

# More 1D Experiments

Kristyn Pantoja

7/25/2019

I. intercept at 0

II. space in-between

V. less space in-between

VI. linear vs quadratic

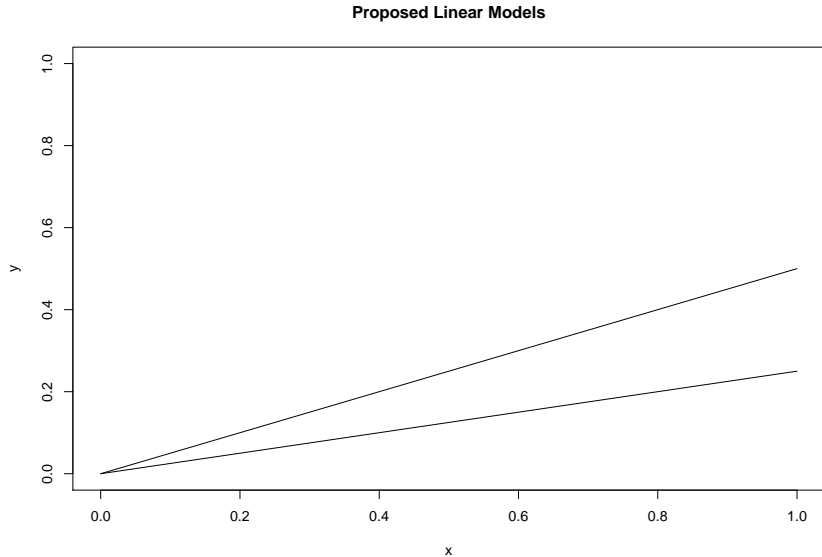
## Some Observations

- ▶ Just to show that it seems

$$G - \text{Crit}_{k \rightarrow \infty} \{MED_{G,k}\} = F - \text{Crit}\{MED_F\}$$

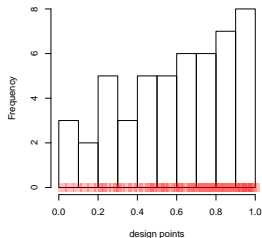
I. intercept at 0

# I. Proposed Linear Models

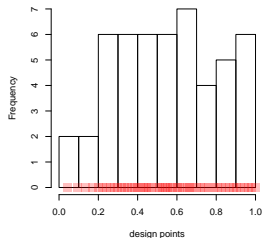


# Designs, $N = 50$

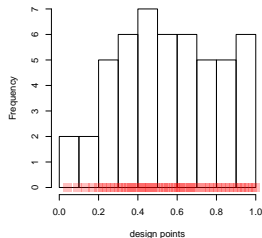
One-at-a-Time,  $k = 1$



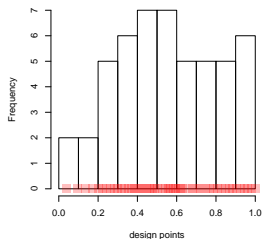
One-at-a-Time,  $k = 4$



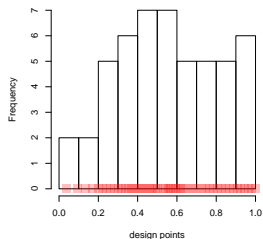
One-at-a-Time,  $k = 20$



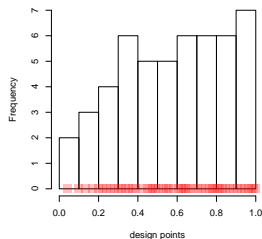
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



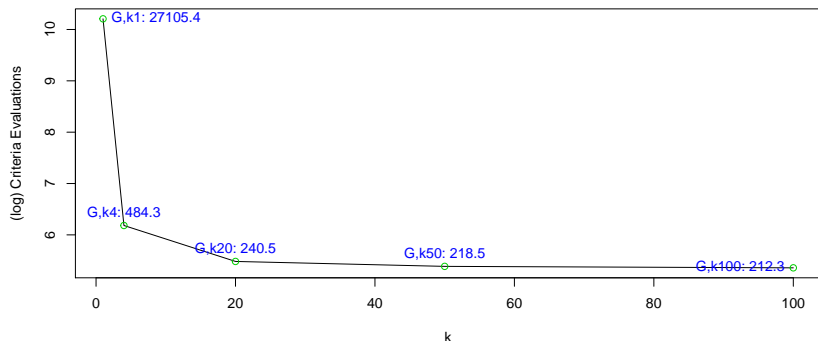
Fast,  $S = 20$



# Comparing Evaluations for each $N = 50$ Design

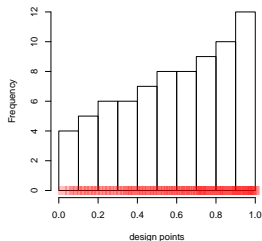
	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	27.105	28.693	28.57	28.757	28.749	27.492
Fast	335.26	209.63	208.43	208.1	208.06	208.15
1atT(k=4)	502.21	484.28	480.28	480.12	479.88	469.12
Mean(D)	0.59672	0.55135	0.55316	0.55152	0.55167	0.5767
sd(D)	0.28173	0.25876	0.25893	0.25844	0.25845	0.26824

Each MED evaluated at its own criterion:

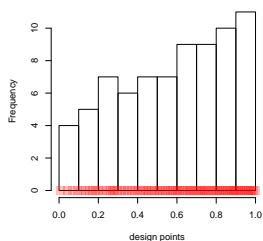


# Designs, $N = 75$

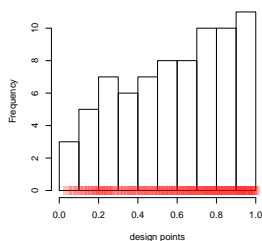
One-at-a-Time,  $k = 1$



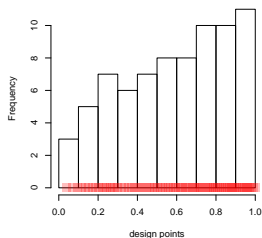
One-at-a-Time,  $k = 4$



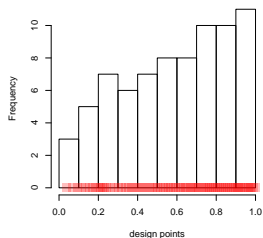
One-at-a-Time,  $k = 20$



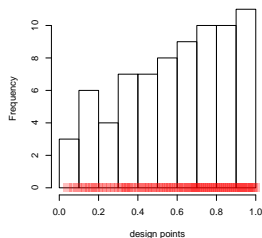
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



Fast,  $S = 20$

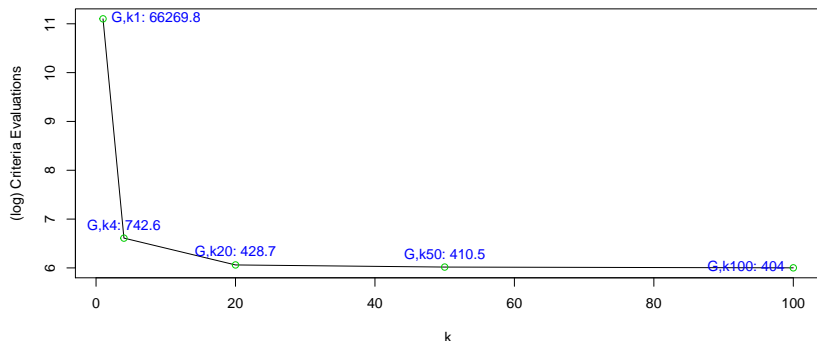




# Comparing Evaluations for each $N = 75$ Design

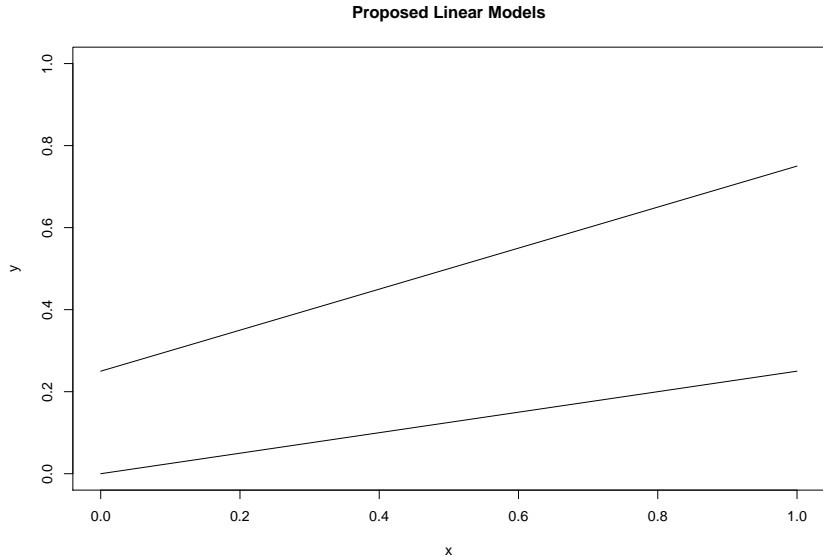
	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	66.27	66.737	66.912	66.844	67.018	66.905
Fast	373.54	451.94	402	400.01	399.65	401.03
1atT(k=4)	733.35	742.62	745.74	745.07	745.91	744.47
Mean(D)	0.5874	0.58103	0.58511	0.58596	0.58528	0.59326
sd(D)	0.28154	0.28039	0.27604	0.27536	0.2764	0.27154

Each MED evaluated at its own criterion:



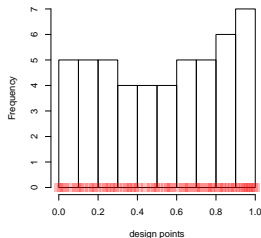
## II. space in-between

## II. Proposed Linear Models

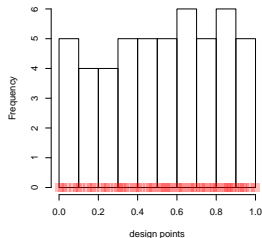


# Designs, $N = 50$

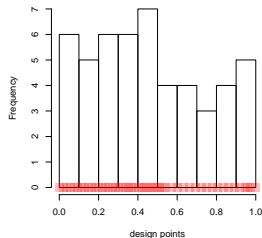
One-at-a-Time,  $k = 1$



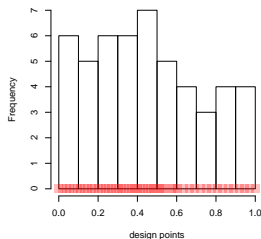
One-at-a-Time,  $k = 4$



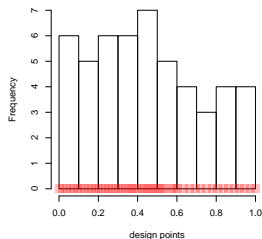
One-at-a-Time,  $k = 20$



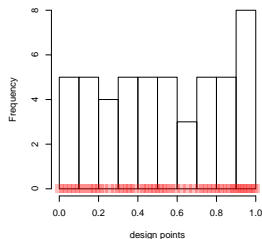
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



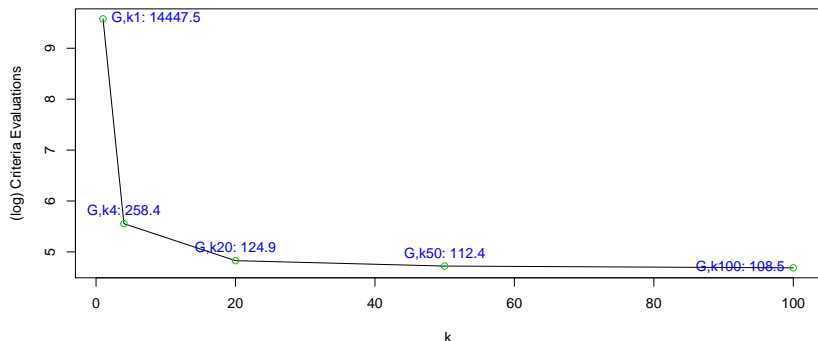
Fast,  $S = 20$



# Comparing Evaluations for each $N = 50$ Design

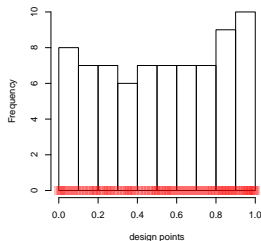
	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	14.448	14.712	15.394	15.558	15.558	14.271
Fast	144.42	105.58	105.23	105.32	105.32	108.16
1atT(k=4)	266.3	258.43	259.47	259.44	259.44	240.49
Mean(D)	0.53194	0.5202	0.45769	0.45036	0.45036	0.52515
sd(D)	0.3106	0.2927	0.29233	0.28393	0.28393	0.31158

Each MED evaluated at its own criterion:

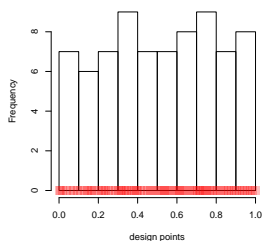


# Designs, $N = 75$

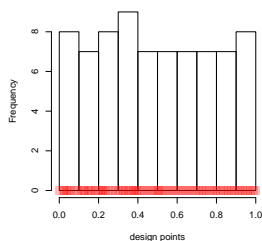
One-at-a-Time,  $k = 1$



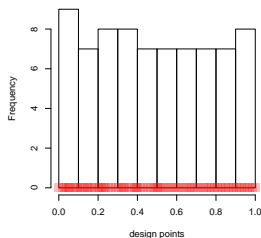
One-at-a-Time,  $k = 4$



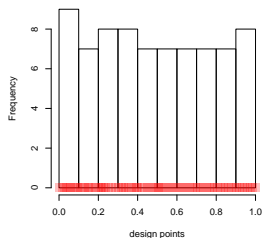
One-at-a-Time,  $k = 20$



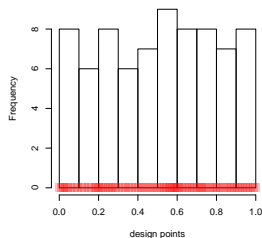
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



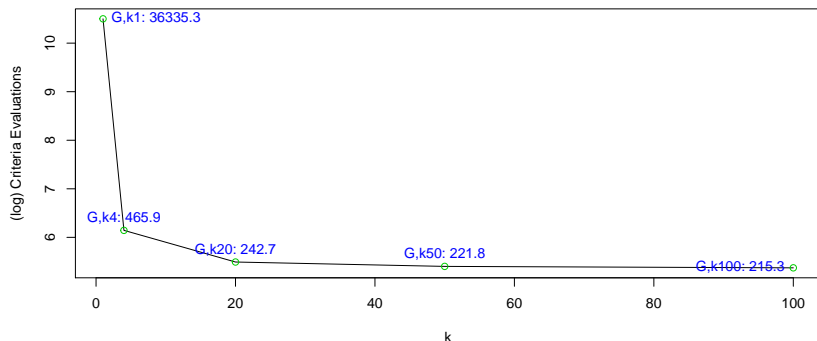
Fast,  $S = 20$



# Comparing Evaluations for each $N = 75$ Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	36.335	37.069	37.248	37.135	37.135	37.067
Fast	302.5	210.13	210.08	209.66	209.66	209.51
1atT(k=4)	492.53	465.92	466.77	466.43	466.43	451.56
Mean(D)	0.52681	0.51185	0.48986	0.48604	0.48604	0.50762
sd(D)	0.30757	0.28924	0.2955	0.29894	0.29894	0.2923

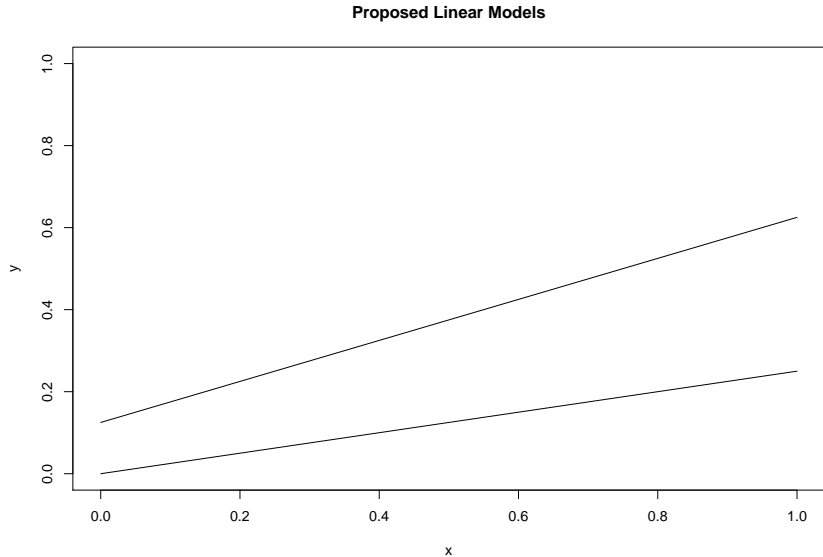
Each MED evaluated at its own criterion:



V. less space in-between

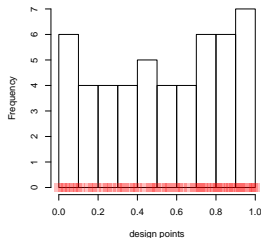


## V. Proposed Linear Models

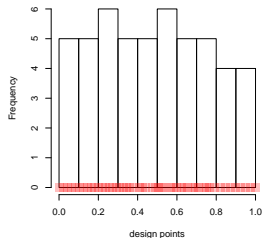


# Designs, $N = 50$

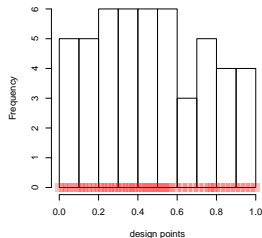
One-at-a-Time,  $k = 1$



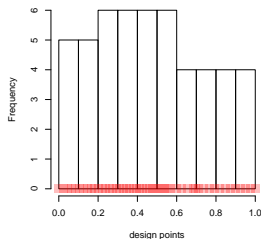
One-at-a-Time,  $k = 4$



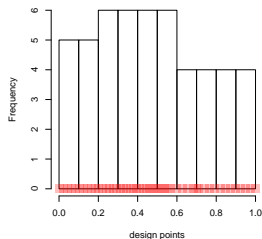
One-at-a-Time,  $k = 20$



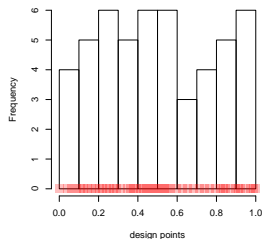
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



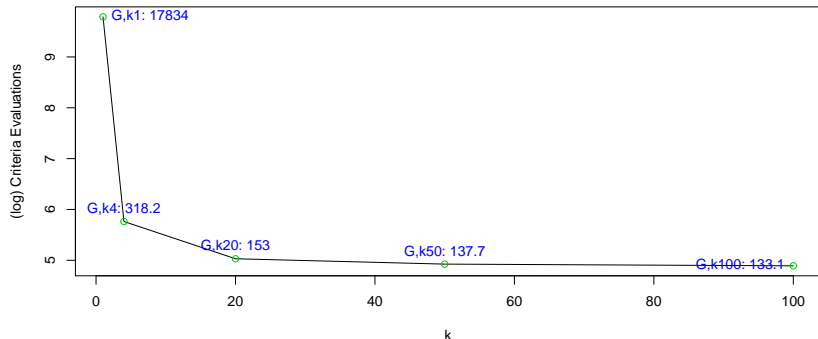
Fast,  $S = 20$



# Comparing Evaluations for each $N = 50$ Design

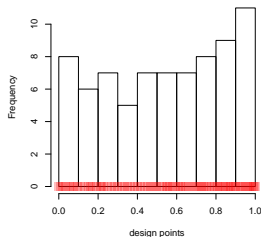
	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	17.834	18.691	19.038	19.067	19.064	18.559
Fast	179.04	130.52	130.62	130.94	130.93	132.39
1atT(k=4)	328.02	318.2	317.77	317.62	317.56	317.09
Mean(D)	0.53486	0.48047	0.47149	0.47004	0.47008	0.5038
sd(D)	0.30937	0.2875	0.28524	0.28363	0.28367	0.29313

Each MED evaluated at its own criterion:

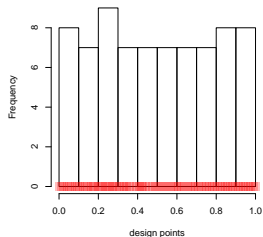


# Designs, $N = 75$

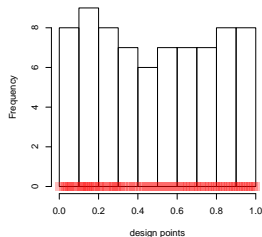
One-at-a-Time,  $k = 1$



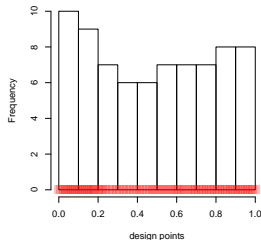
One-at-a-Time,  $k = 4$



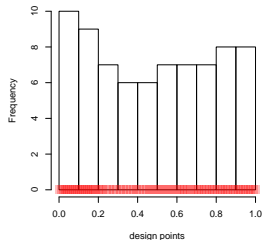
One-at-a-Time,  $k = 20$



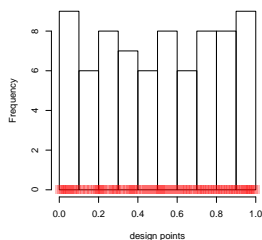
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



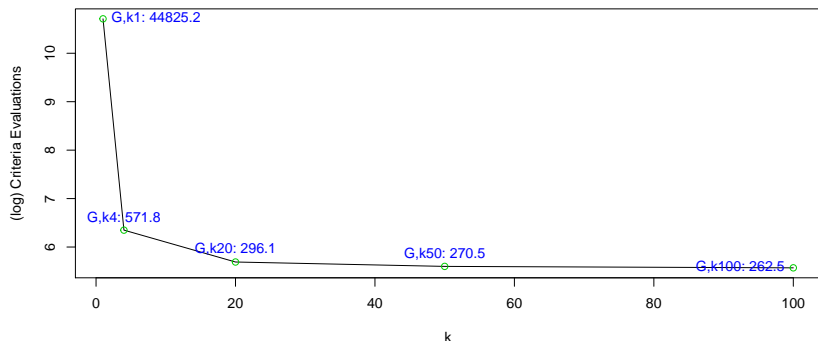
Fast,  $S = 20$



# Comparing Evaluations for each $N = 75$ Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	44.825	45.667	46.168	46.274	46.273	45.291
Fast	377.04	257.68	256.01	255.9	255.9	256.54
1atT(k=4)	606.54	571.78	571.35	571.96	571.96	567.94
Mean(D)	0.53962	0.49804	0.49274	0.48676	0.4868	0.50897
sd(D)	0.30624	0.29905	0.30355	0.31011	0.31014	0.30376

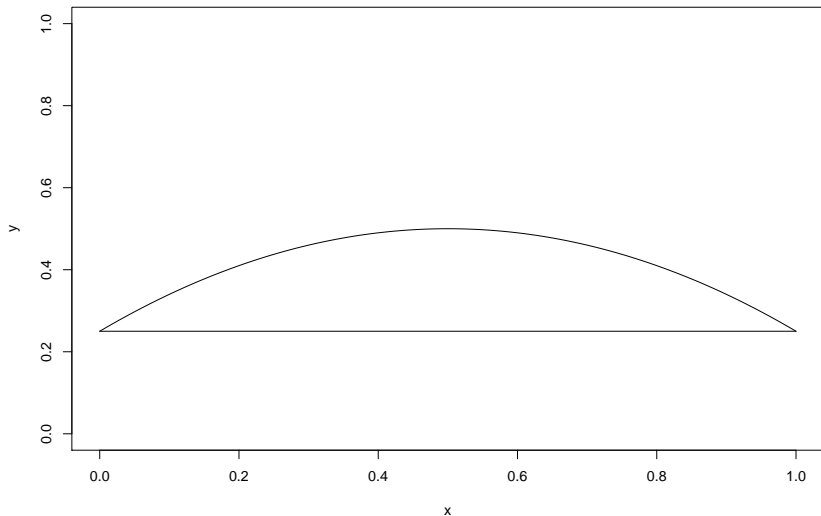
Each MED evaluated at its own criterion:



## VI. linear vs quadratic

# VI. Proposed Linear Models

## Proposed Linear and Quadratic Models

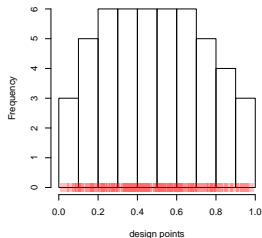


```
## Warning in calculateEvals(D_oaat_lin6_N50_k1, N, mean_beta0, mean_beta1, :  
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1
```

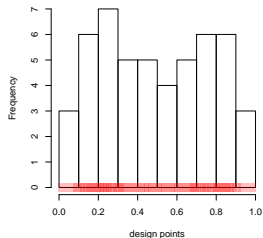
```
## Warning in calculateEvals(D_oaat_lin6_N50_k4, N, mean_beta0, mean_beta1, :  
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1
```

# Designs, $N = 50$

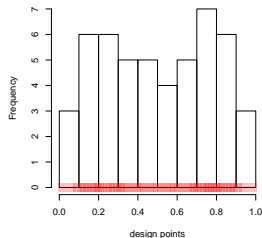
One-at-a-Time,  $k = 1$



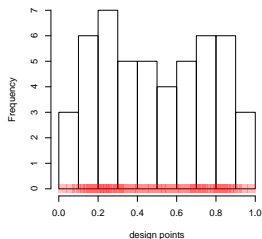
One-at-a-Time,  $k = 4$



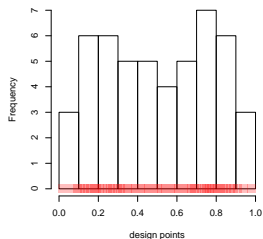
One-at-a-Time,  $k = 20$



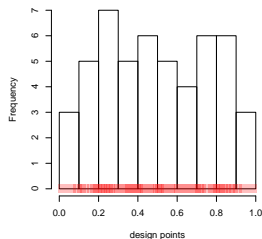
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



Fast,  $S = 20$

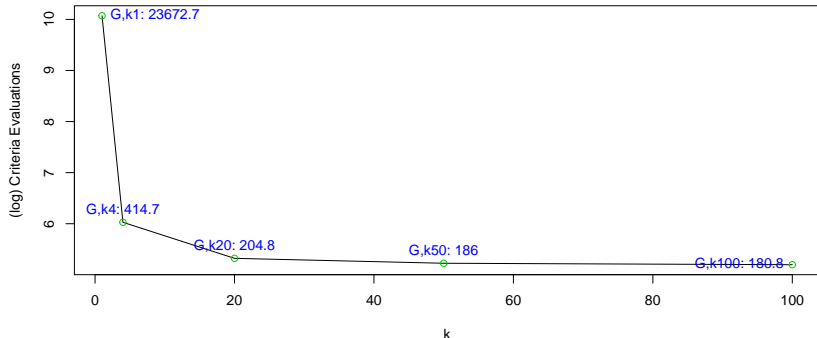




# Comparing Evaluations for each $N = 50$ Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	23.673	24.021	23.902	23.888	23.884	23.803
Fast	226.43	180.72	177.07	176.99	176.97	186.59
1atT(k=4)	426.78	414.73	409.09	408.43	408.23	413.16
Mean(D)	0.49045	0.49371	0.5053	0.4947	0.5053	0.49669
sd(D)	0.26054	0.27526	0.27563	0.27547	0.27544	0.26875

Each MED evaluated at its own criterion:

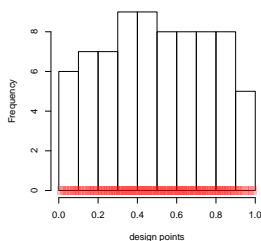


```
## Warning in calculateEvals(D_oaat_lin6_N75_k1, N, mean_beta0, mean_beta1, :  
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1
```

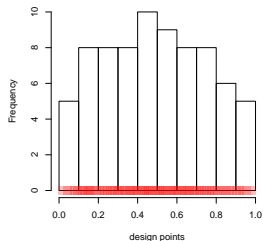
```
## Warning in calculateEvals(D_oaat_lin6_N75_k4, N, mean_beta0, mean_beta1, :  
## var_mean0 != var_mean1. posterior variance will be calculated wrt H1
```

# Designs, $N = 75$

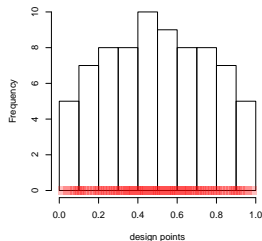
One-at-a-Time,  $k = 1$



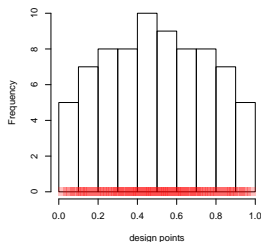
One-at-a-Time,  $k = 4$



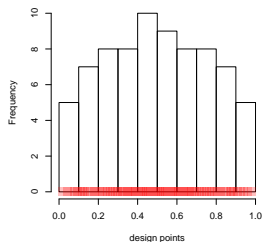
One-at-a-Time,  $k = 20$



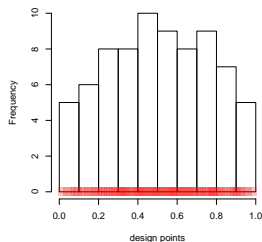
One-at-a-Time,  $k = 50$



One-at-a-Time,  $k = 100$



Fast,  $S = 20$



# Comparing Evaluations for each $N = 75$ Design

	1atT,k=1	1atT,k=4	1atT,k=20	1atT,k=50	1atT,k=100	Fast
TPE $\times 10e-3$	57.335	57.565	57.528	57.483	57.485	57.841
Fast	424.36	348.11	341.87	339.98	339.98	344.89
1atT(k=4)	641.68	632.38	632.58	631.56	631.58	651.87
Mean(D)	0.49943	0.4895	0.49999	0.5	0.5	0.50883
sd(D)	0.2703	0.26168	0.26357	0.26268	0.26265	0.26129

Each MED evaluated at its own criterion:

