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$Single.Stage.Equal.Alpha.Allocation.Design
$Single.Stage.Equal.Alpha.Allocation.Design$design.parameters
$Single.Stage.Equal.Alpha.Allocation.Design$design.parameters$cumulative.sample.sizes.and.c
alendar.time.per.stage
  Stage  C1  C2  A1  A2 Analysis.Time.In.Years
1      1 347 705 347 705                      10

$Single.Stage.Equal.Alpha.Allocation.Design$design.parameters$alpha.allocation
  Stage Subpop.1 Subpop.2
1      1      0.025      0.025

$Single.Stage.Equal.Alpha.Allocation.Design$design.parameters$futility.boundaries
  Stage Subpop.1 Subpop.2
1      1      NA      NA

$Single.Stage.Equal.Alpha.Allocation.Design$design.performance
$Single.Stage.Equal.Alpha.Allocation.Design$design.performance$Power
  Scenario Power.H01 Power.H02 Prob.Reject.All.False.Null.Hypotheses
1          1      0.8729      0.9885                      0.8661
2          2      0.8075      NA                      0.8075
3          3      0.8040      NA                      0.8040
4          4      NA      NA                      NA

$Single.Stage.Equal.Alpha.Allocation.Design$design.performance$Type.1.Error
  Scenario Type.I.Error.H01 Type.I.Error.H02 Familywise.Type.I.Error
1          1      NA      NA      NA
2          2      NA      0.0449      0.0449
3          3      NA      0.0000      0.0000
4          4      0.0298      0.0256      0.0523

$Single.Stage.Equal.Alpha.Allocation.Design$design.performance$Expected.Sample.Size
  Scenario expected.sample.size
1          1      2104
2          2      2104
3          3      2104
4          4      2104
5 Weighted.Combination.Over.Scenarios      2104

$Single.Stage.Equal.Alpha.Allocation.Design$design.performance$Expected.Duration
  Scenario expected.duration
1          1      10
2          2      10
3          3      10
4          4      10
5 Weighted.Combination.Over.Scenarios      10

$Single.Stage.Equal.Alpha.Allocation.Design$design.performance$Distribution.of.sample.size.
and.duration.per.scenario
  scenario C1 C2 A1 A2 sample.size duration person.time frequency proportion
1          1 1 1 1 1      2104      10      40      10000      1
2          2 1 1 1 1      2104      10      40      10000      1
3          3 1 1 1 1      2104      10      40      10000      1
4          4 1 1 1 1      2104      10      40      10000      1

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$Single.Stage.Optimized.Alpha.Allocation.Design
$Single.Stage.Optimized.Alpha.Allocation.Design$design.parameters
$Single.Stage.Optimized.Alpha.Allocation.Design$design.parameters$cumulative.sample.sizes.and.calendar.time.per.stage
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	Stage	C1	C2	A1	A2	Analysis.Time.In.Years
1	1	347	705	347	705	10

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$Single.Stage.Optimized.Alpha.Allocation.Design$design.parameters$alpha.allocation
```

	Stage	Subpop.1	Subpop.2
1	1	0.025	0.025

```
$Single.Stage.Optimized.Alpha.Allocation.Design$design.parameters$futility.boundaries
```

	Stage	Subpop.1	Subpop.2
1	1	NA	NA

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$Single.Stage.Optimized.Alpha.Allocation.Design$design.performance
```

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$Single.Stage.Optimized.Alpha.Allocation.Design$design.performance$Power
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	Scenario	Power.H01	Power.H02	Prob.Reject.All.False.Null.Hypotheses
1	1	0.8799	0.9889	0.8722
2	2	0.8051	NA	0.8051
3	3	0.8053	NA	0.8053
4	4	NA	NA	NA

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$Single.Stage.Optimized.Alpha.Allocation.Design$design.performance$Type.1.Error
```

	Scenario	Type.I.Error.H01	Type.I.Error.H02	Familywise.Type.I.Error
1	1	NA	NA	NA
2	2	NA	0.0421	0.0421
3	3	NA	0.0000	0.0000
4	4	0.0243	0.0234	0.0460

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$Single.Stage.Optimized.Alpha.Allocation.Design$design.performance$Expected.Sample.Size
```

	Scenario	expected.sample.size
1	1	2104
2	2	2104
3	3	2104
4	4	2104
5	Weighted.Combination.Over.Scenarios	2104

```
$Single.Stage.Optimized.Alpha.Allocation.Design$design.performance$Expected.Duration
```

	Scenario	expected.duration
1	1	10
2	2	10
3	3	10
4	4	10
5	Weighted.Combination.Over.Scenarios	10

```
$Single.Stage.Optimized.Alpha.Allocation.Design$design.performance$Distribution.of.sample.size.and.duration.per.scenario
```

	scenario	C1	C2	A1	A2	sample.size	duration	person.time	frequency	proportion
1	1	1	1	1	1	2104	10	40	10000	1
2	2	1	1	1	1	2104	10	40	10000	1
3	3	1	1	1	1	2104	10	40	10000	1
4	4	1	1	1	1	2104	10	40	10000	1

\$Two.Stage.Group.Sequential.Design

\$Two.Stage.Group.Sequential.Design\$design.parameters

\$Two.Stage.Group.Sequential.Design\$design.parameters\$cumulative.sample.sizes.and.calendar.time.per.stage

	Stage	C1	C2	A1	A2	Analysis.Time.In.Years
1	1	347	705	347	705	5
2	2	347	705	347	705	10

\$Two.Stage.Group.Sequential.Design\$design.parameters\$alpha.allocation

	Stage	Subpop.1	Subpop.2
1	1	0.0125	0.0125
2	2	0.0125	0.0125

\$Two.Stage.Group.Sequential.Design\$design.parameters\$futility.boundaries

	Stage	Subpop.1	Subpop.2
1	1	-3	-3
2	2	NA	NA

\$Two.Stage.Group.Sequential.Design\$design.performance

\$Two.Stage.Group.Sequential.Design\$design.performance\$Power

	Scenario	Power.H01	Power.H02	Prob.Reject.All.False.Null.Hypotheses
1	1	0.8727	0.9843	0.8642
2	2	0.7701	NA	0.7701
3	3	0.7804	NA	0.7804
4	4	NA	NA	NA

\$Two.Stage.Group.Sequential.Design\$design.performance\$Type.1.Error

	Scenario	Type.I.Error.H01	Type.I.Error.H02	Familywise.Type.I.Error
1	1	NA	NA	NA
2	2	NA	0.0446	0.0446
3	3	NA	0.0000	0.0000
4	4	0.0248	0.0254	0.0489

\$Two.Stage.Group.Sequential.Design\$design.performance\$Expected.Sample.Size

	Scenario	expected.sample.size
1	1	2104
2	2	2104
3	3	2104
4	4	2104
5	Weighted.Combination.Over.Scenarios	2104

\$Two.Stage.Group.Sequential.Design\$design.performance\$Expected.Duration

	Scenario	expected.duration
1	1	8.38
2	2	9.97
3	3	7.89
4	4	10.00
5	Weighted.Combination.Over.Scenarios	9.06

\$Two.Stage.Group.Sequential.Design\$design.performance\$Distribution.of.sample.size.and.duration.per.scenario

	scenario	C1	C2	A1	A2	sample.size	duration	person.time	frequency	proportion
1	1	1	1	1	1	2104	5	20	3231	0.3231

2	1	1	2	1	2	2104	10	30	NA	NA
3	1	2	1	2	1	2104	10	30	NA	NA
4	1	2	2	2	2	2104	10	40	6769	0.6769
5	2	1	1	1	1	2104	5	20	52	0.0052
6	2	1	2	1	2	2104	10	30	NA	NA
7	2	2	1	2	1	2104	10	30	NA	NA
8	2	2	2	2	2	2104	10	40	9948	0.9948
9	3	1	1	1	1	2104	5	20	4217	0.4217
10	3	1	2	1	2	2104	10	30	NA	NA
11	3	2	1	2	1	2104	10	30	NA	NA
12	3	2	2	2	2	2104	10	40	5783	0.5783
13	4	1	1	1	1	2104	5	20	1	0.0001
14	4	1	2	1	2	2104	10	30	NA	NA
15	4	2	1	2	1	2104	10	30	NA	NA
16	4	2	2	2	2	2104	10	40	9999	0.9999

\$Two.Stage.Equal.Alpha.Allocation.Design

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.parameters

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.parameters\$cumulative.sample.sizes.and.calendar.time.per.stage

Stage	C1	C2	A1	A2	Analysis.Time.In.Years
1	1	347	705	347	705
2	2	347	705	347	705

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.parameters\$alpha.allocation

Stage	Subpop.1	Subpop.2
1	1	0.0125
2	2	0.0125

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.parameters\$futility.boundaries

Stage	Subpop.1	Subpop.2
1	1	-3
2	2	NA

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.performance

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.performance\$Power

Scenario	Power.H01	Power.H02	Prob.Reject.All.False.Null.Hypotheses
1	1	0.8725	0.9877
2	2	0.7740	NA
3	3	0.7767	NA
4	4	NA	NA

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.performance\$Type.1.Error

Scenario	Type.I.Error.H01	Type.I.Error.H02	Familywise.Type.I.Error
1	1	NA	NA
2	2	NA	0.0418
3	3	NA	0.0000
4	4	0.0259	0.0257

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.performance\$Expected.Sample.Size

