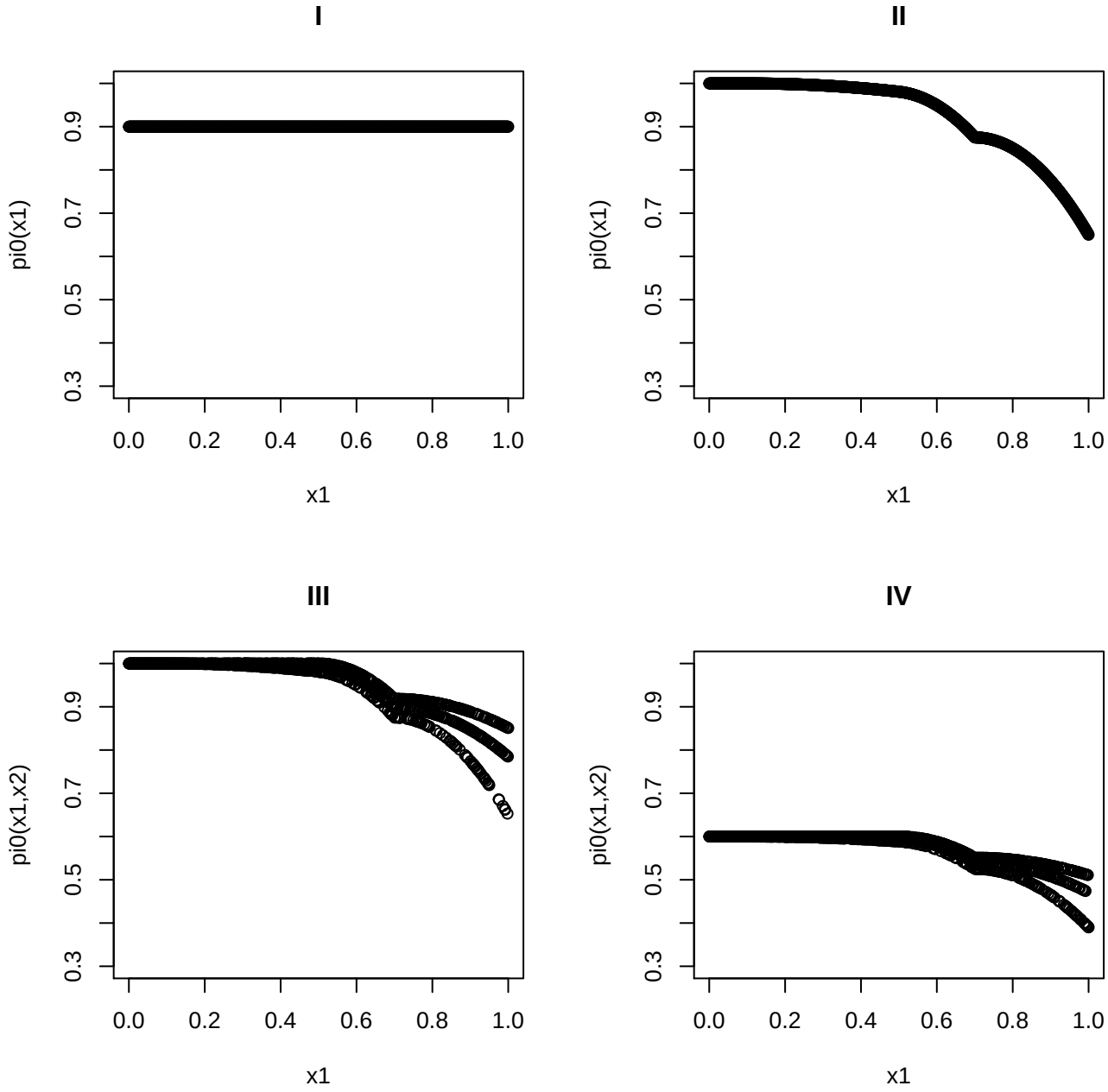
Simulations, independence

Consider 1,000 tests in each simulation, 200 simulations per scenario, nominal FDR = 5%.
The following 4 functions are considered for $\pi_0(x)$:



Estimated false discovery rates (FDR) and true positive rates (TPR) percentages. BL = Boca-Leek. W.S. = well-separated null and alternative, P.S. = poorly separated null and alternative. For III and IV, a dummy variable was used for x_2, along with linear or spline terms for x_1. Used reviewer's definition of "well-separated" and "poorly-separated." Used both the theoretical and empirical nulls for the Scott method. For the t-test, considered 2 groups of 6 (so 2x6 = 10 df) and used the t-statistics instead of the z-statistics for the Scott method. Extended "well-separated" and "poorly-separated" definition to chisquared test, generating means fom the absolute value of a normal distribution with mean 9, respectively 1. For the chisquared test, 1 df corresponds to a 2x2 table, 4 df to a 3x3 table. Used the z-values obtained from back-transforming the p-values for the Scott method in this case.

			FDR					TPR				
$\pi_0(x)$	Dist. under H_1	Reg. model	BL	Scott T	Scott E	Storey	BH	BL	Scott T	Scott E	Storey	BH
I	N, 20 blocks, rho=0.2	Linear	5.3	6.2	6.8	5.0	4.4	51.5	51.4	48.4	51.3	50.1
II	N, 20 blocks, rho=0.2	Linear	5.2	6.9	8.0	5.1	4.6	48.6	63.4	59.3	47.6	46.5
II	N, 20 blocks, rho=0.2	Spline	5.7	8.3	9.2	5.1	4.6	49.2	63.3	59.6	47.6	46.5
III	N, 20 blocks, rho=0.2	Linear	5.5	7.6	9.3	5.2	4.8	45.1	60.0	56.0	44.0	43.2
III	N, 20 blocks, rho=0.2	Spline	5.7	9.6	10.6	5.2	4.8	45.9	60.2	56.3	44.0	43.2
IV	N, 20 blocks, rho=0.2	Linear	5.3	5.3	2.5	4.9	2.9	71.8	71.9	61.0	71.4	65.6
IV	N, 20 blocks, rho=0.2	Spline	5.6	5.5	2.5	4.9	2.9	72.0	71.9	61.1	71.4	65.6
I	N, 20 blocks, rho=0.5	Linear	6.4	10.0	10.7	6.0	5.2	52.0	51.7	47.6	51.6	50.3
II	N, 20 blocks, rho=0.5	Linear	6.1	12.4	13.5	5.7	5.1	48.4	62.8	57.6	47.3	46.2
II	N, 20 blocks, rho=0.5	Spline	7.1	18.7	20.4	5.7	5.1	49.5	62.6	58.0	47.3	46.2
III	N, 20 blocks, rho=0.5	Linear	5.6	11.5	15.9	5.2	4.6	45.4	59.6	56.6	44.0	43.2
III	N, 20 blocks, rho=0.5	Spline	6.6	19.9	23.6	5.2	4.6	46.2	59.0	56.9	44.0	43.2
IV	N, 20 blocks, rho=0.5	Linear	5.8	6.1	2.8	5.3	3.1	72.1	72.3	59.4	71.6	65.7
IV	N, 20 blocks, rho=0.5	Spline	6.5	6.4	3.0	5.3	3.1	72.4	72.2	59.6	71.6	65.7
I	N, 20 blocks, rho=0.9	Linear	9.0	17.6	36.2	6.9	5.3	53.8	53.3	57.9	52.6	50.4
II	N, 20 blocks, rho=0.9	Linear	7.8	20.0	47.5	6.4	4.9	49.6	63.8	68.0	48.0	46.2
II	N, 20 blocks, rho=0.9	Spline	18.2	34.5	53.6	6.4	4.9	52.2	64.4	69.8	48.0	46.2
III	N, 20 blocks, rho=0.9	Linear	6.4	23.1	48.8	5.1	4.0	47.3	60.5	67.9	46.1	44.0
III	N, 20 blocks, rho=0.9	Spline	21.5	38.4	60.5	5.1	4.0	51.0	60.9	69.7	46.1	44.0
IV	N, 20 blocks, rho=0.9	Linear	7.7	8.4	6.9	6.1	3.1	73.1	73.2	57.4	72.2	65.9
IV	N, 20 blocks, rho=0.9	Spline	11.8	10.0	8.0	6.1	3.1	74.4	72.8	57.8	72.2	65.9
I	N, 10 blocks, rho=0.2	Linear	5.4	7.8	6.1	5.1	4.4	51.6	51.6	47.3	51.2	49.9
II	N, 10 blocks, rho=0.2	Linear	5.0	9.3	8.8	4.8	4.3	48.2	63.0	59.8	47.2	46.1
II	N, 10 blocks, rho=0.2	Spline	5.5	13.3	11.1	4.8	4.3	49.1	62.8	59.8	47.2	46.1
III	N, 10 blocks, rho=0.2	Linear	5.2	8.6	9.8	5.0	4.5	44.6	59.5	56.4	43.4	42.7
III	N, 10 blocks, rho=0.2	Spline	5.8	14.3	13.2	5.0	4.5	45.2	59.2	56.6	43.4	42.7
IV	N, 10 blocks, rho=0.2	Linear	5.3	5.7	2.4	5.0	2.9	71.8	71.8	60.4	71.4	65.5
