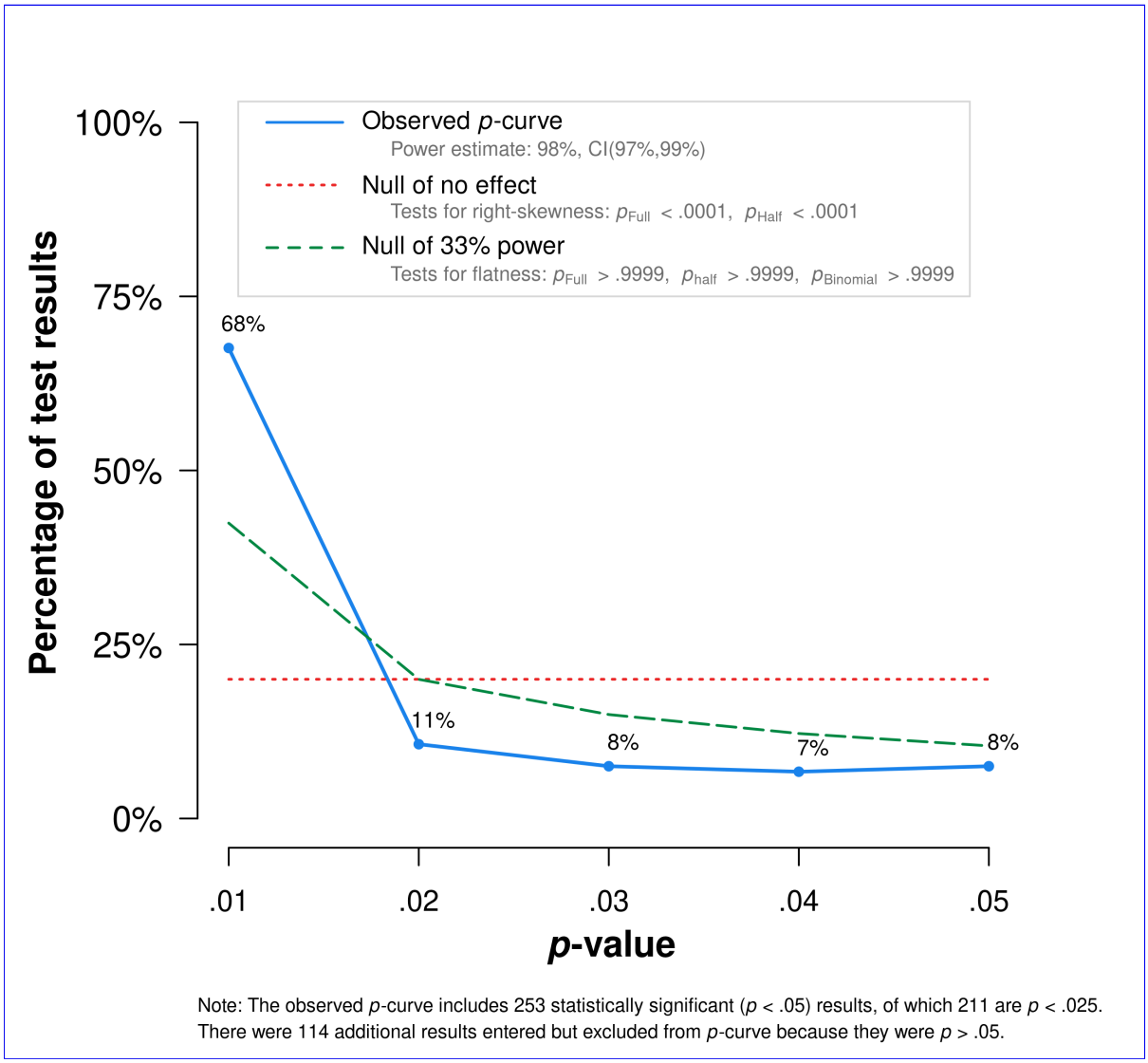
P-CURVE RESULTS - App 4.10

App's Last Update: 2024 08 28



Note: The observed *p*-curve includes 253 statistically significant ($p < .05$) results, of which 211 are $p < .025$.
There were 114 additional results entered but excluded from *p*-curve because they were $p > .05$.

The image above is in high resolution (400 dpi), you can save it and use in peer-reviewed publications.
Below we report the table previous versions of the app embedded in the image above; it includes more details than those reported within the new figure's legend.

	Binomial Test *(Share of results p<.025)*	**Continuous Test** *(Aggregate with Stouffer Method)*	
		Full p-curve (p's<.05)	**Half p-cu (p's<.02**
1) Studies contain evidential value. *(Right skew)*	*p*<.0001	*Z*=-37.17, *p*<.0001	*Z*=-37.46, *p*
2) Studies' evidential value, if any, is inadequate. *(Flatter than 33% power)*	*p*>.9999	*Z*=24.56, *p*>.9999	*Z*=26.27, *p*
Power of tests included in *p*-curve *(correcting for selective reporting)*	**Statistical Power** Estimate: 98% 90% Confidence interval: (97% , 99%)		

Interpretation:

P-Curve analysis combines the half and full p-curve to make inferences about evidential value. In pa half p-curve test is right-skewed with $p<.05$ or both the half and full test are right-skewed with $p<.1$,

analysis indicates the presence of evidential value. This combination test, introduced in Simonsohn, S Nelson (2015 .pdf) 'Better P-Curves' paper, is much more robust to ambitious *p*-hacking than the simpl test is.

Here both conditions are met, indicating evidential value.

Similarly, *p*-curve analysis indicates that evidential value is inadequate or absent if the 33% power tes the full *p*-curve or both the half *p*-curve and binomial 33% power test are *p*<.1. Here neither condition curve does not indicate evidential value is inadequate nor absent.

As with all *p*-values, these cutoffs are just benchmarks; the lower the *p*-values are, the less consisten with the respective null hypotheses. A *p*=.049 is essentially the same as a *p*=.051, while a *p*=.0001 i compelling than either.

To appreciate the advantage of these combination tests in relation to the previously used full *p*-curve tes 2 and pages 1149-1151 in the 'Better P-Curves' paper (.pdf) and check out its Supplement 2 (.pdf)

Brief Explanations of Main Results:

1) **Binomial tests** compare the observed proportion of significant results that are p<.025 (in this case expected proportions when there is no effect (50%), and when studies have 1/3 power (23%). This varies (by a few %s) as a function of the degrees of freedom of the tests submitted to *p*-curve.

2) **Continuous tests** are obtained by computing *pp*-values for each test (probability of at least as extre conditional on p<.05), and converting them to Z scores(N(0,1)). The sum of these Z scores (253 divided by the square-root of the number of tests included (again: 253 in this case) is the reported Z column (and corresponding p-value). This approach is known as Stouffer's Method. (Prior to App 3.0 Fisher's method instead. See "Better P-Curves" paper.)

