Plots for resolution paper

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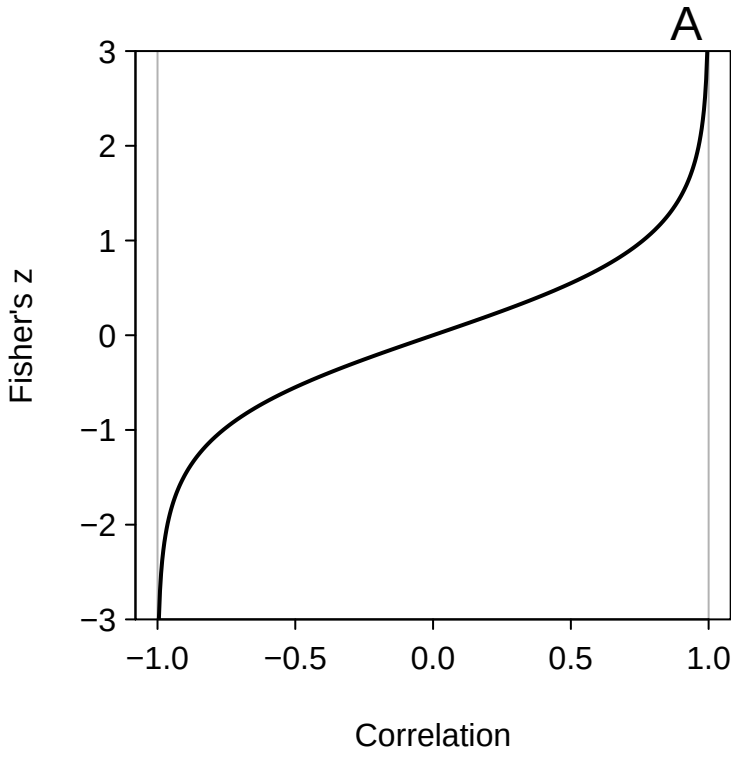
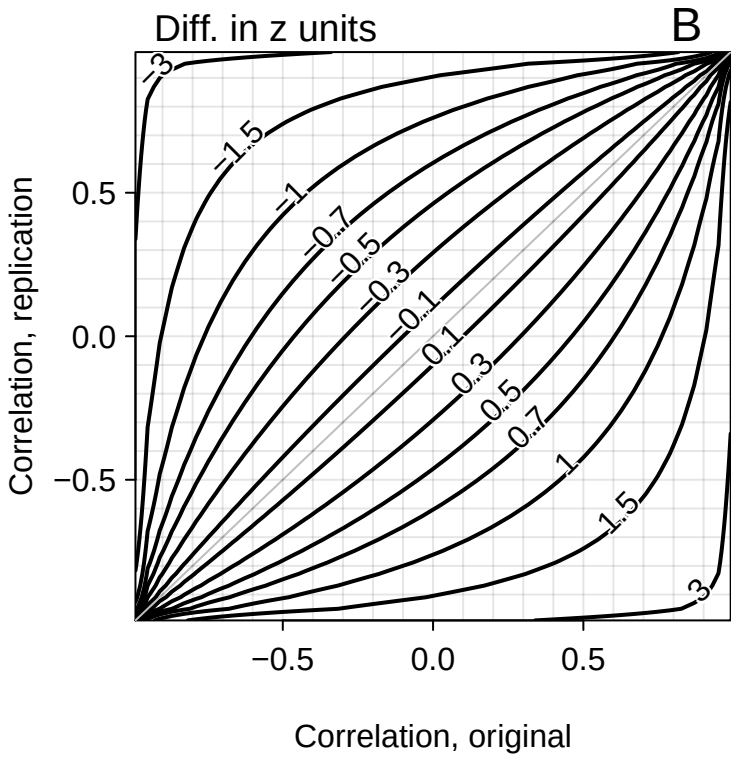
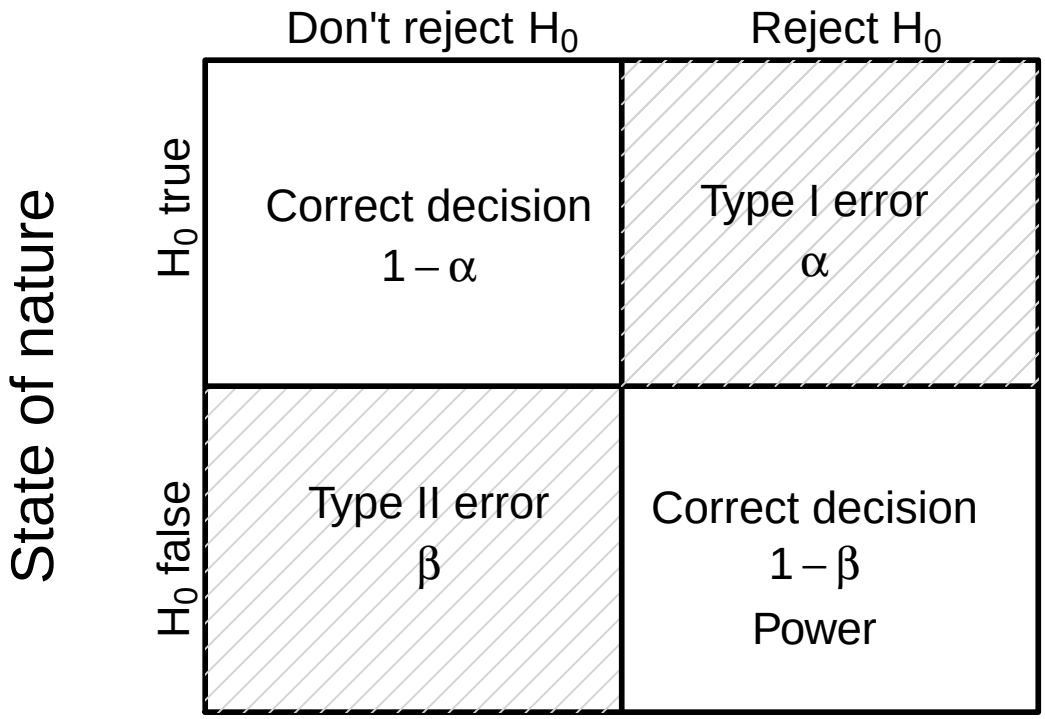
Some of this code was adapted from https://github.com/jtleek/replication_paper (in particular, the data loading.)

