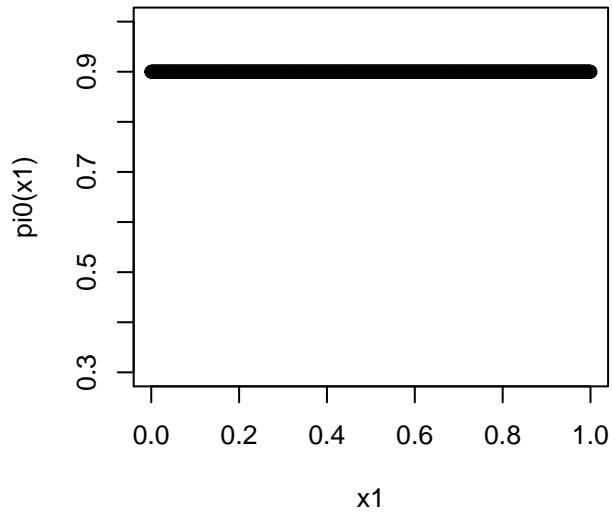# Simulations, independence
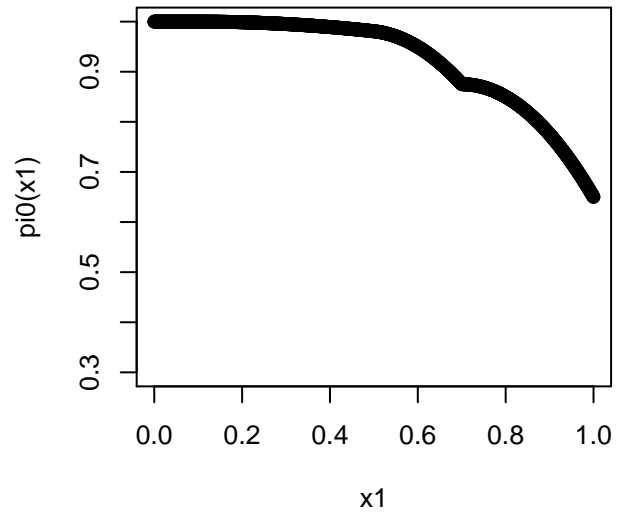
Consider 10,000 tests in each simulation, 200 simulations per scenario, nominal FDR = 5%.
The following 4 functions are considered for $\pi_0(x)$:
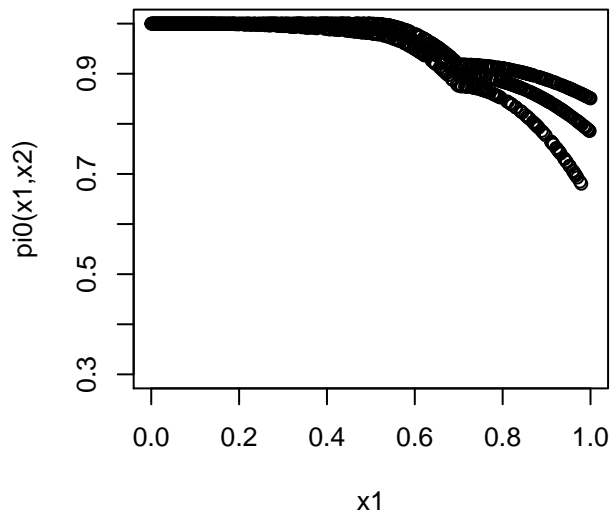
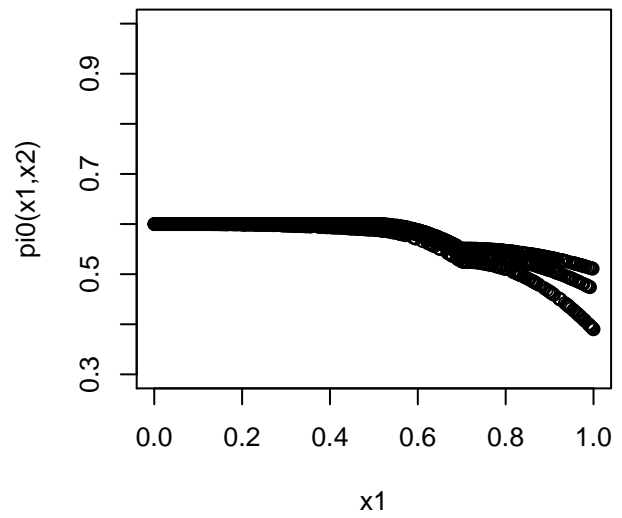Estimated false discovery rates (FDR) and true positive rates (TPR) percentages. BL = Boca-Leek. W.S. = well-separated null and alternative, P.S. = poorly separated null and alternative. For III and IV, a dummy variable was used for x_2, along with linear or spline terms for x_1. Used reviewer's definition 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.

$\pi_0(x)$	Dist. under H_1	Reg. model	FDR BL	Scott T	Scott E	Storey	BH	TPR BL	Scott T	Scott E	Storey	BH
I	Beta(1,20)	Linear	3.7	90.0	90.0	3.7	3.6	0.0	100.0	100.0	0.0	0.0
II	Beta(1,20)	Linear	3.1	92.6	92.6	3.1	3.0	0.0	100.0	100.0	0.0	0.0
II	Beta(1,20)	Spline	3.1	92.6	92.6	3.1	3.0	0.0	100.0	100.0	0.0	0.0
III	Beta(1,20)	Linear	4.0	94.9	94.9	3.5	3.5	0.0	100.0	100.0	0.0	0.0
III	Beta(1,20)	Spline	4.5	94.9	94.9	3.5	3.5	0.0	100.0	100.0	0.0	0.0
IV	Beta(1,20)	Linear	4.4	56.9		4.8	2.5	1.2	100.0		0.5	0.0
IV	Beta(1,20)	Spline	5.0	56.9		4.8	2.5	2.0	100.0		0.5	0.0
I	Norm (W.S.)	Linear	5.0	5.0	5.9	5.0	4.5	50.6	50.6	52.1	50.7	49.6
II	Norm (W.S.)	Linear	4.9	5.2	5.3	4.9	4.6	48.4	63.9	62.9	47.3	46.6
II	Norm (W.S.)	Spline	4.9	5.2	5.3	4.9	4.6	48.8	64.0	63.0	47.3	46.6
III	Norm (W.S.)	Linear	4.9	5.2	5.5	4.9	4.7	44.2	60.2	59.3	43.5	43.0
III	Norm (W.S.)	Spline	4.9	5.2	5.4	4.9	4.7	44.4	60.6	59.7	43.5	43.0
IV	Norm (W.S.)	Linear	4.8	5.0	2.3	4.8	2.8	71.3	71.8	62.2	71.2	65.3
IV	Norm (W.S.)	Spline	4.8	5.0	2.3	4.8	2.8	71.3	71.8	62.2	71.2	65.3
I	T (W.S.)	Linear	5.2	21.7	20.8	5.1	4.7	14.1	55.3	53.2	14.1	12.6
II	T (W.S.)	Linear	4.6	20.0	19.9	4.9	4.5	11.5	65.7	65.4	10.2	9.2
II	T (W.S.)	Spline	4.5	20.2	20.1	4.9	4.5	12.0	65.7	65.4	10.2	9.2
III	T (W.S.)	Linear	4.9	24.7	26.8	5.2	5.2	6.8	62.5	63.7	6.0	5.5
III	T (W.S.)	Spline	4.8	24.8	26.9	5.2	5.2	7.0	62.6	63.9	6.0	5.5
IV	T (W.S.)	Linear	4.8	9.3	1.2	4.8	2.9	51.8	72.8	28.5	51.6	40.2
IV	T (W.S.)	Spline	4.8	9.3	1.2	4.8	2.9	51.9	72.9	28.6	51.6	40.2
I	Chisq 1 df (W.S.)	Linear	5.0	90.0	90.0	5.0	4.5	50.7	100.0	100.0	50.6	49.6
II	Chisq 1 df (W.S.)	Linear	4.9	92.6	92.6	5.0	4.6	48.2	100.0	100.0	47.2	46.4
II	Chisq 1 df (W.S.)	Spline	4.8	92.6	92.6	5.0	4.6	48.6	100.0	100.0	47.2	46.4
III	Chisq 1 df (W.S.)	Linear	5.0	94.9	94.9	5.0	4.8	44.0	100.0	100.0	43.2	42.7
III	Chisq 1 df (W.S.)	Spline	5.0	94.9	94.9	5.0	4.8	44.2	100.0	100.0	43.2	42.7
IV	Chisq 1 df (W.S.)	Linear	4.8	56.9		4.8	2.8	71.1	100.0		71.0	65.2
IV	Chisq 1 df (W.S.)	Spline	4.8	56.9		4.8	2.8	71.2	100.0		71.0	65.2
I	Chisq 4 df (W.S.)	Linear	5.0	90.0	90.0	5.0	4.5	29.7	100.0	100.0	29.7	28.7
II	Chisq 4 df (W.S.)	Linear	4.9	92.6	92.6	5.0	4.7	28.0	100.0	100.0	27.1	26.5
II	Chisq 4 df (W.S.)	Spline	4.9	92.6	92.6	5.0	4.7	28.4	100.0	100.0	27.1	26.5
III	Chisq 4 df (W.S.)	Linear	5.2	94.9	94.9	5.2	5.0	24.3	100.0	100.0	23.6	23.2
III	Chisq 4 df (W.S.)	Spline	5.2	94.9	94.9	5.2	5.0	24.4	100.0	100.0	23.6	23.2
IV	Chisq 4 df (W.S.)	Linear	4.7	56.9	57.1	4.7	2.8	51.8	100.0	100.0	51.7	44.8
IV	Chisq 4 df (W.S.)	Spline	4.7	56.9	57.1	4.7	2.8	51.9	100.0	100.0	51.7	44.8