Scenario	expected.sample.size
1	1
2	2

3	3	2104
4	4	2104
5 Weighted.Combination.Over.Scenarios		2104

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.performance\$Expected.Duration

	Scenario	expected.duration
1	1	8.38
2	2	9.98
3	3	7.89
4	4	10.00
5 Weighted.Combination.Over.Scenarios		9.06

\$Two.Stage.Equal.Alpha.Allocation.Design\$design.performance\$Distribution.of.sample.size.and  
.duration.per.scenario

	scenario	C1	C2	A1	A2	sample.size	duration	person.time	frequency	proportion
1	1	1	1	1	1	2104	5	20	3232	0.3232
2	1	1	2	1	2	2104	10	30	1065	0.1065
3	1	2	1	2	1	2104	10	30	4272	0.4272
4	1	2	2	2	2	2104	10	40	1431	0.1431
5	2	1	1	1	1	2104	5	20	47	0.0047
6	2	1	2	1	2	2104	10	30	4281	0.4281
7	2	2	1	2	1	2104	10	30	72	0.0072
8	2	2	2	2	2	2104	10	40	5600	0.5600
9	3	1	1	1	1	2104	5	20	4215	0.4215
10	3	1	2	1	2	2104	10	30	48	0.0048
11	3	2	1	2	1	2104	10	30	5686	0.5686
12	3	2	2	2	2	2104	10	40	51	0.0051
13	4	1	1	1	1	2104	5	20	2	0.0002
14	4	1	2	1	2	2104	10	30	132	0.0132
15	4	2	1	2	1	2104	10	30	144	0.0144
16	4	2	2	2	2	2104	10	40	9722	0.9722

\$Two.Stage.Optimized.Alpha.Allocation.Design

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.parameters

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.parameters\$cumulative.sample.sizes.and.  
calendar.time.per.stage

	Stage	C1	C2	A1	A2	Analysis.Time.In.Years
1	1	347	705	347	705	5
2	2	347	705	347	705	10

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.parameters\$alpha.allocation

	Stage	Subpop.1	Subpop.2
1	1	0.0125	0.0125
2	2	0.0125	0.0125

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.parameters\$futility.boundaries

	Stage	Subpop.1	Subpop.2
1	1	-3	-3
2	2	NA	NA

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.performance

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.performance\$Power

Scenario Power.H01 Power.H02 Prob.Reject.All.False.Null.Hypotheses

1	1	0.8653	0.9879	0.8591
2	2	0.7820	NA	0.7820
3	3	0.7733	NA	0.7733
4	4	NA	NA	NA

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.performance\$Type.1.Error

Scenario	Type.I.Error.H01	Type.I.Error.H02	Familywise.Type.I.Error
1	1	NA	NA
2	2	NA	0.0462
3	3	NA	0.0000
4	4	0.024	0.0271

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.performance\$Expected.Sample.Size

Scenario	expected.sample.size
1	1
2	2
3	3
4	4
5 Weighted.Combination.Over.Scenarios	2104

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.performance\$Expected.Duration

Scenario	expected.duration
1	1
2	2
3	3
4	4
5 Weighted.Combination.Over.Scenarios	9.08

\$Two.Stage.Optimized.Alpha.Allocation.Design\$design.performance\$Distribution.of.sample.size  
.and.duration.per.scenario

scenario	C1	C2	A1	A2	sample.size	duration	person.time	frequency	proportion
1	1	1	1	1	2104	5	20	3195	0.3195
2	1	1	2	1	2104	10	30	1051	0.1051
3	1	2	1	2	2104	10	30	4320	0.4320
4	1	2	2	2	2104	10	40	1434	0.1434
5	2	1	1	1	2104	5	20	65	0.0065
6	2	1	2	1	2104	10	30	4094	0.4094
7	2	2	1	2	2104	10	30	82	0.0082
8	2	2	2	2	2104	10	40	5759	0.5759
9	3	1	1	1	2104	5	20	4123	0.4123
10	3	1	2	1	2104	10	30	39	0.0039
11	3	2	1	2	2104	10	30	5769	0.5769
12	3	2	2	2	2104	10	40	69	0.0069
13	4	1	1	1	2104	5	20	NA	NA
14	4	1	2	1	2104	10	30	127	0.0127
15	4	2	1	2	2104	10	30	158	0.0158
16	4	2	2	2	2104	10	40	9715	0.9715

<i>Design</i>	<i>Scenario</i>	<i>Minimum difference in power (obtained - desired)</i>
Single.Stage.Equal.Alpha.Allocation.Design	3	0.0040
Single.Stage.Optimized.Alpha.Allocation.Design	2	0.0051
Two.Stage.Group.Sequential.Design	2	-0.0299
Two.Stage.Equal.Alpha.Allocation.Design	2	-0.0260
Two.Stage.Optimized.Alpha.Allocation.Design	3	-0.0267