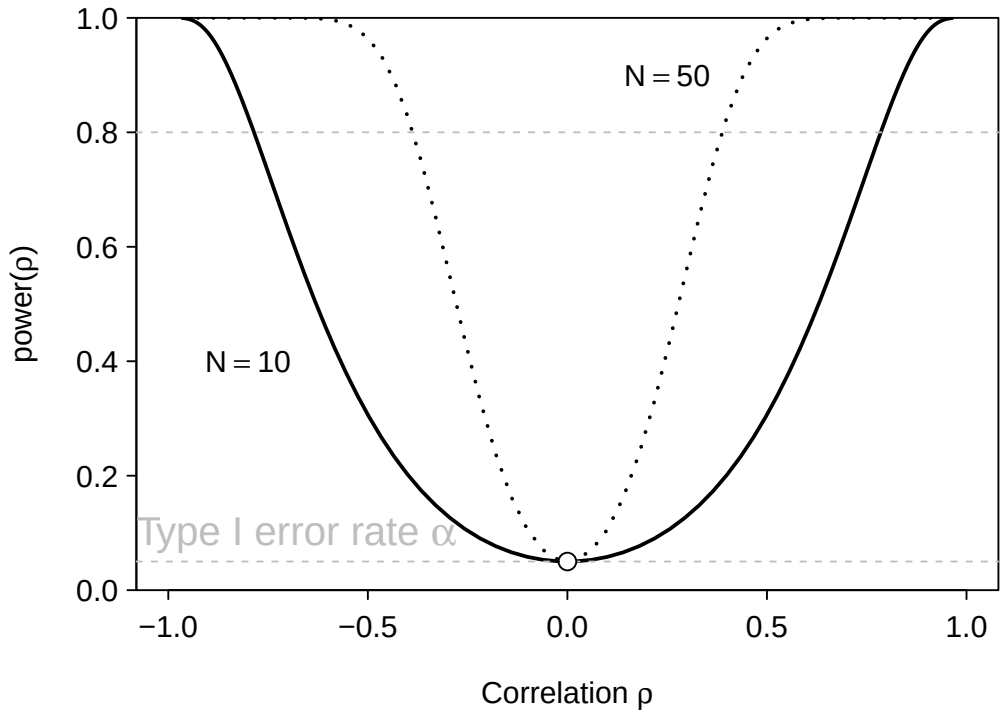
How many total studies are we left with after cleaning?

