

Supplementary Web Materials:  
Variance prior specification for a basket trial design  
using Bayesian hierarchical modeling

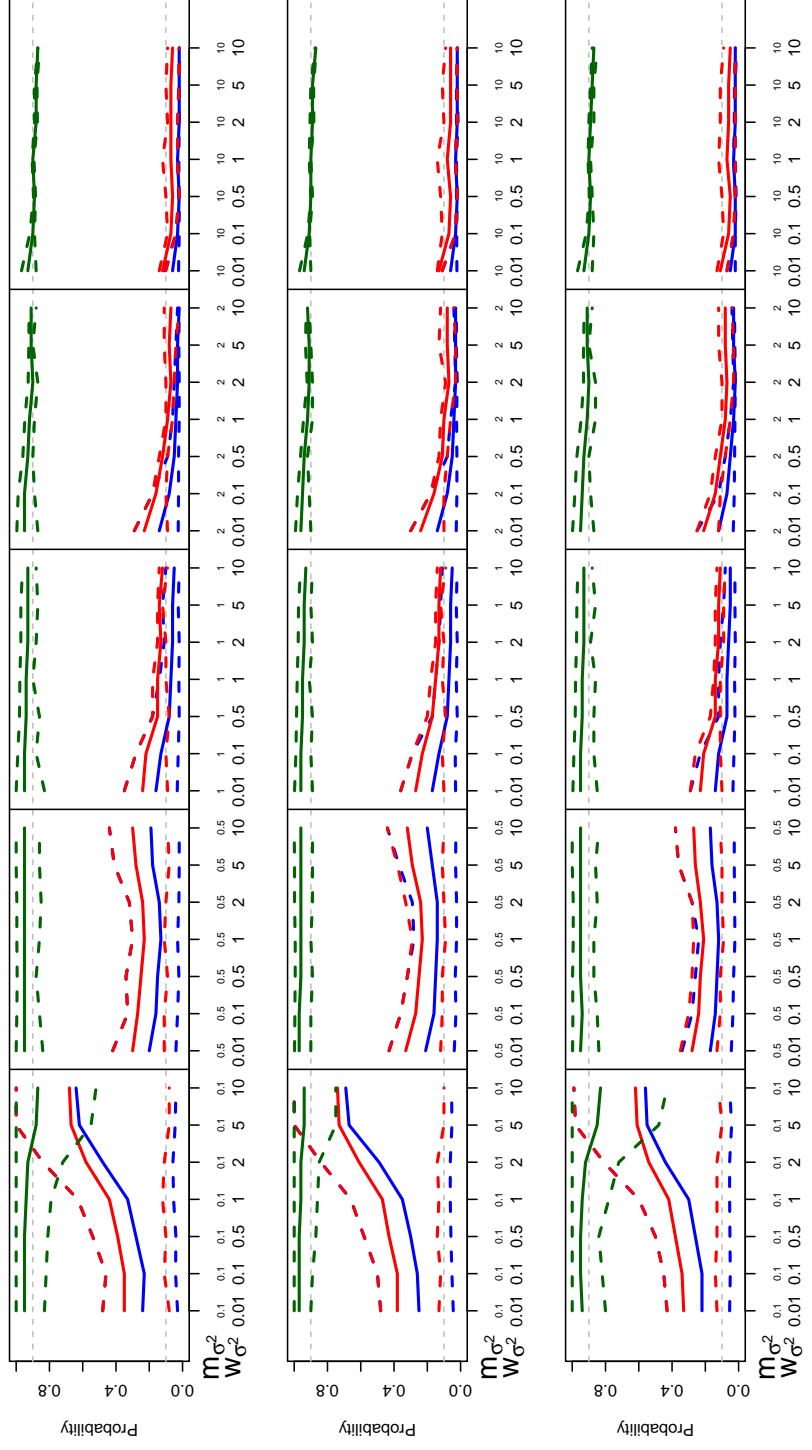
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Supplementary Material Table 1: Quantiles for the prior distribution of  $\sigma^2$  for: 35 inverse gamma priors specifications assuming prior mean  $m_\sigma^2$  and prior weight  $w_\sigma^2$ ; and 36 uniform prior specifications assuming lower bound  $a$  and upper bound  $b$ .