Note that the binomial and continuous tests are by definition one-sided (e.g., *more* right skewed than negative Z values to indicate deviation in the direction of the alternative hypothesis of interest; f negative Z value for the Right-Skew test is evidence against the flat null, and thus in favor of Right-Ske

3) **Statistical power** is obtained by comparing the expected *p*-curve for each possible value of power and 99% to the observed *p*-curve, and selecting the level of power that leads to the expected *p*-cu closely resembles the observed *p*-curve. (We quantify the similarity with the overall Z arising from ag resulting pp-values via the Stouffer method, pp-values which depend on the assumed level of power possible is Z=0.

Dropping Highest/Lowest *p*-values

(Cumulative meta-analysis)

In order to assess the extent to which *p*-curve's overall results hinge on a few studies, the figure below excluding a progressively larger number of the most extreme *p*-values originally included in *p*-curve.

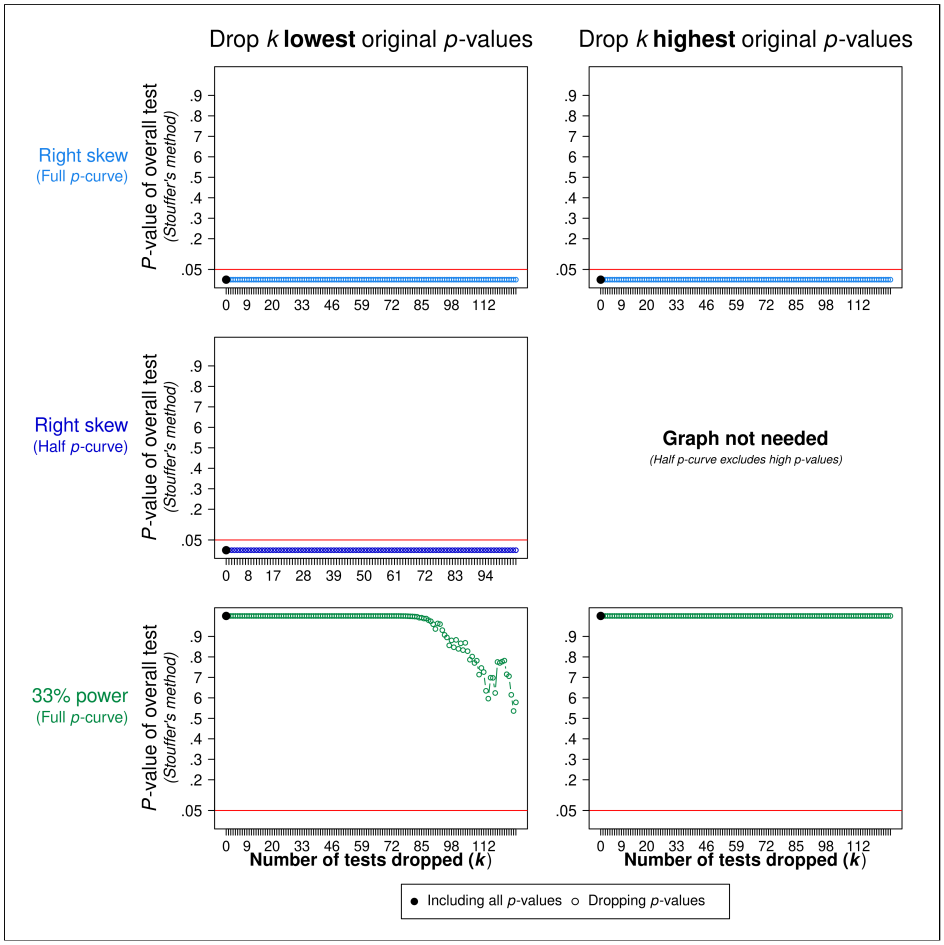
The first column of charts, reports results that first exclude the smallest *p*-value in *p*-curve, then the sec and so on.

For example, if *p*-curve contained the following four *p*-values: *p*=.001, *p*=.004, *p*=.01 and *p*=.045, t would report results with all four *p*-values, the next marker when one excludes *p*=.001, then excludin and *p*=.004, and so on.

In the second column one proceeds in opposite order. First excluding p=.045, then p=.045 and p=.01, ar

The graph plots what happens until there is only half the p-values left, but in most situations one is only what happens as the single or handful of most extreme p-values are excluded.

We should place more confidence in sets of studies whose overall evidential value survives the exclusio extreme few results.



Calculations for each test entered into *p*-curve:

Test entered by user	*p*-value	*pp*-values				Z Scores			
		Full *p*-curve		Half *p*-curve		Full *p*-curve		Half *p*-curv	
		Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power
chi2(44)=72.31	.00455	.09107	.72944	.18214	.61348	-1.33	0.61	-0.91	0.
chi2(54)=52.68	.52541	NA	NA	NA	NA	NA	NA	NA	N
chi2(54)=52.68	.52541	NA	NA	NA	NA	NA	NA	NA	N
chi2(6)=9.08	.16913	NA	NA	NA	NA	NA	NA	NA	N
F(1,10)=15.94	.00255	.05098	.85917	.10196	.79068	-1.64	1.08	-1.27	0.
F(1,106)=8.58	.00416	.08324	.73578	.16647	.62798	-1.38	0.63	-0.97	0.
F(1,112)=2.93	.08972	NA	NA	NA	NA	NA	NA	NA	N
F(1,112)=5.10	.02586	.51726	.27715	NA	NA	0.04	-0.59	NA	N
F(1,112)=5.22	.02421	.48424	.30113	.96849	.01627	-0.04	-0.52	1.86	-2.
F(1,112)=5.26	.02369	.47374	.30896	.94748	.02729	-0.07	-0.50	1.62	-1.
F(1,112)=8.66	.00395	.07909	.74319	.15818	.63851	-1.41	0.65	-1.00	0.
F(1,112)=8.66	.00395	.07909	.74319	.15818	.63851	-1.41	0.65	-1.00	0.
F(1,118)=1.41	.23744	NA	NA	NA	NA	NA	NA	NA	N
F(1,118)=17.88	.00005	.00093	.98534	.00187	.97937	-3.11	2.18	-2.90	2.
F(1,118)=5.27	.02346	.46924	.31215	.93847	.03203	-0.08	-0.49	1.54	-1.
F(1,119)=3.54	.06235	NA	NA	NA	NA	NA	NA	NA	N
F(1,120)=11.56	.00092	.01831	.89439	.03662	.85140	-2.09	1.25	-1.79	1.
F(1,120)=5.69	.01863	.37254	.38981	.74508	.14140	-0.33	-0.28	0.66	-1.
F(1,122)=8.28	.00473	.09467	.71417	.18934	.59784	-1.31	0.57	-0.88	0.
F(1,13)=1.65	.22138	NA	NA	NA	NA	NA	NA	NA	N
F(1,13)=1.66	.22006	NA	NA	NA	NA	NA	NA	NA	N
F(1,13)=4.34	.05753	NA	NA	NA	NA	NA	NA	NA	N

