NIST Decision Tree Report

Summary

Include	Laboratory	Result	Uncertainty	DegreesOfFreedom
TRUE	IRMM	34.30	1.03	60
TRUE	KRISS	32.90	0.69	4
TRUE	NARL	34.53	0.83	18
TRUE	NIST	32.42	0.29	2
TRUE	NMIJ	31.90	0.40	13
TRUE	NRC	35.80	0.38	60

Date: 2023-08-01
Version Number: 1.0.2
Type of DoE: Degrees of Equivalence Recognizing Dark Uncertainty
Random Seed: 793
Selected Procedure: Hierarchical Gauss-Gauss
Consensus estimate: 33.63
Standard uncertainty: 0.5444
95% coverage interval: (32.52, 34.73)
Dark uncertainty (tau): 1.498
Tau posterior 0.025 and 0.975 quantiles: (0.817,3.092)

Decision Tree Hypothesis test results

Cochran's test for Homogeneity:
p-value: $p < 0.001$
$Q = 68.22$ (Reference Distribution: Chi-Square with 5 Degrees of Freedom)
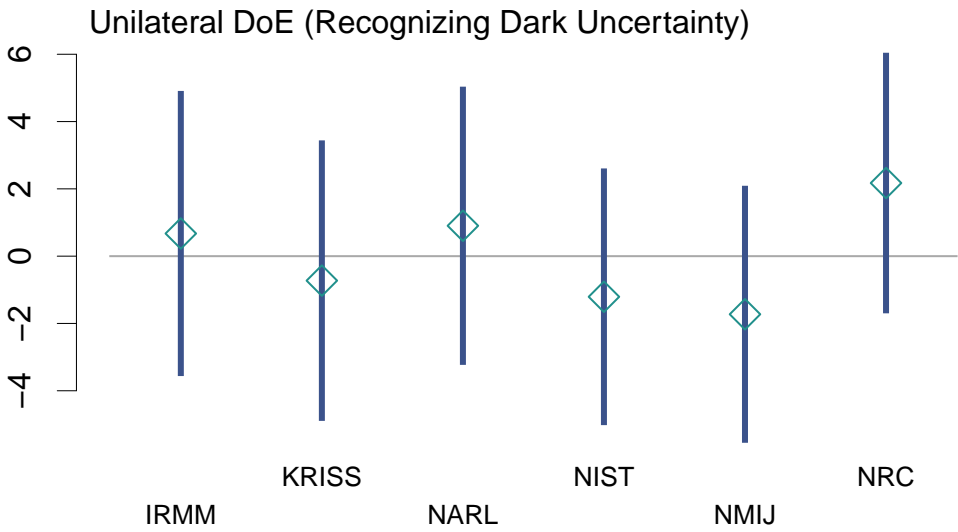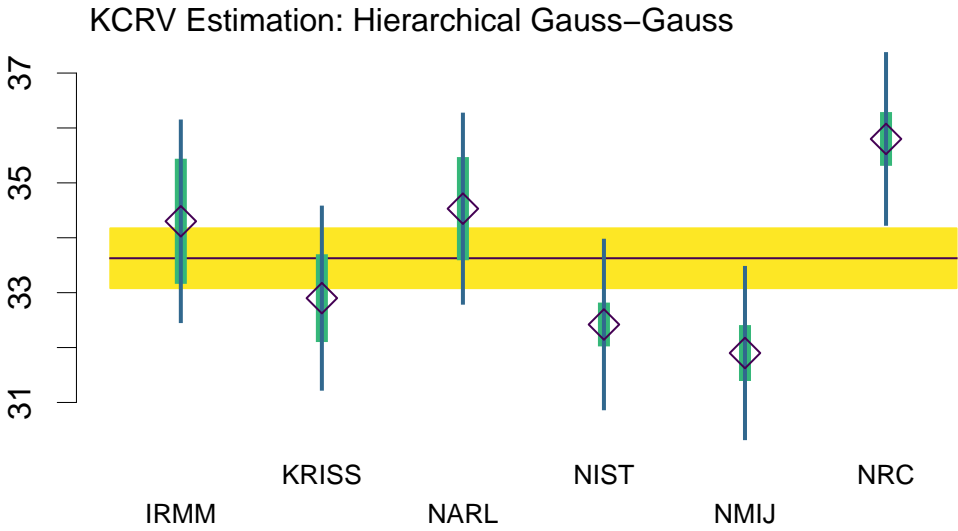tau est. $= 1.711$
$\text{tau/median}(x) = 0.05093$
$\text{tau/median}(u) = 3.14$

Shapiro-Wilk test for Normality: $p = 0.5301$

Miao-Gel-Gastwirth test of Symmetry: $p = 0.9328$

Plots

KCRV Estimation: Hierarchical Gauss–Gauss

Unilateral DoE (Recognizing Dark Uncertainty)

DoE Table

	Lab	DoE.x	DoE.U95	DoE.Lwr	DoE.Upr
IRMM	IRMM	0.6731	4.148	-3.474	4.821
KRISS	KRISS	-0.7269	4.079	-4.806	3.352
NARL	NARL	0.9031	4.045	-3.142	4.948
NIST	NIST	-1.2070	3.725	-4.932	2.518
NMIJ	NMIJ	-1.7270	3.730	-5.457	2.003
NRC	NRC	2.1730	3.783	-1.610	5.956

Lab Uncertainties Table

lab	x	u	nu	ut
IRMM	34.30	1.03	60	1.8177
KRISS	32.90	0.69	4	1.6490
NARL	34.53	0.83	18	1.7123
NIST	32.42	0.29	2	1.5255
NMIJ	31.90	0.40	13	1.5502
NRC	35.80	0.38	60	1.5451

lab	D	uDR	UDR	LwrR	UprR	uDI	UDI	LwrI	UprI
IRMM	0.6731	2.0682	4.0389	-3.3658	4.7121	1.1389	2.2072	-1.5341	2.8803
KRISS	-0.7269	2.0217	4.0305	-4.7573	3.3036	0.9969	1.9828	-2.7097	1.2559
NARL	0.9031	2.0127	3.8885	-2.9853	4.7916	1.0402	2.0532	-1.1501	2.9564
NIST	-1.2069	1.8686	3.7116	-4.9184	2.5047	0.7755	1.5007	-2.7076	0.2939
NMIJ	-1.7269	1.8871	3.7420	-5.4688	2.0151	0.6931	1.3695	-3.0963	-0.3574
NRC	2.1731	1.8491	3.6739	-1.5008	5.8471	0.6671	1.3210	0.8521	3.4942

MCMC Sampler Diagnostics Table (if applicable)

If one of the Bayesian models is run (Hierarchical Gauss-Gauss, Hierarchical Laplace-Gauss, or Hierarchical Skew-Student-t), then diagnostics for the MCMC sampler will be given below. As a general recommendation, if any of the R-hat values are greater than 1.05, then the sampler may not have reached equilibrium, and the "Total Number of MCMC Steps" should be increased, and the run repeated. The "Number of MCMC Warm-Up Steps" should be about half of the "Total Number of MCMC Steps." The "Effective Sample Size" (n.eff) is approximately the size of the MCMC sample that the results are based on.

	Rhat	n.eff
deviance	1.001	5000
lambda[1]	1.001	5000
lambda[2]	1.001	5000
lambda[3]	1.001	3600
lambda[4]	1.001	5000
lambda[5]	1.001	4900
lambda[6]	1.001	5000
mu	1.001	3500
sigma[1]	1.001	5000

	Rhat	n.eff
sigma[2]	1.001	4700
sigma[3]	1.001	5000
sigma[4]	1.001	5000
sigma[5]	1.002	2200
sigma[6]	1.001	3400
tau	1.001	5000