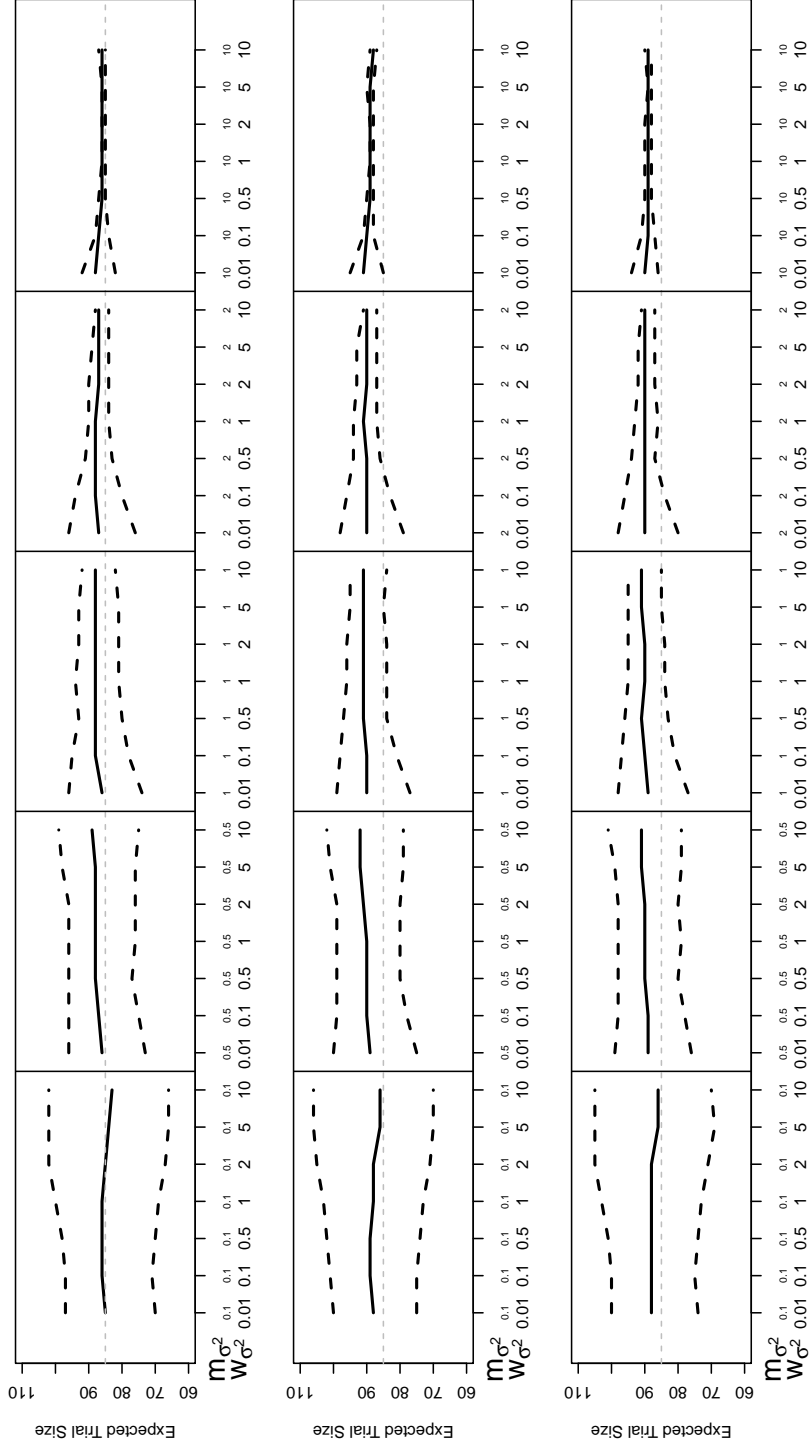
$m_\sigma^2$	$w_\sigma^2$	Inverse-gamma				Uniform					
		Quantiles for $\sigma^2$				a	b	Quantiles for $\sigma^2$			
		25%	50%	75%	99%			25%	50%	75%	99%
0.1	0.01	9.4e-126	2e-65	3.6e-30	4e-06	0	1	0.062	0.25	0.56	0.98
0.1	0.1	3.2e-16	2.9e-10	9.3e-07	0.00054	0	2	0.25	1	2.3	3.9
0.1	0.5	6.5e-06	0.00011	0.00066	0.0061	0	3	0.56	2.3	5.1	8.8
0.1	1	0.00025	0.0011	0.0033	0.017	0	10	6.4	25	56	98
0.1	2	0.0029	0.0069	0.014	0.046	0	100	640	2500	5600	9800
0.1	5	0.033	0.054	0.083	0.19	0	10000	6200000	2.5e+07	5.6e+07	9.8e+07
0.1	10	0.17	0.23	0.31	0.58	0.01	1	0.066	0.25	0.57	0.98
0.5	0.01	7.8e-124	5.4e-64	1e-28	0.00011	0.01	2	0.25	1	2.3	3.9
0.5	0.1	6.8e-15	7.4e-09	2.5e-05	0.014	0.01	3	0.57	2.2	5.1	8.8
0.5	0.5	0.00016	0.0027	0.016	0.15	0.01	10	6.2	25	56	98
0.5	1	0.0063	0.028	0.083	0.41	0.01	100	630	2500	5600	9800
0.5	2	0.072	0.17	0.35	1.2	0.01	10000	6200000	2.5e+07	5.6e+07	9.8e+07
0.5	5	0.84	1.4	2.1	4.8	0.05	1	0.084	0.28	0.58	0.98
0.5	10	4.2	5.8	7.9	15	0.05	2	0.29	1.1	2.3	3.9
1	0.01	3.5e-124	2.3e-63	4.9e-28	0.00044	0.05	3	0.62	2.3	5.1	8.8
1	0.1	2.7e-14	2.8e-08	9.2e-05	0.054	0.05	10	6.4	25	56	98
1	0.5	0.00065	0.011	0.065	0.61	0.05	100	620	2500	5600	9800
1	1	0.025	0.11	0.33	1.6	0.05	10000	6300000	2.5e+07	5.6e+07	9.8e+07
1	2	0.29	0.69	1.4	4.6	0.3	1	0.23	0.42	0.68	0.99
1	5	3.3	5.4	8.2	19	0.3	2	0.53	1.3	2.5	3.9
1	10	17	23	31	58	0.3	3	0.95	2.7	5.4	8.8
2	0.01	7.4e-123	6.2e-63	1.4e-27	0.0019	0.3	10	7.4	27	58	98
2	0.1	9.7e-14	1e-07	0.00035	0.22	0.3	100	630	2500	5700	9800
2	0.5	0.0026	0.043	0.26	2.4	0.3	10000	6200000	2.5e+07	5.6e+07	9.8e+07
2	1	0.1	0.45	1.3	6.6	0.5	1	0.39	0.56	0.77	0.99
2	2	1.2	2.8	5.5	19	0.5	2	0.77	1.6	2.6	3.9
2	5	13	22	33	76	0.5	3	1.3	3.1	5.7	8.8
2	10	67	93	130	230	0.5	10	8.1	28	58	98
10	0.01	1.7e-121	8.3e-62	2.9e-26	0.047	0.5	100	640	2500	5700	9800
10	0.1	2.7e-12	3e-06	0.0095	5.4	0.5	10000	6400000	2.5e+07	5.6e+07	9.8e+07
10	0.5	0.066	1.1	6.5	60	0.71	1	0.61	0.73	0.86	0.99
10	1	2.6	12	33	170	0.71	2	1.1	1.8	2.8	3.9
10	2	29	69	140	460	0.71	3	1.7	3.5	5.9	8.9
10	5	330	540	830	1900	0.71	10	9.3	29	59	98
10	10	1700	2300	3100	5800	0.71	100	650	2600	5600	9800
						0.71	10000	6300000	2.5e+07	5.7e+07	9.8e+07

## Vary Accrual Rates

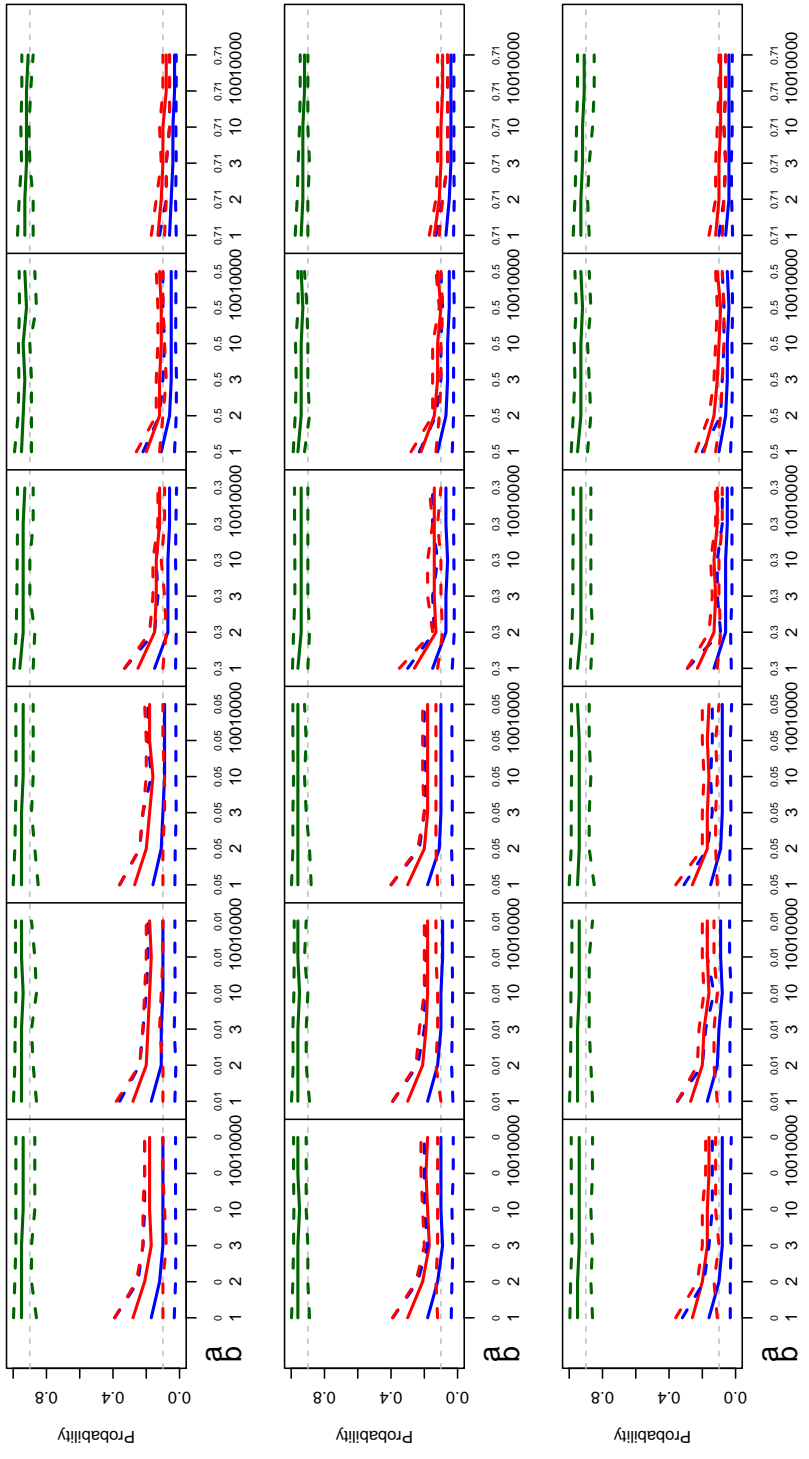
In the following figures, the top panel assumes for each basket, 2 patients enter every month; the middle panel assumes 3, 2, 2, 1, and 1 patient enter every month for Basket 1, 2, 3, 4, and 5, respectively; and the bottom panel assumes 1, 1, 2, 2, and 3 patient enter every month for Basket 1, 2, 3, 4, and 5, respectively.



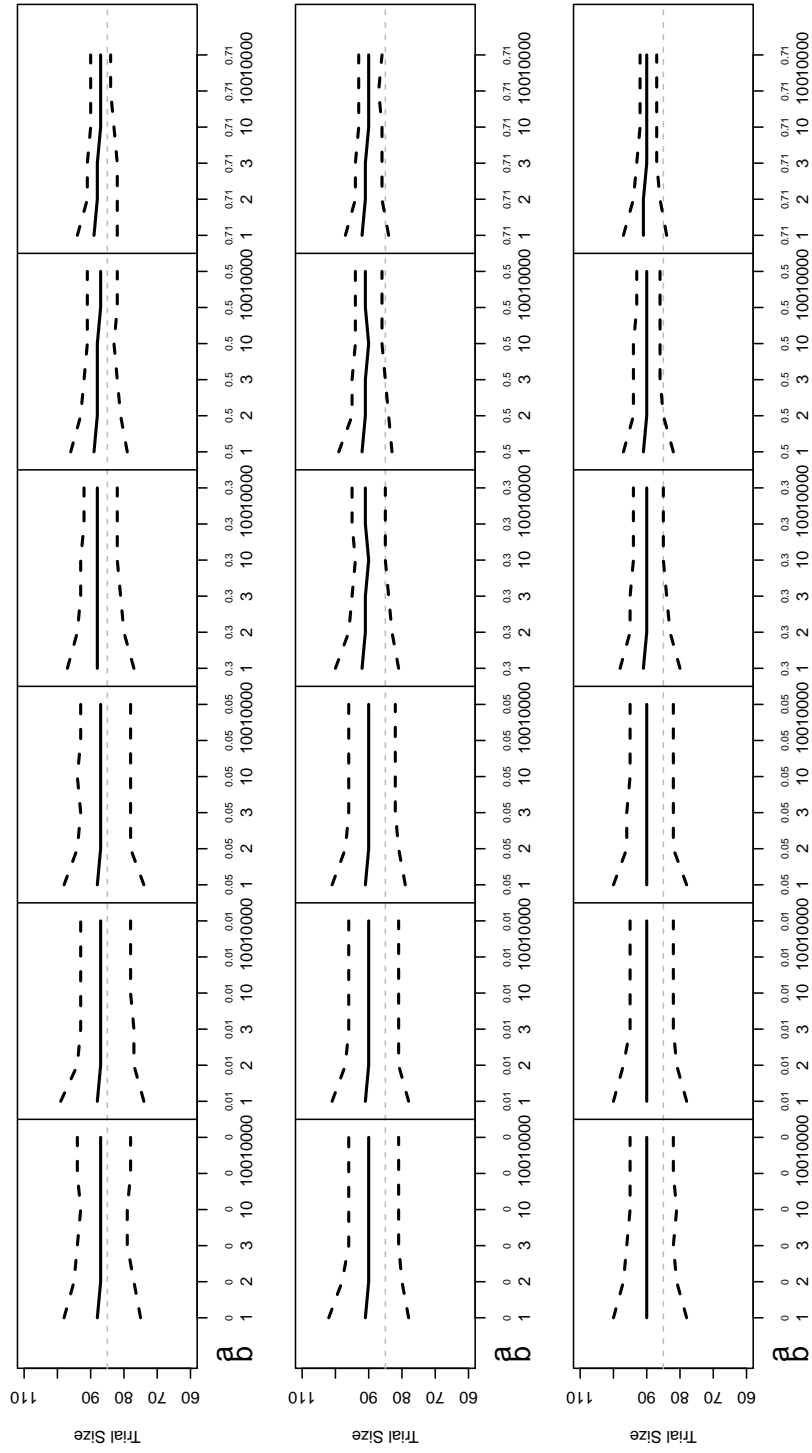
Supplementary Material Figure 1: The x-axis displays the assumed prior mean and weight hyperparameters for the Inverse Gamma prior distribution on  $\sigma^2$ . Presented are the average (solid lines) and range (dashed lines) of the power (green), marginal false positive rate (blue), and family wise error rate (red) across all scenarios ( $A = 0, 1, \dots, K = 5$  baskets active).



Supplementary Material Figure 2: The x-axis displays the assumed prior mean and weight hyperparameters for the Inverse Gamma prior distribution on  $\sigma^2$ . Presented are the average (solid lines) and range (dashed lines) of the expected trial size across all scenarios.



Supplementary Material Figure 3: The x-axis displays the assumed lower and upper hyperparameters for the Uniform prior distribution on  $\sigma$ . Presented are the average (solid lines) and range (dashed lines) of the power (green), marginal false positive rate (blue), and family wise error rate (red) across all scenarios ( $A = 0, 1, \dots, K = 5$  baskets active).



Supplementary Material Figure 4: The x-axis displays the assumed lower and upper hyperparameters for the Uniform prior distribution on  $\sigma$ . Presented are the average (solid lines) and range (dashed lines) of the expected trial size across all scenarios.