IV	N, 10 blocks, rho=0.2	Spline	5.7	5.9	2.5	5.0	2.9	72.1	71.8	60.5	71.4	65.5
I	N, 10 blocks, rho=0.5	Linear	7.3	17.1	15.9	6.5	5.4	51.9	51.8	48.8	51.7	50.0
II	N, 10 blocks, rho=0.5	Linear	5.9	20.3	19.9	5.3	4.5	48.3	62.6	61.0	46.8	45.6
II	N, 10 blocks, rho=0.5	Spline	8.6	32.5	27.7	5.3	4.5	49.2	63.3	61.4	46.8	45.6
III	N, 10 blocks, rho=0.5	Linear	5.8	17.4	17.7	4.9	4.2	44.2	58.1	54.3	43.0	42.0
III	N, 10 blocks, rho=0.5	Spline	8.6	32.7	30.2	4.9	4.2	45.0	58.1	55.6	43.0	42.0
IV	N, 10 blocks, rho=0.5	Linear	6.3	7.5	3.3	5.5	3.2	72.4	72.4	59.0	71.9	65.8
IV	N, 10 blocks, rho=0.5	Spline	7.6	8.3	3.8	5.5	3.2	72.7	72.1	59.3	71.9	65.8
I	N, 10 blocks, rho=0.9	Linear	14.1	30.6	45.6	6.6	4.1	55.5	54.7	65.6	53.3	50.2
II	N, 10 blocks, rho=0.9	Linear	13.3	35.5	55.9	5.9	3.3	51.1	66.5	75.8	49.0	46.1
II	N, 10 blocks, rho=0.9	Spline	35.1	49.9	67.5	5.9	3.3	56.1	67.4	77.6	49.0	46.1
III	N, 10 blocks, rho=0.9	Linear	13.3	33.7	66.4	5.4	3.3	45.6	58.1	75.7	43.4	40.7
III	N, 10 blocks, rho=0.9	Spline	40.7	51.5	73.0	5.4	3.3	52.0	61.6	77.4	43.4	40.7
IV	N, 10 blocks, rho=0.9	Linear	11.2	12.4	12.0	7.0	3.1	74.0	73.5	63.9	72.5	65.8
IV	N, 10 blocks, rho=0.9	Spline	19.2	15.6	13.8	7.0	3.1	76.2	73.3	64.3	72.5	65.8

			FDR					TPR				
$\pi_0(x)$	Dist. under H_1	Reg. model	BL	Scott T	Scott E	Storey	BH	BL	Scott T	Scott E	Storey	BH
I	T, 20 blocks, rho=0.2	Linear	1.7	9.1	7.4	1.5	0.9	8.0	51.6	57.8	7.6	5.7
II	T, 20 blocks, rho=0.2	Linear	3.2	13.9	7.3	3.2	1.8	8.0	63.8	61.0	6.8	4.5
II	T, 20 blocks, rho=0.2	Spline	3.7	14.7	8.5	3.2	1.8	9.2	63.9	61.3	6.8	4.5
III	T, 20 blocks, rho=0.2	Linear	2.6	13.8	9.6	2.1	1.3	4.3	59.4	60.1	3.4	2.3
III	T, 20 blocks, rho=0.2	Spline	3.6	15.1	11.0	2.1	1.3	5.2	59.7	60.3	3.4	2.3
IV	T, 20 blocks, rho=0.2	Linear	2.7	5.4	2.9	2.4	1.0	55.4	71.8	65.1	54.4	44.3
IV	T, 20 blocks, rho=0.2	Spline	3.0	5.4	2.8	2.4	1.0	56.0	71.9	65.1	54.4	44.3
I	T, 20 blocks, rho=0.5	Linear	1.7	10.3	11.0	1.5	1.0	8.6	51.6	57.4	8.2	5.9
II	T, 20 blocks, rho=0.5	Linear	3.5	16.3	11.9	3.3	2.1	7.7	64.2	61.7	6.6	4.5
II	T, 20 blocks, rho=0.5	Spline	4.7	19.5	16.6	3.3	2.1	9.1	63.9	62.1	6.6	4.5
III	T, 20 blocks, rho=0.5	Linear	3.2	17.6	13.0	2.3	1.5	5.0	59.3	59.0	3.6	2.6
III	T, 20 blocks, rho=0.5	Spline	4.4	23.4	20.5	2.3	1.5	5.6	59.6	59.5	3.6	2.6
IV	T, 20 blocks, rho=0.5	Linear	2.7	5.5	3.0	2.3	1.0	55.3	71.9	64.7	54.3	44.4
IV	T, 20 blocks, rho=0.5	Spline	3.2	5.8	3.1	2.3	1.0	55.8	71.9	64.8	54.3	44.4
I	T, 20 blocks, rho=0.9	Linear	3.0	14.5	29.0	1.5	0.9	11.5	51.7	64.1	9.9	6.2
II	T, 20 blocks, rho=0.9	Linear	3.8	20.9	45.7	2.3	1.9	10.2	64.9	70.6	7.7	5.0
II	T, 20 blocks, rho=0.9	Spline	15.8	32.1	54.6	2.3	1.9	14.2	64.7	70.5	7.7	5.0
III	T, 20 blocks, rho=0.9	Linear	5.2	23.9	49.7	3.2	1.4	7.3	60.7	63.5	5.6	3.1
III	T, 20 blocks, rho=0.9	Spline	19.0	35.1	60.6	3.2	1.4	10.6	61.7	65.5	5.6	3.1
IV	T, 20 blocks, rho=0.9	Linear	3.6	6.6	7.5	2.4	1.0	56.1	72.2	67.5	54.6	44.3
IV	T, 20 blocks, rho=0.9	Spline	8.6	7.5	8.0	2.4	1.0	58.4	72.0	67.2	54.6	44.3
I	T, 10 blocks, rho=0.2	Linear	1.8	9.9	7.8	1.6	0.8	8.3	51.3	57.2	8.0	5.9
II	T, 10 blocks, rho=0.2	Linear	3.4	15.0	8.1	3.4	1.5	7.3	63.1	61.3	6.4	4.3
II	T, 10 blocks, rho=0.2	Spline	4.0	16.7	9.9	3.4	1.5	8.6	63.2	61.5	6.4	4.3
III	T, 10 blocks, rho=0.2	Linear	2.2	15.2	9.5	1.6	1.2	3.7	58.7	59.4	3.0	1.9
III	T, 10 blocks, rho=0.2	Spline	2.7	18.0	12.7	1.6	1.2	4.2	58.5	59.7	3.0	1.9
IV	T, 10 blocks, rho=0.2	Linear	2.6	5.5	2.8	2.4	1.0	54.8	71.5	64.6	53.9	43.9
IV	T, 10 blocks, rho=0.2	Spline	3.0	5.6	2.8	2.4	1.0	55.4	71.5	64.7	53.9	43.9
I	T, 10 blocks, rho=0.5	Linear	2.2	13.5	14.2	1.6	0.9	9.3	50.8	57.4	8.5	6.1
II	T, 10 blocks, rho=0.5	Linear	3.3	19.2	13.6	3.4	1.7	7.9	63.1	61.2	7.0	4.4
II	T, 10 blocks, rho=0.5	Spline	6.2	27.6	21.3	3.4	1.7	9.9	63.5	61.3	7.0	4.4
III	T, 10 blocks, rho=0.5	Linear	2.3	23.4	21.5	1.3	0.7	4.4	58.0	59.5	3.0	2.1
III	T, 10 blocks, rho=0.5	Spline	3.8	35.9	31.4	1.3	0.7	5.6	58.1	60.1	3.0	2.1
IV	T, 10 blocks, rho=0.5	Linear	3.1	6.1	3.4	2.5	1.0	54.4	71.4	63.5	53.4	43.2
IV	T, 10 blocks, rho=0.5	Spline	4.3	6.6	3.8	2.5	1.0	55.3	71.2	64.0	53.4	43.2
I	T, 10 blocks, rho=0.9	Linear	7.7	23.0	38.0	1.6	1.0	14.9	51.5	70.9	11.4	6.7
II	T, 10 blocks, rho=0.9	Linear	10.1	31.5	50.0	4.1	1.7	12.4	65.4	76.2	11.1	6.0
II	T, 10 blocks, rho=0.9	Spline	41.7	43.6	60.7	4.1	1.7	22.4	68.2	78.9	11.1	6.0
III	T, 10 blocks, rho=0.9	Linear	12.7	36.2	62.9	2.2	1.3	11.0	60.5	77.2	5.8	2.6
III	T, 10 blocks, rho=0.9	Spline	43.0	48.4	71.0	2.2	1.3	19.3	62.9	78.7	5.8	2.6
IV	T, 10 blocks, rho=0.9	Linear	6.2	9.2	11.1	3.2	1.0	56.3	72.1	68.3	54.2	42.4
IV	T, 10 blocks, rho=0.9	Spline	15.1	10.8	11.8	3.2	1.0	59.3	71.8	68.3	54.2	42.4