Test entered by user	*p*-value	*pp*-values				Z Scores			
		Full *p*-curve		Half *p*-curve		Full *p*-curve		Half *p*-curv	
		Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power
F(1,13)=5.09	.04193	.83864	.08907	NA	NA	0.99	-1.35	NA	N
F(1,15)=0.01	.92167	NA	NA	NA	NA	NA	NA	NA	N
F(1,15)=0.16	.69479	NA	NA	NA	NA	NA	NA	NA	N
F(1,15)=1.03	.32625	NA	NA	NA	NA	NA	NA	NA	N
F(1,15)=198.82	<.00001	<.00001	>.9999	<.00001	>.9999	-5.63	5.09	-5.50	5.
F(1,15)=4.52	.05051	NA	NA	NA	NA	NA	NA	NA	N
F(1,15)=61.03	<.00001	.00002	.99972	.00005	.99959	-4.07	3.45	-3.91	3.
F(1,15)=7.57	.01485	.29691	.49471	.59382	.26385	-0.53	-0.01	0.24	-0.
F(1,15)=9.22	.00833	.16661	.64757	.33322	.48655	-0.97	0.38	-0.43	-0.
F(1,151)=4.99	.02696	.53927	.26078	NA	NA	0.10	-0.64	NA	N
F(1,151)=5.76	.01761	.35226	.40655	.70452	.16579	-0.38	-0.24	0.54	-0.
F(1,151)=5.84	.01686	.33718	.42008	.67435	.18481	-0.42	-0.20	0.45	-0.
F(1,151)=6.41	.01237	.24741	.50850	.49481	.30910	-0.68	0.02	-0.01	-0.
F(1,152)=0.06	.80683	NA	NA	NA	NA	NA	NA	NA	N
F(1,152)=0.27	.60409	NA	NA	NA	NA	NA	NA	NA	N
F(1,152)=1.69	.19557	NA	NA	NA	NA	NA	NA	NA	N
F(1,157)=2.6	.10887	NA	NA	NA	NA	NA	NA	NA	N
F(1,16)=63.58	<.00001	.00001	.99984	.00002	.99976	-4.23	3.59	-4.07	3.
F(1,170)=3.95	.04848	.96955	.01451	NA	NA	1.87	-2.18	NA	N
F(1,170)=6.34	.01273	.25458	.50035	.50915	.29796	-0.66	0.00	0.02	-0.
F(1,173)=4.21	.04169	.83387	.08298	NA	NA	0.97	-1.39	NA	N
F(1,18)=5.70	.02814	.56282	.26218	NA	NA	0.16	-0.64	NA	N
F(1,19)=11.44	.00313	.06254	.80788	.12508	.72245	-1.53	0.87	-1.15	0.
F(1,195)=16.29	.00008	.00156	.97825	.00312	.96946	-2.96	2.02	-2.73	1.
F(1,26)=37.87	<.00001	.00003	.99933	.00007	.99904	-3.99	3.21	-3.82	3.
F(1,260)=0.57	.45094	NA	NA	NA	NA	NA	NA	NA	N
F(1,263)=12.1	.00059	.01180	.91755	.02360	.88430	-2.26	1.39	-1.98	1.
F(1,263)=16.5	.00006	.00129	.98060	.00257	.97277	-3.01	2.07	-2.80	1.
F(1,263)=9.1	.00281	.05613	.78642	.11226	.70027	-1.59	0.79	-1.21	0.
F(1,265)=5.83	.01643	.32866	.42616	.65732	.19471	-0.44	-0.19	0.41	-0.
F(1,265)=80.95	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.95	-7.67	5.
F(1,277)=0.34	.56030	NA	NA	NA	NA	NA	NA	NA	N
F(1,277)=4.41	.03663	.73266	.13837	NA	NA	0.62	-1.09	NA	N
F(1,277)=8.44	.00397	.07933	.73847	.15867	.63301	-1.41	0.64	-1.00	0.
F(1,28)=0.03	.86374	NA	NA	NA	NA	NA	NA	NA	N
F(1,28)=0.17	.68325	NA	NA	NA	NA	NA	NA	NA	N
F(1,28)=2.05	.16328	NA	NA	NA	NA	NA	NA	NA	N
F(1,28)=3.34	.07829	NA	NA	NA	NA	NA	NA	NA	N
F(1,28)=5.04	.03285	.65702	.19190	NA	NA	0.40	-0.87	NA	N
F(1,28)=70.91	<.00001	<.00001	>.9999	<.00001	>.9999	-5.26	4.49	-5.13	4.
F(1,30)=0.35	.55855	NA	NA	NA	NA	NA	NA	NA	N
F(1,33)=0.02	.88840	NA	NA	NA	NA	NA	NA	NA	N
F(1,33)=10.81	.00240	.04805	.82462	.09610	.74998	-1.66	0.93	-1.30	0.
F(1,33)=12.12	.00143	.02852	.87517	.05704	.82205	-1.90	1.15	-1.58	0.
F(1,33)=22.26	.00004	.00084	.98982	.00169	.98549	-3.14	2.32	-2.93	2.
F(1,33)=5.54	.02469	.49387	.30311	.98774	.00655	-0.02	-0.52	2.25	-2.
F(1,33)=5.97	.02007	.40134	.37692	.80269	.11177	-0.25	-0.31	0.85	-1.
F(1,36)=0.23	.63442	NA	NA	NA	NA	NA	NA	NA	N
F(1,36)=0.34	.56346	NA	NA	NA	NA	NA	NA	NA	N
F(1,36)=17.10	.00020	.00406	.96684	.00811	.95280	-2.65	1.84	-2.40	1.
F(1,36)=2.17	.14942	NA	NA	NA	NA	NA	NA	NA	N
F(1,36)=8.75	.00544	.10883	.70541	.21766	.58067	-1.23	0.54	-0.78	0.
F(1,36)=90.3	<.00001	<.00001	>.9999	<.00001	>.9999	-6.12	5.30	-6.01	5.
F(1,38)=12.67	.00102	.02036	.89806	.04071	.85503	-2.05	1.27	-1.74	1.
F(1,38)=4.58	.03883	.77657	.11752	NA	NA	0.76	-1.19	NA	N
F(1,38)=9.51	.00380	.07593	.76266	.15187	.66246	-1.43	0.71	-1.03	0.
F(1,38)=9.70	.00350	.06993	.77446	.13986	.67924	-1.48	0.75	-1.08	0.
F(1,380)=379.62	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.95	-7.67	5.
F(1,40)=13.76	.00063	.01262	.92542	.02523	.89402	-2.24	1.44	-1.96	1.
F(1,40)=6.04	.01842	.36831	.40266	.73661	.15115	-0.34	-0.25	0.63	-1.
F(1,40)=6.62	.01390	.27799	.48853	.55597	.27317	-0.59	-0.03	0.14	-0.
F(1,405)=8.95	.00294	.05889	.77925	.11777	.69045	-1.56	0.77	-1.19	0.
F(1,41)=8.51	.00571	.11415	.69422	.22829	.56562	-1.20	0.51	-0.74	0.
F(1,41)=9.62	.00348	.06953	.77384	.13906	.67873	-1.48	0.75	-1.08	0.
F(1,42)=4.14	.04823	.96452	.01739	NA	NA	1.81	-2.11	NA	N
F(1,45)=12.83	.00083	.01666	.90858	.03333	.87030	-2.13	1.33	-1.83	1.
F(1,46)=10.75	.00199	.03981	.83885	.07963	.77144	-1.75	0.99	-1.41	0.
F(1,46)=187.23	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.88	-7.67	5.
F(1,46)=2.09	.15505	NA	NA	NA	NA	NA	NA	NA	N
F(1,48)=10.06	.00264	.05282	.80685	.10565	.72620	-1.62	0.87	-1.25	0.
F(1,51)=0.36	.55116	NA	NA	NA	NA	NA	NA	NA	N

Test entered by user	*p*-value	*pp*-values				Z Scores			
		Full *p*-curve		Half *p*-curve		Full *p*-curve		Half *p*-curv	
		Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power
F(1,51)=4.06	.04920	.98394	.00777	NA	NA	2.14	-2.42	NA	N
F(1,51)=5.71	.02060	.41207	.36251	.82413	.09698	-0.22	-0.35	0.93	-1.
F(1,53)=7.86	.00705	.14093	.64925	.28186	.50337	-1.08	0.38	-0.58	0.
F(1,56)=119.35	<.00001	<.00001	>.9999	<.00001	>.9999	-7.49	5.89	-7.40	5.
F(1,56)=2.74	.10346	NA	NA	NA	NA	NA	NA	NA	N
F(1,56)=4.10	.04766	.95322	.02281	NA	NA	1.68	-2.00	NA	N
F(1,56)=4.91	.03078	.61566	.21341	NA	NA	0.29	-0.79	NA	N
F(1,56)=7.67	.00760	.15203	.63273	.30406	.48029	-1.03	0.34	-0.51	-0.
F(1,57)=0.073	.78799	NA	NA	NA	NA	NA	NA	NA	N
F(1,57)=1.07	.30531	NA	NA	NA	NA	NA	NA	NA	N
F(1,57)=12.59	.00078	.01569	.90957	.03138	.87206	-2.15	1.34	-1.86	1.
F(1,57)=7.36	.00880	.17607	.60024	.35213	.43442	-0.93	0.25	-0.38	-0.
F(1,58)=10.6	.00189	.03781	.84092	.07562	.77497	-1.78	1.00	-1.44	0.
F(1,58)=12.17	.00093	.01868	.89852	.03735	.85645	-2.08	1.27	-1.78	1.
F(1,58)=22.4	.00001	.00029	.99440	.00059	.99208	-3.44	2.54	-3.25	2.
F(1,58)=24.3	.00001	.00014	.99668	.00029	.99531	-3.62	2.71	-3.44	2.
F(1,58)=42.29	<.00001	<.00001	>.9999	<.00001	>.9999	-4.94	4.00	-4.80	3.
F(1,58)=42.29	<.00001	<.00001	>.9999	<.00001	>.9999	-4.94	4.00	-4.80	3.
F(1,58)=9.55	.00307	.06139	.78532	.12278	.69632	-1.54	0.79	-1.16	0.
F(1,59)=2.28	.13639	NA	NA	NA	NA	NA	NA	NA	N
F(1,59)=231.48	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.90	-7.67	5.
F(1,59)=3.16	.08062	NA	NA	NA	NA	NA	NA	NA	N
F(1,60)=0.030	.86307	NA	NA	NA	NA	NA	NA	NA	N
F(1,60)=16.01	.00018	.00351	.96669	.00702	.95290	-2.70	1.83	-2.46	1.
F(1,60)=2.57	.11416	NA	NA	NA	NA	NA	NA	NA	N
F(1,60)=2.98	.08945	NA	NA	NA	NA	NA	NA	NA	N
F(1,60)=21.51	.00002	.00039	.99302	.00078	.99012	-3.36	2.46	-3.16	2.
F(1,60)=25.91	<.00001	.00008	.99794	.00015	.99709	-3.79	2.87	-3.61	2.
F(1,60)=5.75	.01962	.39233	.37744	.78467	.11967	-0.27	-0.31	0.79	-1.
F(1,60)=5.94	.01778	.35566	.40924	.71132	.16463	-0.37	-0.23	0.56	-0.
F(1,60)=5.97	.01751	.35021	.41412	.70042	.17153	-0.38	-0.22	0.53	-0.
F(1,60)=9.37	.00330	.06594	.77531	.13189	.68228	-1.51	0.76	-1.12	0.
F(1,61)=10.76	.00172	.03434	.84966	.06868	.78745	-1.82	1.03	-1.49	0.
F(1,61)=18.0	.00008	.00153	.98131	.00305	.97358	-2.96	2.08	-2.74	1.
F(1,61)=24.9	.00001	.00011	.99732	.00021	.99622	-3.70	2.79	-3.52	2.
F(1,62)=103.01	<.00001	<.00001	>.9999	<.00001	>.9999	-7.28	5.89	-7.18	5.
F(1,62)=106.07	<.00001	<.00001	>.9999	<.00001	>.9999	-7.36	5.90	-7.27	5.
F(1,62)=4.91	.03038	.60763	.21810	NA	NA	0.27	-0.78	NA	N
F(1,90)=0.05	.82357	NA	NA	NA	NA	NA	NA	NA	N
F(1,92)=7.33	.00808	.16169	.61420	.32338	.45632	-0.99	0.29	-0.46	-0.
F(1,97)=5.67	.01921	.38420	.38093	.76841	.12789	-0.29	-0.30	0.73	-1.
F(1,991)=385.15	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.96	-7.67	5.
F(1,110)=129.5	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.93	-7.67	5.
F(1,110)=17.7	.00005	.00106	.98413	.00212	.97766	-3.07	2.15	-2.86	2.
F(1,110)=9.2	.00302	.06039	.78120	.12078	.69199	-1.55	0.78	-1.17	0.
F(1,14)=22.01	.00035	.00693	.96520	.01387	.94916	-2.46	1.81	-2.20	1.
F(1,14)=8.15	.01273	.25457	.54297	.50913	.33225	-0.66	0.11	0.02	-0.
F(1,147)=90.8	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.94	-7.67	5.
F(1,15)=7.08	.01780	.35604	.43660	.71208	.17919	-0.37	-0.16	0.56	-0.
F(1,7)=4.42	.07361	NA	NA	NA	NA	NA	NA	NA	N
F(14,252)=1.83	.03484	.69671	.16637	NA	NA	0.51	-0.97	NA	N
F(2,114)=15.31	<.00001	.00003	.99882	.00005	.99833	-4.05	3.04	-3.88	2.
F(2,114)=28.99	<.00001	<.00001	>.9999	<.00001	>.9999	-5.95	4.87	-5.84	4.
F(2,114)=8.11	.00051	.01019	.92676	.02037	.89659	-2.32	1.45	-2.05	1.
F(2,122)=1.01	.36724	NA	NA	NA	NA	NA	NA	NA	N
F(2,192)=150.2	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	6.10	-7.67	6.
F(2,192)=3.05	.04966	.99320	.00325	NA	NA	2.47	-2.72	NA	N
F(2,195)=4.57	.01149	.22983	.52794	.45967	.33533	-0.74	0.07	-0.10	-0.
F(2,26)=116.38	<.00001	<.00001	>.9999	<.00001	>.9999	-6.93	5.87	-6.83	5.
F(2,28)=20.74	<.00001	.00006	.99888	.00012	.99838	-3.85	3.06	-3.67	2.
F(2,28)=3.606	.04042	.80830	.10303	NA	NA	0.87	-1.26	NA	N
F(2,30)=2.02	.15031	NA	NA	NA	NA	NA	NA	NA	N
F(2,30)=20.83	<.00001	.00004	.99910	.00009	.99871	-3.93	3.12	-3.76	3.
F(2,30)=73.82	<.00001	<.00001	>.9999	<.00001	>.9999	-6.46	5.68	-6.36	5.
F(2,32)=113.38	<.00001	<.00001	>.9999	<.00001	>.9999	-7.42	5.93	-7.32	5.
F(2,34)=2.04	.14564	NA	NA	NA	NA	NA	NA	NA	N
F(2,379)=6.39	.00186	.03730	.83030	.07459	.76150	-1.78	0.96	-1.44	0.
F(2,380)=1.01	.36519	NA	NA	NA	NA	NA	NA	NA	N
F(2,380)=4.01	.01891	.37812	.38335	.75624	.13335	-0.31	-0.30	0.69	-1.
F(2,56)=1.16	.32090	NA	NA	NA	NA	NA	NA	NA	N
F(2,60)=0.05	.95127	NA	NA	NA	NA	NA	NA	NA	N

Test entered by user	*p*-value	*pp*-values				Z Scores			
		Full *p*-curve		Half *p*-curve		Full *p*-curve		Half *p*-curve	
		Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power
F(2,60)=2.76	.07134	NA	NA	NA	NA	NA	NA	NA	N
F(2,60)=3.17	.04912	.98243	.00861	NA	NA	2.11	-2.38	NA	N
F(2,60)=4.64	.01338	.26750	.49720	.53501	.28598	-0.62	-0.01	0.09	-0.
F(2,60)=.40	.67209	NA	NA	NA	NA	NA	NA	NA	N
F(2,80)=1.19	.30955	NA	NA	NA	NA	NA	NA	NA	N
F(2,90)=1.22	.30007	NA	NA	NA	NA	NA	NA	NA	N
F(2,90)=4.42	.01476	.29510	.46497	.59020	.24333	-0.54	-0.09	0.23	-0.
F(2,92)=8.13	.00056	.01121	.92351	.02243	.89184	-2.28	1.43	-2.01	1.
F(2,96)=3.20	.04515	.90292	.04825	NA	NA	1.30	-1.66	NA	N
F(2,47)=.49	.61572	NA	NA	NA	NA	NA	NA	NA	N
F(3,196)=21.91	<.00001	<.00001	>.9999	<.00001	>.9999	-6.45	5.28	-6.34	5.
F(3,208)=3.04	.03000	.60006	.22209	NA	NA	0.25	-0.77	NA	N
F(3,260)=1.02	.38429	NA	NA	NA	NA	NA	NA	NA	N
F(3,46)=3.13	.03455	.69103	.17103	NA	NA	0.50	-0.95	NA	N
F(3,49)=2.82	.04851	.97025	.01488	NA	NA	1.88	-2.17	NA	N
F(3,96)=19.9	<.00001	<.00001	>.9999	<.00001	>.9999	-5.65	4.59	-5.53	4.
F(3,96)=53.9	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	6.03	-7.67	5.
F(4,211)=13.28	<.00001	<.00001	>.9999	<.00001	>.9999	-5.47	4.32	-5.34	4.
F(4,28)=0.47	.75725	NA	NA	NA	NA	NA	NA	NA	N
F(4,402)=2.45	.04567	.91347	.04264	NA	NA	1.36	-1.72	NA	N
F(4,60)=7.11	.00009	.00188	.97892	.00375	.96989	-2.90	2.03	-2.67	1.
F(4,64)=7.719	.00004	.00077	.98852	.00154	.98362	-3.17	2.27	-2.96	2.
F(4,112)=3.62	.00818	.16364	.61498	.32729	.45410	-0.98	0.29	-0.45	-0.
F(8,112)=2.02	.05025	NA	NA	NA	NA	NA	NA	NA	N
F(8,112)=2.10	.04146	.82927	.08938	NA	NA	0.95	-1.34	NA	N
F(9,108)=2.29	.02155	.43108	.35341	.86217	.07617	-0.17	-0.38	1.09	-1.
F(9,108)=3.76	.00038	.00761	.94318	.01523	.91881	-2.43	1.58	-2.16	1.
r(11)=.48	.09691	NA	NA	NA	NA	NA	NA	NA	N
r(18)=.71	.00045	.00906	.95217	.01812	.93078	-2.36	1.67	-2.09	1.
r(18)=.72	.00034	.00688	.96114	.01377	.94376	-2.46	1.76	-2.20	1.
r(205)=.56	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.95	-7.67	5.
r(49)=.29	.03899	.77986	.11466	NA	NA	0.77	-1.20	NA	N
r(49)=.47	.00050	.01003	.93404	.02007	.90652	-2.33	1.51	-2.05	1.
r(8)=.05	.89090	NA	NA	NA	NA	NA	NA	NA	N
r(88)=.04	.70817	NA	NA	NA	NA	NA	NA	NA	N
t(10)=.983	.34879	NA	NA	NA	NA	NA	NA	NA	N
t(10)=3.23	.00902	.18042	.65059	.36084	.48067	-0.91	0.39	-0.36	-0.
t(103)=2.57	.01160	.23201	.52749	.46402	.33458	-0.73	0.07	-0.09	-0.
t(11319)=2.01	.04445	.88910	.05385	NA	NA	1.22	-1.61	NA	N
t(114)=12.00	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.93	-7.67	5.
t(114)=6.243	<.00001	<.00001	>.9999	<.00001	>.9999	-5.12	4.10	-4.99	4.
t(114)=8.97	<.00001	<.00001	>.9999	<.00001	>.9999	-7.31	5.91	-7.21	5.
t(119)=17.14	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.93	-7.67	5.
t(12)=2.419	.03238	.64753	.21137	NA	NA	0.38	-0.80	NA	N
t(128)=10.39	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.93	-7.67	5.
t(129)=4.9	<.00001	.00006	.99799	.00011	.99717	-3.86	2.88	-3.69	2.
t(129)=1.7	.09154	NA	NA	NA	NA	NA	NA	NA	N
t(13)=0.686	.50476	NA	NA	NA	NA	NA	NA	NA	N
t(13)=11.87	<.00001	<.00001	>.9999	<.00001	>.9999	-4.90	4.37	-4.76	4.
t(13)=.49	.63230	NA	NA	NA	NA	NA	NA	NA	N
t(13)=1.76	.10190	NA	NA	NA	NA	NA	NA	NA	N
t(13)=3.44	.00439	.08783	.77546	.17567	.67085	-1.35	0.76	-0.93	0.
t(134)=0.5	.61790	NA	NA	NA	NA	NA	NA	NA	N
t(138)=11.40	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.94	-7.67	5.
t(144)=0.81	.41928	NA	NA	NA	NA	NA	NA	NA	N
t(145)=0.96	.33865	NA	NA	NA	NA	NA	NA	NA	N
t(146)=0.52	.60385	NA	NA	NA	NA	NA	NA	NA	N
t(146)=0.57	.56955	NA	NA	NA	NA	NA	NA	NA	N
t(146)=4.71	.00001	.00011	.99658	.00023	.99519	-3.69	2.70	-3.50	2.
t(147)=0.22	.82618	NA	NA	NA	NA	NA	NA	NA	N
t(147)=1.45	.14919	NA	NA	NA	NA	NA	NA	NA	N
t(147)=2.41	.01719	.34377	.41423	.68754	.17650	-0.40	-0.22	0.49	-0.
t(147)=8.23	<.00001	<.00001	>.9999	<.00001	>.9999	-6.95	5.78	-6.85	5.
t(148)=5.40	<.00001	.00001	.99965	.00001	.99951	-4.41	3.39	-4.26	3.
t(148)=6.01	<.00001	<.00001	>.9999	<.00001	>.9999	-5.01	3.96	-4.87	3.
t(15)=1.64	.12180	NA	NA	NA	NA	NA	NA	NA	N
t(15)=2.08	.05509	NA	NA	NA	NA	NA	NA	NA	N
t(15)=3.31	.00476	.09521	.75596	.19041	.64446	-1.31	0.69	-0.88	0.
t(15)=1.3	.21322	NA	NA	NA	NA	NA	NA	NA	N
t(15)=1.8	.09200	NA	NA	NA	NA	NA	NA	NA	N
t(15)=1.99	.06514	NA	NA	NA	NA	NA	NA	NA	N

Test entered by user	*p*-value	*pp*-values				Z Scores			
		Full *p*-curve		Half *p*-curve		Full *p*-curve		Half *p*-curve	
		Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power
t(15)=2.00	.06395	NA	NA	NA	NA	NA	NA	NA	N
t(15)=2.4	.02982	.59650	.24192	NA	NA	0.24	-0.70	NA	N
t(15)=2.5	.02451	.49012	.32138	.98023	.01132	-0.02	-0.46	2.06	-2.
t(15)=2.8	.01346	.26919	.52397	.53839	.30647	-0.62	0.06	0.10	-0.
t(15)=3.2	.00596	.11928	.71644	.23855	.58688	-1.18	0.57	-0.71	0.
t(15)=6.8	.00001	.00012	.99878	.00024	.99823	-3.67	3.03	-3.49	2.
t(15)=6.8	.00001	.00012	.99878	.00024	.99823	-3.67	3.03	-3.49	2.
t(15)=7.2	<.00001	.00006	.99932	.00012	.99902	-3.84	3.21	-3.67	3.
t(15)=7.2	<.00001	.00006	.99932	.00012	.99902	-3.84	3.21	-3.67	3.
t(15)=7.5	<.00001	.00004	.99956	.00008	.99936	-3.96	3.33	-3.79	3.
t(16)=17.76	<.00001	<.00001	>.9999	<.00001	>.9999	-6.34	5.79	-6.23	5.
t(16)=3.03	.00796	.15930	.65476	.31859	.49828	-1.00	0.40	-0.47	-0.
t(16)=47.20	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	6.11	-7.67	6.
t(16)=6.03	.00002	.00035	.99674	.00070	.99526	-3.39	2.72	-3.19	2.
t(16)=6.25	.00001	.00023	.99770	.00046	.99666	-3.50	2.83	-3.31	2.
t(16)=8.00	<.00001	.00001	.99984	.00002	.99977	-4.24	3.60	-4.08	3.
t(163)=5.09	<.00001	.00002	.99904	.00004	.99865	-4.11	3.10	-3.95	3.
t(172)=15.87	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.94	-7.67	5.
t(18.8)=3.08	.00622	.12438	.69921	.24876	.56531	-1.15	0.52	-0.68	0.
t(18)=1.53	.14340	NA	NA	NA	NA	NA	NA	NA	N
t(18)=3.44	.00292	.05842	.81837	.11683	.73715	-1.57	0.91	-1.19	0.
t(18)=4.42	.00033	.00661	.96231	.01322	.94546	-2.48	1.78	-2.22	1.
t(18)=5.51	.00003	.00062	.99421	.00125	.99161	-3.23	2.52	-3.02	2.
t(19)=2.30	.03295	.65905	.19518	NA	NA	0.41	-0.86	NA	N
t(20.4)=1.77	.09167	NA	NA	NA	NA	NA	NA	NA	N
t(204)=1.12	.26403	NA	NA	NA	NA	NA	NA	NA	N
t(213)=2.75	.00647	.12944	.65516	.25888	.51581	-1.13	0.40	-0.65	0.
t(23)=1.62	.11886	NA	NA	NA	NA	NA	NA	NA	N
t(23)=2.12	.04501	.90018	.05144	NA	NA	1.28	-1.63	NA	N
t(23)=2.71	.01249	.24984	.53045	.49968	.32536	-0.67	0.08	-0.00	-0.
t(240)=2.37	.01858	.37159	.38833	.74319	.14143	-0.33	-0.28	0.65	-1.
t(242)=4.63	.00001	.00012	.99627	.00024	.99476	-3.67	2.68	-3.49	2.
t(242)=8.24	<.00001	<.00001	>.9999	<.00001	>.9999	-7.24	5.90	-7.15	5.
t(25.5)=1.89	.07018	NA	NA	NA	NA	NA	NA	NA	N
t(252)=2.12	.03498	.69967	.15762	NA	NA	0.52	-1.00	NA	N
t(26)=1.02	.31713	NA	NA	NA	NA	NA	NA	NA	N
t(260)=1.97	.04990	.99799	.00094	NA	NA	2.88	-3.11	NA	N
t(260)=3.18	.00165	.03303	.84439	.06605	.78162	-1.84	1.01	-1.51	0.
t(260)=3.59	.00040	.00790	.93608	.01581	.91029	-2.41	1.52	-2.15	1.
t(261)=2.88	.00431	.08613	.72594	.17227	.61539	-1.36	0.60	-0.95	0.
t(265)=1.97	.04988	.99759	.00113	NA	NA	2.82	-3.05	NA	N
t(27)=1.52	.14014	NA	NA	NA	NA	NA	NA	NA	N
t(279)=20.42	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.95	-7.67	5.
t(2896)=12.11	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.96	-7.67	5.
t(2896)=6.92	<.00001	<.00001	>.9999	<.00001	>.9999	-6.35	5.16	-6.24	5.
t(29)=1.16	.25551	NA	NA	NA	NA	NA	NA	NA	N
t(29)=1.82	.07910	NA	NA	NA	NA	NA	NA	NA	N
t(29)=2.87	.00759	.15171	.64555	.30342	.49345	-1.03	0.37	-0.51	-0.
t(29)=3.068	.00464	.09275	.73773	.18551	.62519	-1.32	0.64	-0.89	0.
t(29)=4.252	.00020	.00402	.96900	.00804	.95570	-2.65	1.87	-2.41	1.
t(30)=0.47	.64175	NA	NA	NA	NA	NA	NA	NA	N
t(30)=0.90	.37529	NA	NA	NA	NA	NA	NA	NA	N
t(30)=1.05	.30210	NA	NA	NA	NA	NA	NA	NA	N
t(30)=1.08	.28875	NA	NA	NA	NA	NA	NA	NA	N
t(30)=1.15	.25923	NA	NA	NA	NA	NA	NA	NA	N
t(30)=1.20	.23953	NA	NA	NA	NA	NA	NA	NA	N
t(30)=1.52	.13898	NA	NA	NA	NA	NA	NA	NA	N
t(30)=3.1	.00418	.08369	.75322	.16738	.64756	-1.38	0.68	-0.96	0.
t(30)=3.94	.00045	.00900	.94424	.01801	.92037	-2.37	1.59	-2.10	1.
t(31)=0.03	.97626	NA	NA	NA	NA	NA	NA	NA	N
t(31)=0.62	.53979	NA	NA	NA	NA	NA	NA	NA	N
t(31)=2.71	.01086	.21728	.56001	.43455	.37204	-0.78	0.15	-0.16	-0.
t(31)=2.75	.00986	.19711	.58428	.39422	.40668	-0.85	0.21	-0.27	-0.
t(31)=3.41	.00182	.03644	.85463	.07289	.79253	-1.79	1.06	-1.45	0.
t(31)=7.62	<.00001	<.00001	>.9999	<.00001	>.9999	-5.01	4.21	-4.87	4.
t(33)=1.13	.26662	NA	NA	NA	NA	NA	NA	NA	N
t(33)=2.15	.03898	.77957	.11648	NA	NA	0.77	-1.19	NA	N
t(33)=5.16	.00001	.00023	.99625	.00046	.99466	-3.50	2.67	-3.31	2.
t(332)=4	.00008	.00156	.97766	.00313	.96866	-2.96	2.01	-2.73	1.
t(333)=1.2	.23099	NA	NA	NA	NA	NA	NA	NA	N
t(34.315)=2.159	.03793	.75859	.12839	NA	NA	0.70	-1.13	NA	N

Test entered by user	*p*-value	*pp*-values				Z Scores			
		Full *p*-curve		Half *p*-curve		Full *p*-curve		Half *p*-curv	
		Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power of 33%	Righ Skew	Power
t(35)=2.36	.02398	.47960	.31320	.95919	.02194	-0.05	-0.49	1.74	-2.
t(37)=1.66	.10537	NA	NA	NA	NA	NA	NA	NA	N
t(38)=4.60	.00005	.00092	.98858	.00184	.98376	-3.12	2.28	-2.90	2.
t(38)=4.71	.00003	.00065	.99114	.00131	.98740	-3.21	2.37	-3.01	2.
t(40)=9.6	<.00001	<.00001	>.9999	<.00001	>.9999	-6.33	5.48	-6.22	5.
t(42.717)=1.889	.06569	NA	NA	NA	NA	NA	NA	NA	N
t(42)=1.06	.29520	NA	NA	NA	NA	NA	NA	NA	N
t(42)=7.45	<.00001	<.00001	>.9999	<.00001	>.9999	-5.27	4.40	-5.15	4.
t(43)=1.921	.06138	NA	NA	NA	NA	NA	NA	NA	N
t(43)=0.343	.73327	NA	NA	NA	NA	NA	NA	NA	N
t(46)=0.15	.88142	NA	NA	NA	NA	NA	NA	NA	N
t(46)=3.1	.00330	.06598	.77908	.13195	.68667	-1.51	0.77	-1.12	0.
t(46)=3.15	.00287	.05737	.79738	.11473	.71262	-1.58	0.83	-1.20	0.
t(46)=5.84	<.00001	.00001	.99962	.00002	.99947	-4.26	3.37	-4.11	3.
t(47)=2.32	.02473	.49467	.29869	.98934	.00560	-0.01	-0.53	2.30	-2.
t(47)=2.88	.00597	.11943	.68346	.23886	.55117	-1.18	0.48	-0.71	0.
t(49)=2.11	.03999	.79977	.10350	NA	NA	0.84	-1.26	NA	N
t(500)=3.28	.00111	.02221	.87656	.04442	.82695	-2.01	1.16	-1.70	0.
t(5022)=23.27	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.96	-7.67	5.
t(5022)=3.16	.00159	.03174	.84540	.06348	.78350	-1.86	1.02	-1.53	0.
t(51)=2.88	.00580	.11602	.68756	.23204	.55743	-1.20	0.49	-0.73	0.
t(57)=2.76	.00776	.15520	.62810	.31040	.47384	-1.01	0.33	-0.49	-0.
t(57)=5.073	<.00001	.00009	.99772	.00018	.99677	-3.75	2.84	-3.57	2.
t(57)=5.35	<.00001	.00003	.99895	.00006	.99851	-3.99	3.07	-3.83	2.
t(57)=5.81	<.00001	.00001	.99972	.00001	.99961	-4.38	3.45	-4.23	3.
t(58)=0.4	.69063	NA	NA	NA	NA	NA	NA	NA	N
t(58)=7.0	<.00001	<.00001	>.9999	<.00001	>.9999	-5.30	4.36	-5.17	4.
t(62)=0.240	.81112	NA	NA	NA	NA	NA	NA	NA	N
t(62)=2.35	.02197	.43943	.33871	.87885	.06520	-0.15	-0.42	1.17	-1.
t(62)=6.65	<.00001	<.00001	>.9999	<.00001	>.9999	-5.10	4.15	-4.96	4.
t(64)=7.8	<.00001	<.00001	>.9999	<.00001	>.9999	-5.94	4.98	-5.82	4.
t(7)=3.11	.01708	.34162	.49043	.68325	.22306	-0.41	-0.02	0.48	-0.
t(7)=2.7	.03064	.61278	.25380	NA	NA	0.29	-0.66	NA	N
t(7)=4.3	.00357	.07133	.84033	.14266	.75655	-1.47	1.00	-1.07	0.
t(70)=3.55	.00069	.01387	.91480	.02774	.87969	-2.20	1.37	-1.92	1.
t(71)=0.318	.75142	NA	NA	NA	NA	NA	NA	NA	N
t(71)=1.371	.17469	NA	NA	NA	NA	NA	NA	NA	N
t(74)=1.14	.25796	NA	NA	NA	NA	NA	NA	NA	N
t(75)=0.45	.65401	NA	NA	NA	NA	NA	NA	NA	N
t(77)=2.95	.00421	.08415	.73689	.16830	.62876	-1.38	0.63	-0.96	0.
t(79)=2.26	.02657	.53150	.26854	NA	NA	0.08	-0.62	NA	N
t(79)=2.55	.01271	.25412	.50540	.50825	.30227	-0.66	0.01	0.02	-0.
t(81)=0.482	.63111	NA	NA	NA	NA	NA	NA	NA	N
t(83)=0.546	.58653	NA	NA	NA	NA	NA	NA	NA	N
t(85)=3.37	.00113	.02264	.88161	.04529	.83307	-2.00	1.18	-1.69	0.
t(9)=4.411	.00169	.03386	.90155	.06773	.85270	-1.83	1.29	-1.49	1.
t(9)=1.247	.24387	NA	NA	NA	NA	NA	NA	NA	N
t(92)=2.17	.03258	.65166	.18846	NA	NA	0.39	-0.88	NA	N
t(94)=1.51	.13440	NA	NA	NA	NA	NA	NA	NA	N
t(94)=23.60	<.00001	<.00001	>.9999	<.00001	>.9999	-7.76	5.92	-7.67	5.
t(97)=2.33	.02188	.43758	.33737	.87516	.06653	-0.16	-0.42	1.15	-1.
t(99)=2.3	.02355	.47095	.31158	.94190	.03031	-0.07	-0.49	1.57	-1.
t(99)=4.7	.00001	.00017	.99576	.00034	.99403	-3.59	2.63	-3.40	2.
Z=1.00	.31731	NA	NA	NA	NA	NA	NA	NA	N
Z=1.663	.09631	NA	NA	NA	NA	NA	NA	NA	N
Z=1.898	.05770	NA	NA	NA	NA	NA	NA	NA	N
Z=2.03	.04236	.84713	.07534	NA	NA	1.02	-1.44	NA	N
Z=2.04	.04135	.82701	.08589	NA	NA	0.94	-1.37	NA	N
Z=2.24	.02509	.50182	.28453	NA	NA	0.00	-0.57	NA	N
Z=2.78	.00544	.10872	.68381	.21744	.55726	-1.23	0.48	-0.78	0.
Z=3.69	.00022	.00449	.95401	.00897	.93560	-2.61	1.69	-2.37	1.
SUM of Z-Scores in column, dividing by sqrt(N of tests) Z Scores reported under p-curve figure above----->						**-37.17**	**24.56**	**-37.46**	**26.**

Explaining these calculations with an example:

Take the first significant result entered: **chi2(44)=72.31**. It is associated with a two-sided *p*-value of values are the probability of at least as extreme a significant p-value. For right skew we compute these u of no effect; because *p*-values would be distributed uniform between 0 and .05, we simply divide by .05 20) and get the *pp*-value for right skew, that is 0.00455*20=**0.09107**. One minus that gives us the *pp*-

skew (not shown above).

For the *pp*-value under the null that the test is powered to 33% things are a bit more complicated. Thi will not be quite enough, but: we find the non-centrality parameter for the corresponding distribution a freedom that gives 33% power. We then evaluate in that non-central distribution the observed chi2(44)=72.31, and now divide by 33% rather than 5% because now 1/3 of tests are expected to be than only 5% of them.

More importantly, the interpretation of the *pp*-value for 33% power is as follows. If the underlying eff big enough to give the sample of the study obtaining chi2(44)=72.31 33% power, then with probabilit would get a *p*-value of 0.00455 or higher.

For the half *p*-curve we proceed similarly. First, for right skew we divide by .025 (multiply by 40). W is >.025 it is not included in half p-curve, we see "NA" in the table above. For 33% power, in turn, we non-centrality parameter but this time we divide by the share of p-values expected to be p<.025 when p

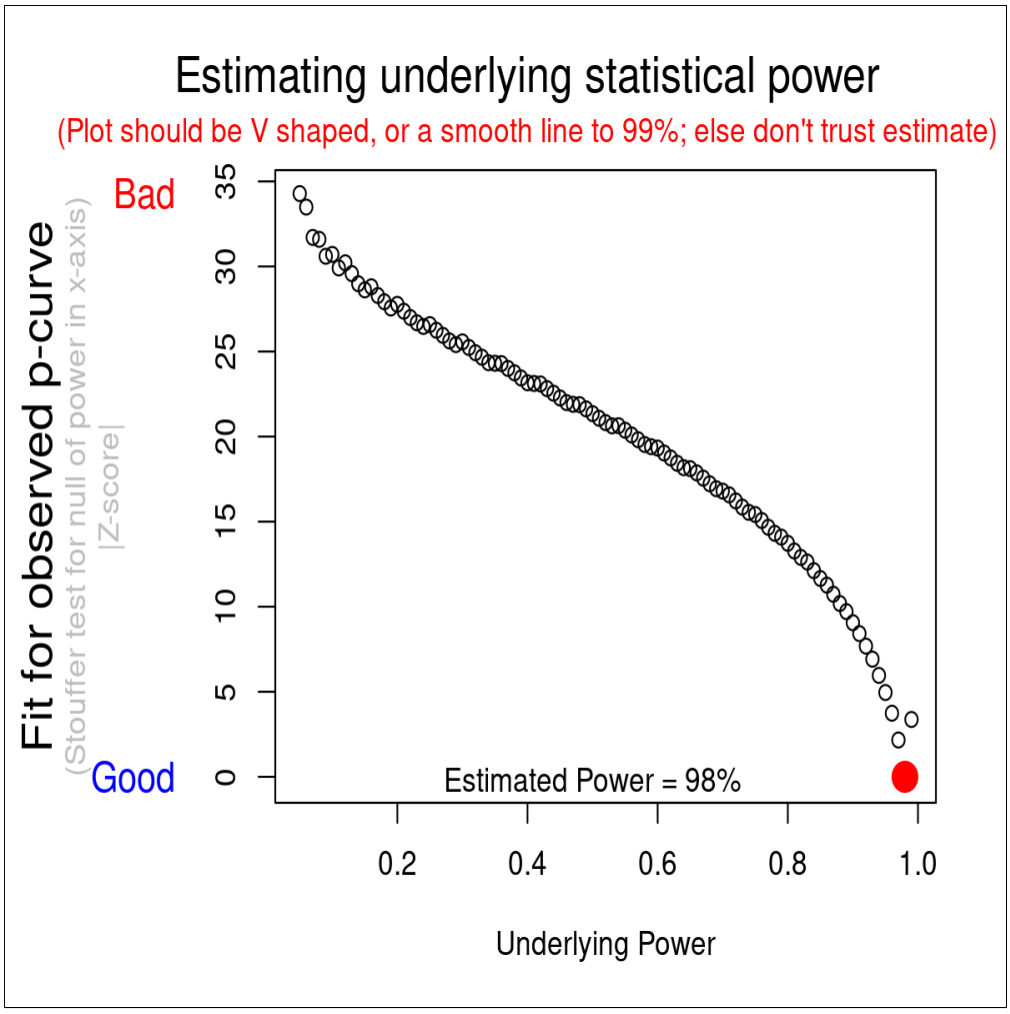
The last four columns report the Z-Scores associated with those *pp*-values. So for the full *p*-curve ri value we had **pp=0.09107**. