0.1307	0.9155
SRS-MB	Gridded	Skewed	0%	100	-0.0024	0.1412	0.9150
GRTS-DB	Gridded	Skewed	0%	100	0.0082	0.1304	0.8945
GRTS-MB	Gridded	Skewed	0%	100	-0.0001	0.1384	0.9210

Table 14: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 14.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	0%	100	0.0019	0.1318	0.9460
SRS-MB	Random	Normal	0%	100	-0.0007	0.1344	0.9435
GRTS-DB	Random	Normal	0%	100	0.0021	0.1315	0.9280
GRTS-MB	Random	Normal	0%	100	-0.0004	0.1339	0.9450

Table 15: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 15.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	0%	100	0.0039	0.1315	0.9230
SRS-MB	Random	Skewed	0%	100	0.0005	0.1342	0.9280
GRTS-DB	Random	Skewed	0%	100	0.0043	0.1311	0.8990
GRTS-MB	Random	Skewed	0%	100	0.0021	0.1322	0.9280

Table 16: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 16.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	50%	100	-0.0003	0.0993	0.9435
SRS-MB	Gridded	Normal	50%	100	-0.0007	0.1058	0.9425
GRTS-DB	Gridded	Normal	50%	100	0.0000	0.1003	0.9300
GRTS-MB	Gridded	Normal	50%	100	-0.0025	0.1207	0.9420

Table 17: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 17.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	50%	100	-0.0019	0.1127	0.9175
SRS-MB	Gridded	Skewed	50%	100	0.0002	0.1135	0.9160
GRTS-DB	Gridded	Skewed	50%	100	0.0000	0.1113	0.9025
GRTS-MB	Gridded	Skewed	50%	100	0.0023	0.1221	0.9315

Table 18: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 18.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	50%	100	-0.0010	0.0997	0.9380
SRS-MB	Random	Normal	50%	100	-0.0001	0.1079	0.9440
GRTS-DB	Random	Normal	50%	100	-0.0012	0.1012	0.9235
GRTS-MB	Random	Normal	50%	100	-0.0016	0.1214	0.9440

Table 19: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 19.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	50%	100	-0.0002	0.1105	0.9235
SRS-MB	Random	Skewed	50%	100	-0.0020	0.1097	0.9290
GRTS-DB	Random	Skewed	50%	100	0.0013	0.1104	0.9090
GRTS-MB	Random	Skewed	50%	100	0.0020	0.1188	0.9395

Table 20: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 20.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	90%	100	-0.0013	0.0602	0.9425
SRS-MB	Gridded	Normal	90%	100	-0.0003	0.0701	0.9440
GRTS-DB	Gridded	Normal	90%	100	-0.0013	0.0670	0.9325
GRTS-MB	Gridded	Normal	90%	100	-0.0027	0.1083	0.9460

Table 21: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 21.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	90%	100	0.0004	0.0695	0.9280
SRS-MB	Gridded	Skewed	90%	100	-0.0038	0.0767	0.9265
GRTS-DB	Gridded	Skewed	90%	100	0.0018	0.0746	0.9270
GRTS-MB	Gridded	Skewed	90%	100	-0.0015	0.1108	0.9345

Table 22: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 22.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	90%	100	-0.0007	0.0570	0.9480
SRS-MB	Random	Normal	90%	100	0.0011	0.0675	0.9475
GRTS-DB	Random	Normal	90%	100	0.0009	0.0651	0.9430
GRTS-MB	Random	Normal	90%	100	0.0002	0.1071	0.9490

Table 23: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 23.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	90%	100	0.0023	0.0671	0.9230
SRS-MB	Random	Skewed	90%	100	-0.0031	0.0757	0.9315
GRTS-DB	Random	Skewed	90%	100	0.0026	0.0751	0.9225
GRTS-MB	Random	Skewed	90%	100	-0.0019	0.1165	0.9325

Table 24: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 24.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	0%	200	0.0032	0.0843	0.9610
SRS-MB	Gridded	Normal	0%	200	0.0003	0.0894	0.9440
GRTS-DB	Gridded	Normal	0%	200	0.0032	0.0842	0.9520
GRTS-MB	Gridded	Normal	0%	200	0.0005	0.0891	0.9465

Table 25: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 25.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	0%	200	0.0005	0.0892	0.9405
SRS-MB	Gridded	Skewed	0%	200	-0.0023	0.0895	0.9445
GRTS-DB	Gridded	Skewed	0%	200	0.0006	0.0891	0.9360
GRTS-MB	Gridded	Skewed	0%	200	-0.0018	0.0894	0.9440

Table 26: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 26.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	0%	200	0.0009	0.0882	0.9480
SRS-MB	Random	Normal	0%	200	0.0017	0.0907	0.9375
GRTS-DB	Random	Normal	0%	200	0.0008	0.0881	0.9400
GRTS-MB	Random	Normal	0%	200	0.0019	0.0905	0.9385

Table 27: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 27.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	0%	200	-0.0011	0.0873	0.9395
SRS-MB	Random	Skewed	0%	200	0.0005	0.0869	0.9390
GRTS-DB	Random	Skewed	0%	200	-0.0011	0.0873	0.9345
GRTS-MB	Random	Skewed	0%	200	0.0007	0.0867	0.9400

Table 28: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 28.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	50%	200	0.0039	0.0679	0.9375
SRS-MB	Gridded	Normal	50%	200	-0.0004	0.0678	0.9510
GRTS-DB	Gridded	Normal	50%	200	0.0036	0.0688	0.9330
GRTS-MB	Gridded	Normal	50%	200	-0.0016	0.0777	0.9520

Table 29: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 29.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	50%	200	0.0018	0.0691	0.9360
SRS-MB	Gridded	Skewed	50%	200	0.0016	0.0747	0.9400
GRTS-DB	Gridded	Skewed	50%	200	0.0019	0.0698	0.9325
GRTS-MB	Gridded	Skewed	50%	200	0.0013	0.0816	0.9400

Table 30: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 30.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	50%	200	0.0009	0.0643	0.9510
SRS-MB	Random	Normal	50%	200	0.0005	0.0713	0.9444
GRTS-DB	Random	Normal	50%	200	0.0005	0.0655	0.9474
GRTS-MB	Random	Normal	50%	200	0.0008	0.0816	0.9389

Table 31: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 31.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	50%	200	-0.0007	0.0679	0.9385
SRS-MB	Random	Skewed	50%	200	-0.0048	0.0729	0.9350
GRTS-DB	Random	Skewed	50%	200	-0.0001	0.0680	0.9400
GRTS-MB	Random	Skewed	50%	200	-0.0041	0.0789	0.9510

Table 32: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 32.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Normal	90%	200	-0.0008	0.0376	0.9475
SRS-MB	Gridded	Normal	90%	200	-0.0008	0.0418	0.9445
GRTS-DB	Gridded	Normal	90%	200	-0.0010	0.0418	0.9455
GRTS-MB	Gridded	Normal	90%	200	-0.0011	0.0730	0.9450

Table 33: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 33.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Gridded	Skewed	90%	200	0.0010	0.0423	0.9375
SRS-MB	Gridded	Skewed	90%	200	-0.0007	0.0475	0.9365
GRTS-DB	Gridded	Skewed	90%	200	0.0018	0.0482	0.9370
GRTS-MB	Gridded	Skewed	90%	200	0.0038	0.0768	0.9430

Table 34: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 34.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Normal	90%	200	0.0014	0.0368	0.9475
SRS-MB	Random	Normal	90%	200	0.0011	0.0408	0.9480
GRTS-DB	Random	Normal	90%	200	0.0016	0.0418	0.9450
GRTS-MB	Random	Normal	90%	200	0.0026	0.0713	0.9495

Table 35: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 35.

Approach	Layout	Response	DRE%	n	MB	RMSE	Coverage
SRS-DB	Random	Skewed	90%	200	-0.0001	0.0396	0.9419
SRS-MB	Random	Skewed	90%	200	0.0011	0.0437	0.9414
GRTS-DB	Random	Skewed	90%	200	-0.0008	0.0431	0.9504
GRTS-MB	Random	Skewed	90%	200	0.0028	0.0708	0.9504

Table 36: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in simulation scenario 36.

Approach	Response	n	MB	RMSE	Coverage
SRS-DB	Hg ppb	50	-0.5604	10.4434	0.9070
SRS-MB	Hg ppb	50	0.0573	11.3760	0.9020
GRTS-DB	Hg ppb	50	-0.1880	10.5558	0.8970
GRTS-MB	Hg ppb	50	0.2539	12.9467	0.9215

Table 37: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in a data application scenario 1.

Approach	Response	n	MB	RMSE	Coverage
SRS-DB	ZMMI	50	-0.1191	1.9608	0.9355
SRS-MB	ZMMI	50	0.0000	2.1477	0.9395
GRTS-DB	ZMMI	50	-0.0047	1.9953	0.9210
GRTS-MB	ZMMI	50	0.0461	2.4502	0.9440

Table 38: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in a data application scenario 2.

Approach	Response	n	MB	RMSE	Coverage
SRS-DB	Hg ppb	100	-0.4156	7.0344	0.9230
SRS-MB	Hg ppb	100	-0.4213	7.4820	0.9190
GRTS-DB	Hg ppb	100	0.0075	7.1415	0.9045
GRTS-MB	Hg ppb	100	-0.1390	8.9667	0.9290

Table 39: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in a data application scenario 3.

Approach	Response	n	MB	RMSE	Coverage
SRS-DB	ZMMI	100	-0.0968	1.2958	0.9450
SRS-MB	ZMMI	100	-0.0942	1.3920	0.9445
GRTS-DB	ZMMI	100	-0.0066	1.3219	0.9205
GRTS-MB	ZMMI	100	-0.0541	1.6901	0.9460

Table 40: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in a data application scenario 4.

Approach	Response	n	MB	RMSE	Coverage
SRS-DB	Hg ppb	200	-0.2762	4.3998	0.9410
SRS-MB	Hg ppb	200	-0.1775	4.6970	0.9400
GRTS-DB	Hg ppb	200	-0.0538	4.5051	0.9325
GRTS-MB	Hg ppb	200	-0.0876	5.9176	0.9450

Table 41: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in a data application scenario 5.

Approach	Response	n	MB	RMSE	Coverage
SRS-DB	ZMMI	200	-0.0311	0.8280	0.9450
SRS-MB	ZMMI	200	-0.0736	0.9090	0.9450
GRTS-DB	ZMMI	200	0.0193	0.8524	0.9460
GRTS-MB	ZMMI	200	-0.0093	1.1311	0.9455

Table 42: Sampling-analysis combination (Approach), population layout (Layout), response type (Response), proportion of dependent random error (DRE%), sample size (n), mean bias (MB), root-mean-squared error (rMS(P)E), and 95% interval coverage (Coverage) in a data application scenario 6.