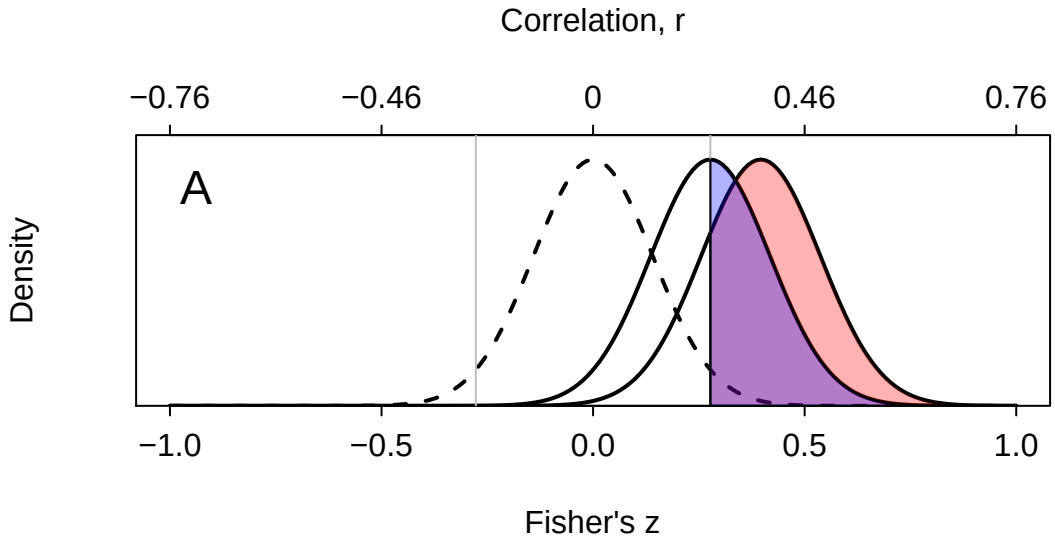
```
## [1] 73
```

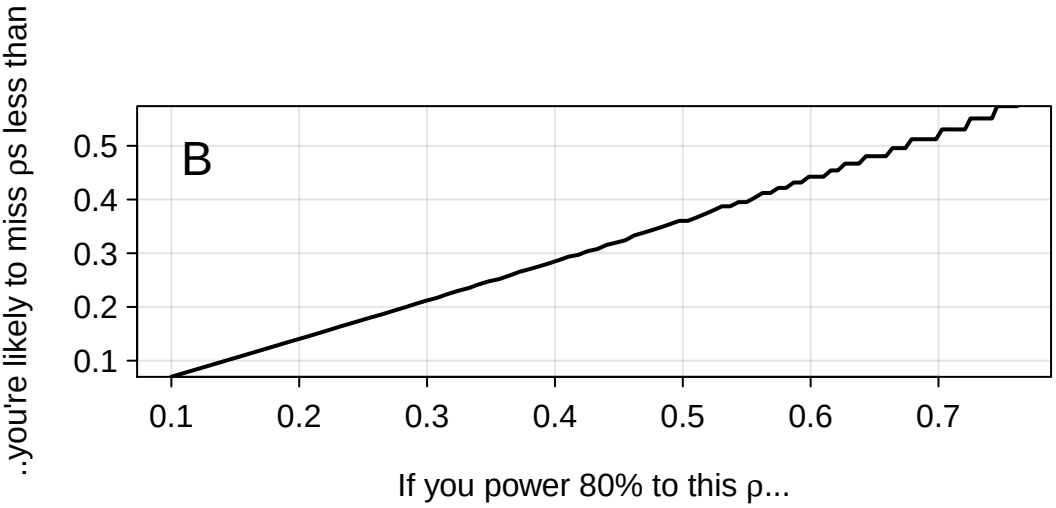

A
Fisher's z
3
2
1
0
−1
−2
−3
−1.0
−0.5
0.0
0.5
1.0
Correlation

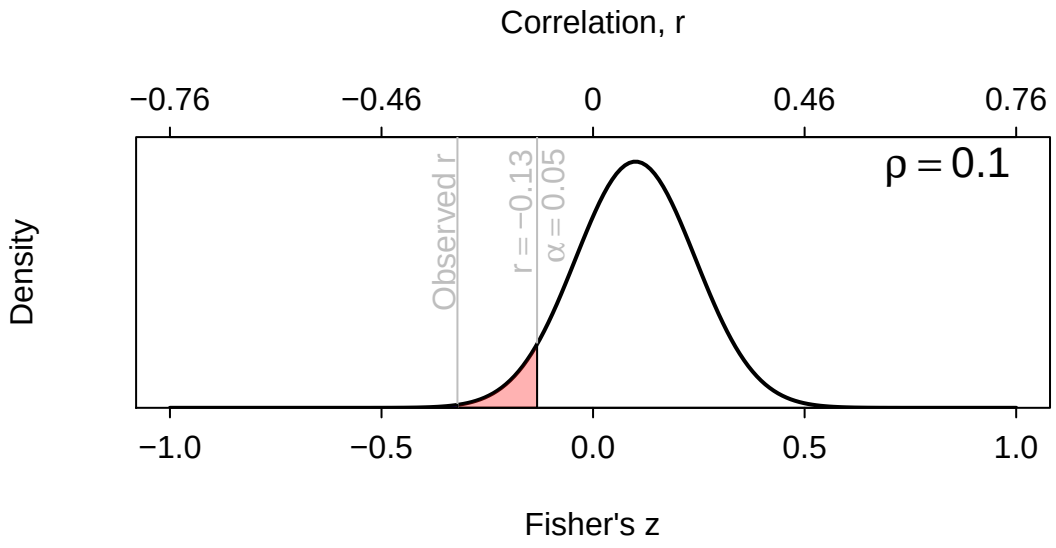

Diff. in z units
B
Correlation, replication
0.5
0.0
−0.5
−3
−1.5
−1
−0.7
−0.5
−0.3
−0.1
0.1
0.3
0.5
0.7
1
1.5
3
−0.5
0.0
0.5
Correlation, original

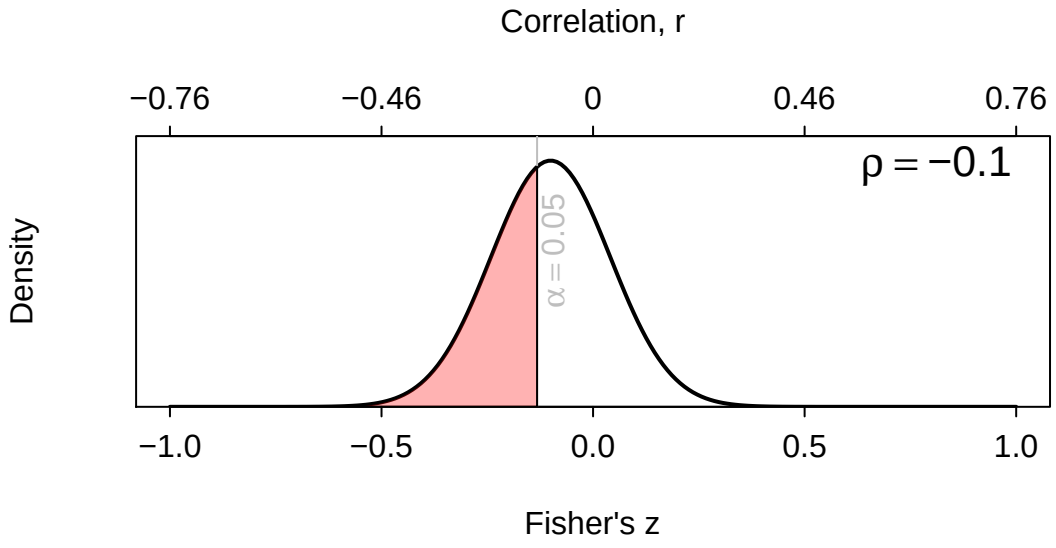

Decision
Don't reject H_0
Reject H_0
State of nature
H_0 true
H_0 false
Correct decision
$1 - \alpha$
Type I error
α
Type II error
β
Correct decision
$1 - \beta$
Power

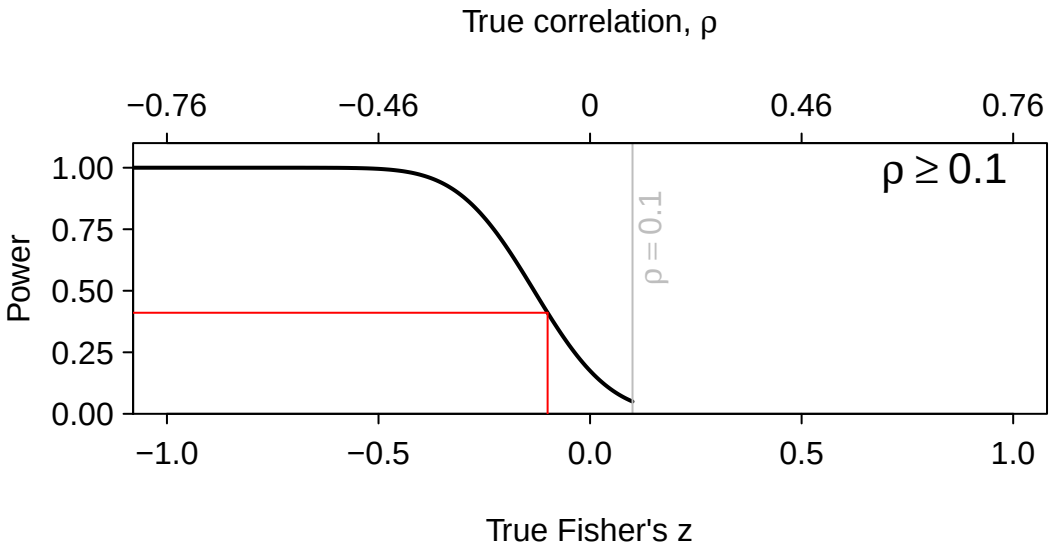

power(ρ)
1.0
0.8
0.6
0.4
0.2
0.0
N = 50
N = 10
Type I error rate α
−1.0
−0.5
0.0
0.5
1.0
Correlation ρ

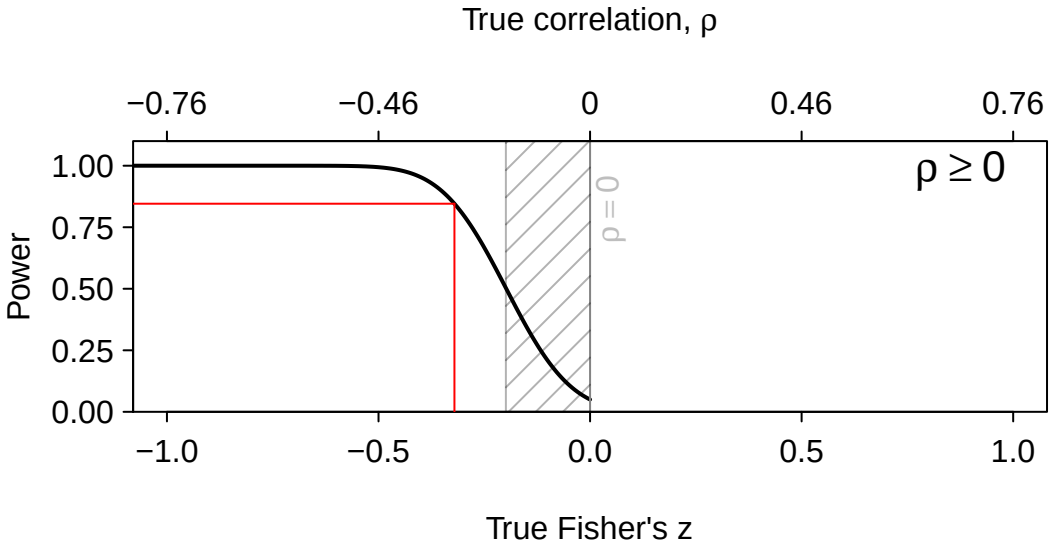

Correlation, r
−0.76
−0.46
0
0.46
0.76
A
Density
−1.0
−0.5
0.0
0.5
1.0
Fisher's z


B
..you're likely to miss ρs less than
0.5
0.4
0.3
0.2
0.1
0.1
0.2
0.3
0.4
0.5
0.6
0.7
If you power 80% to this ρ...


Correlation, r
−0.76
−0.46
0
0.46
0.76
Observed r
r = −0.13
α = 0.05
ρ = 0.1
Density
−1.0
−0.5
0.0
0.5
1.0
Fisher's z


Correlation, r
−0.76
−0.46
0
0.46
0.76
ρ = −0.1
α = 0.05
Density
−1.0
−0.5
0.0
0.5
1.0
Fisher's z





Power on top graph

```
## [1] 0.41
```

Power on bottom graph

```
## [1] 0.85
```

Value with 50% power

```
## [1] -0.2
```

p value for observation

```
## [1] 0.0015
```

What proportion of the replications are in the prediction CI when we permute the results?

```
## [1] 0.54
```

What proportion of replications are in the prediction CI when we set all the original results to 0 effect size?

```
## [1] 0.81
```

What proportion of replications are in the prediction CI when we set all the original results to the same effect size of the replications, but with opposite sign?

```
## [1] 0.58
```

	Orig. N	Repl. N	Orig. r	Repl. r	Observed difference (Fisher's z)	SE of difference (Fisher's z)
a	32	48	0.46	0.13	0.36	0.23
b	186	280	0.17	0.04	0.13	0.10
c	564	3597	0.00	0.11	-0.10	0.05
d	14	19	0.72	0.21	0.70	0.38
e	8	8	0.86	0.12	1.17	0.58

How many 95% prediction intervals contain replication?

```
## [1] 51
```

How many 99% prediction intervals contain replication?

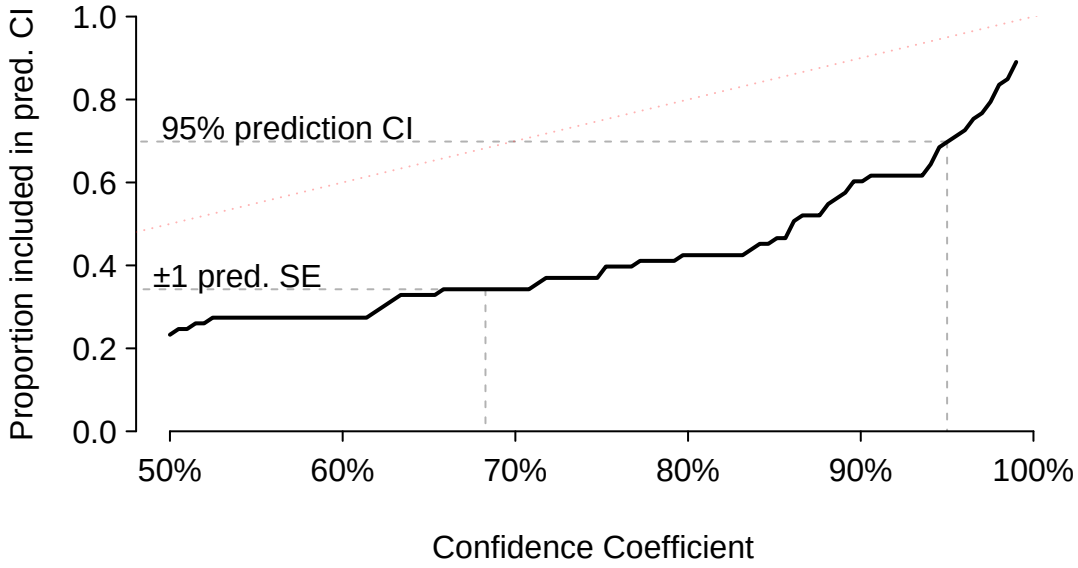
```
## [1] 65
```

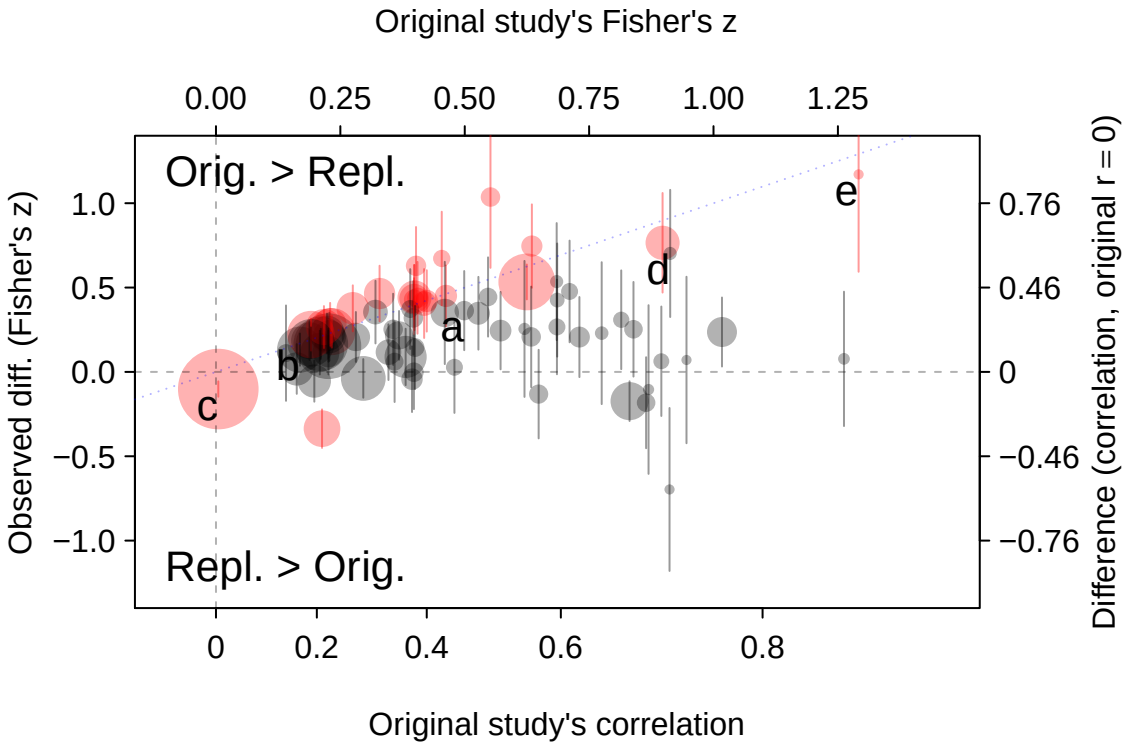
How many 50% prediction intervals contain replication?

```
## [1] 17
```

How many prediction SE intervals contain replication?

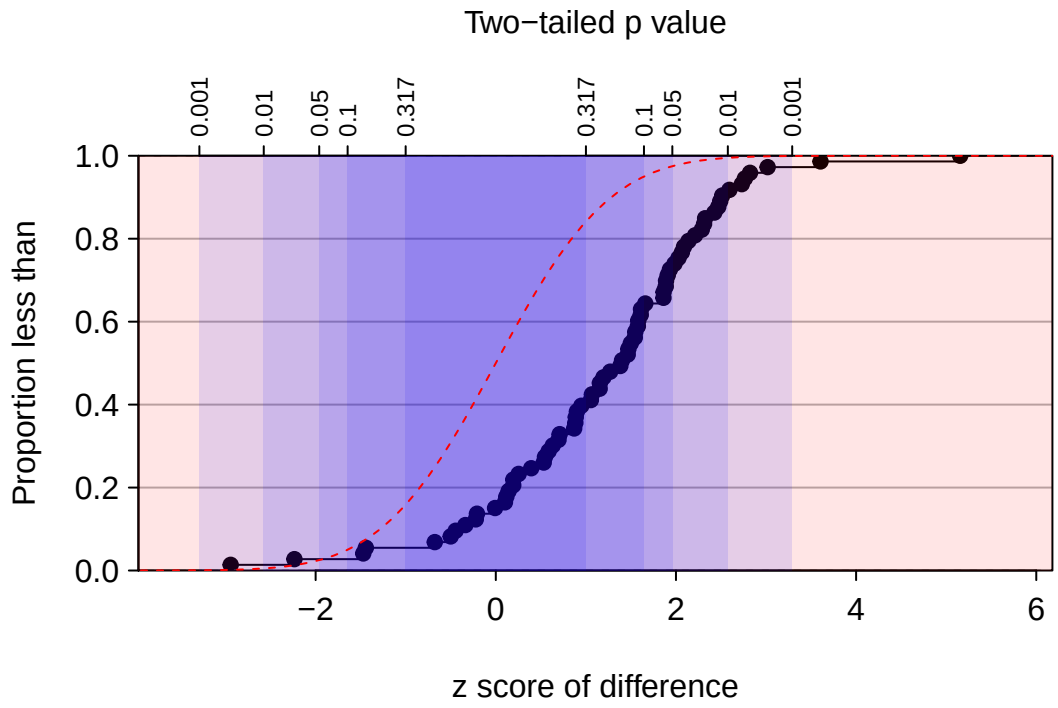
```
## [1] 25
```

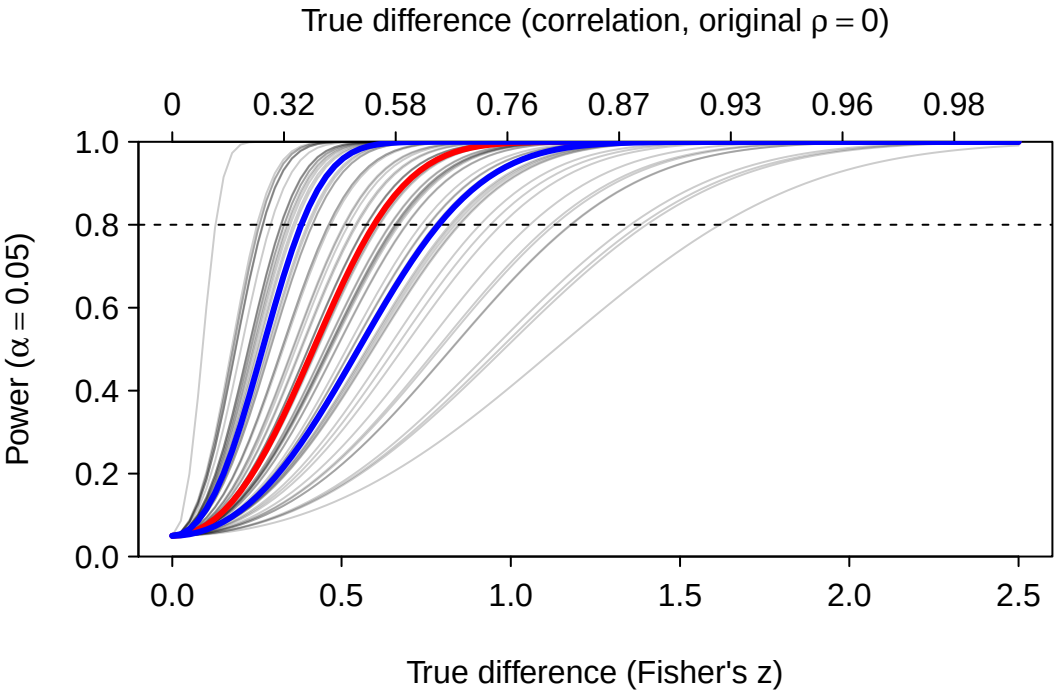




What is the median z score?

```
## [1] 1.4
```





What are the quartiles of the power at a difference of .3?

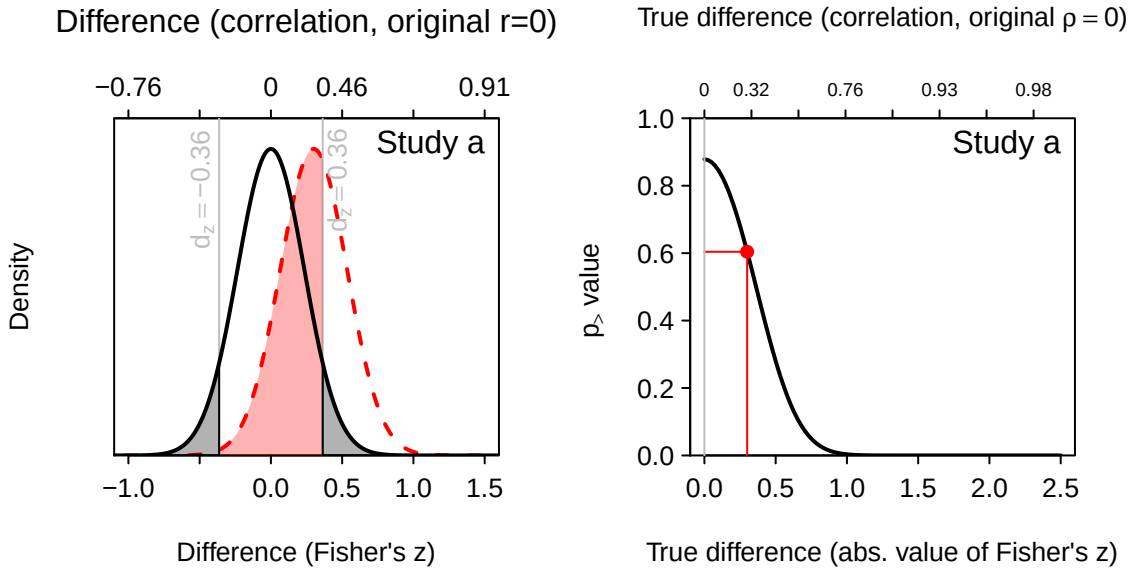
```
##  25%  50%  75%
## 0.19 0.29 0.60
```

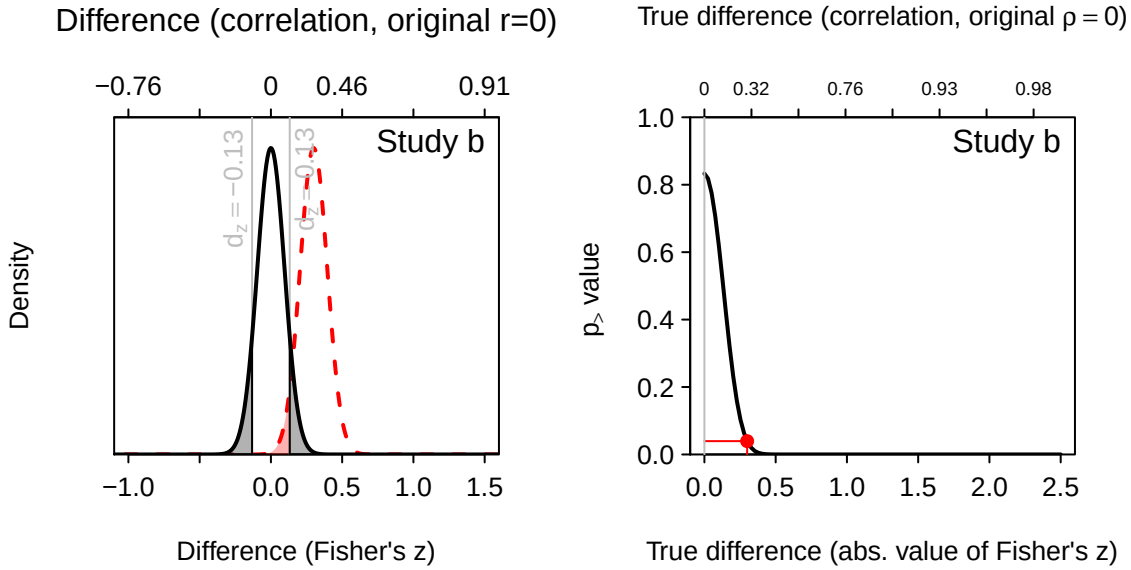
These are the p values against the null.

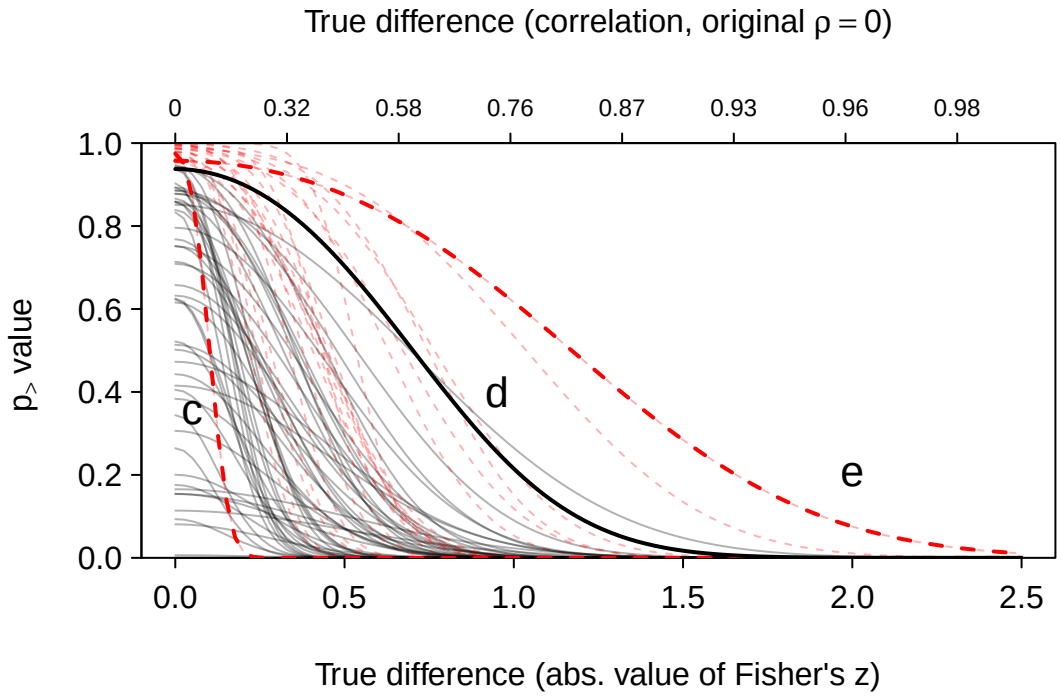
```
## [1] 0.122 0.167 0.025 0.062 0.043
```

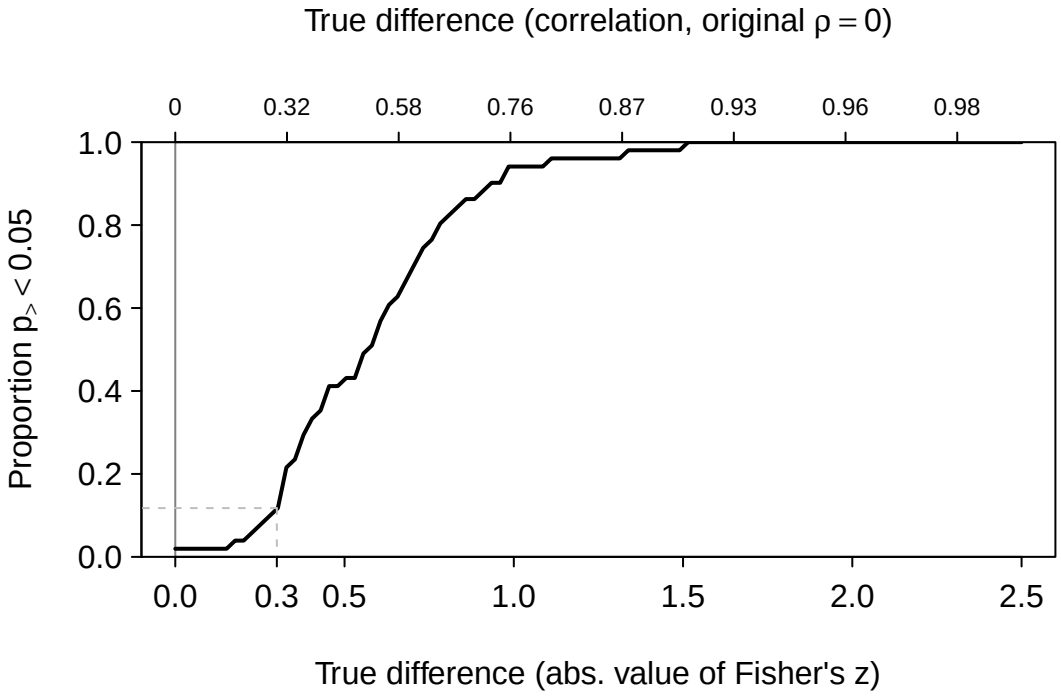
These are the p values against $d \geq .3$.

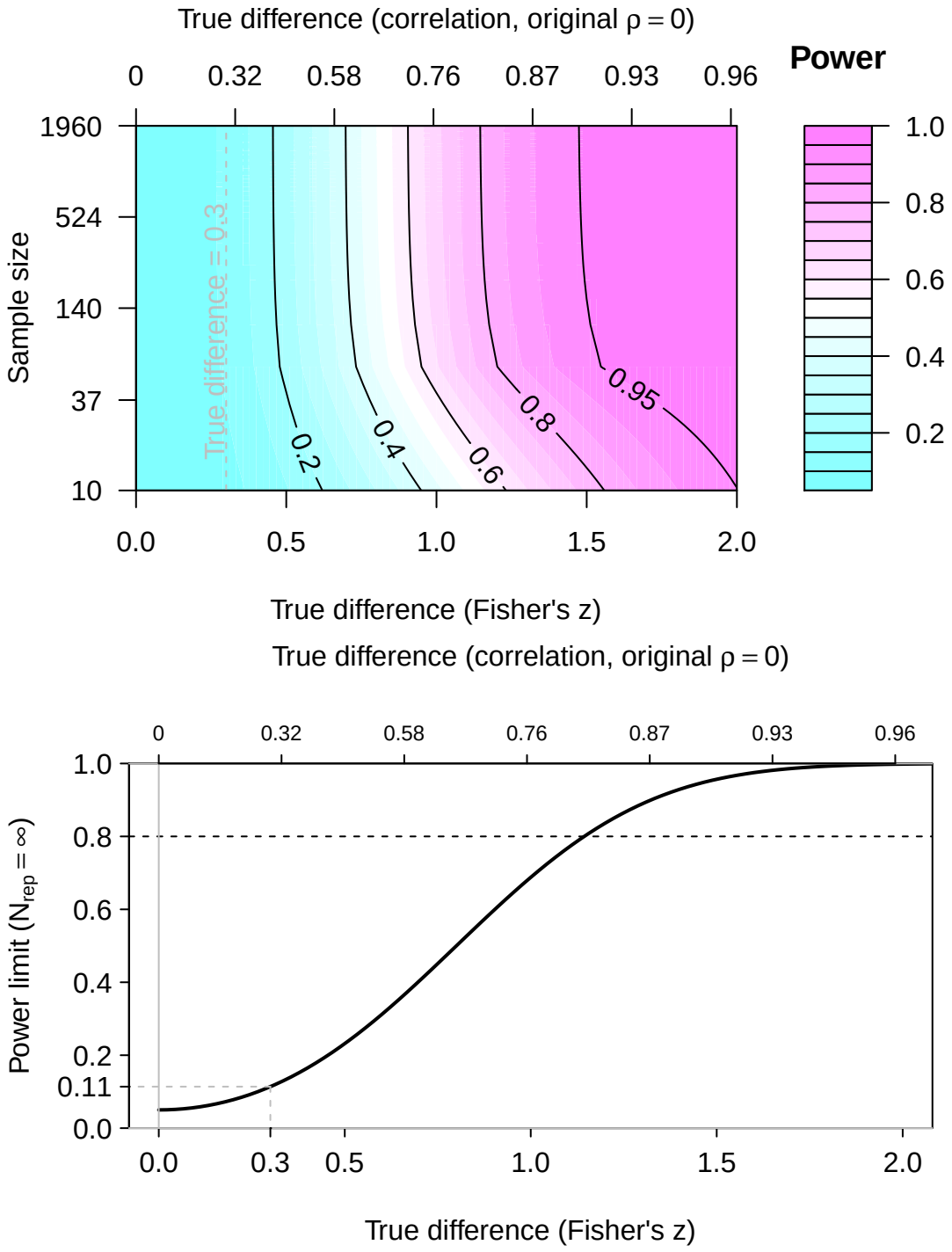
```
## [1] 0.604 0.039 0.000 0.853 0.929
```

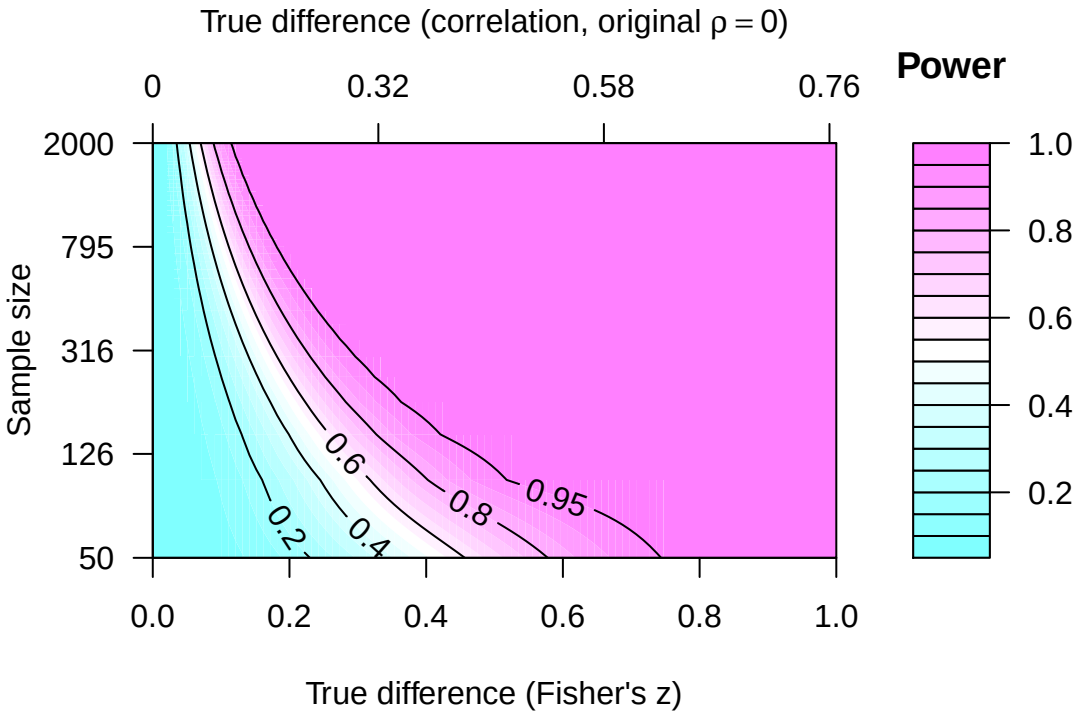





True difference (correlation, original ρ = 0)
0
0.32
0.58
0.76
0.87
0.93
0.96
0.98
1.0
0.8
0.6
0.4
0.2
0.0
p> value
c
d
e
0.0
0.5
1.0
1.5
2.0
2.5
True difference (abs. value of Fisher's z)


True difference (correlation, original ρ = 0)
0
0.32
0.58
0.76
0.87
0.93
0.96
0.98
1.0
0.8
0.6
0.4
0.2
0.0
Proportion p> < 0.05
0.0
0.3
0.5
1.0
1.5
2.0
2.5
True difference (abs. value of Fisher's z)


True difference (correlation, original ρ = 0)
0
0.32
0.58
0.76
0.87
0.93
0.96
Power
1960
524
140
37
10
Sample size
True difference = 0.3
0.2
0.4
0.6
0.8
0.95
1.0
0.8
0.6
0.4
0.2
0.0
0.5
1.0
1.5
2.0
True difference (Fisher's z)
True difference (correlation, original ρ = 0)
0
0.32
0.58
0.76
0.87
0.93
0.96
1.0
0.8
0.6
0.4
0.2
0.11
0.0
Power limit (N_rep = ∞)
0.0
0.3
0.5
1.0
1.5
2.0
True difference (Fisher's z)


True difference (correlation, original ρ = 0)
0
0.32
0.58
0.76
Power
2000
795
316
126
50
Sample size
0.2
0.4
0.6
0.8
0.95
1.0
0.8
0.6
0.4
0.2
0.0
0.2
0.4
0.6
0.8
1.0
True difference (Fisher's z)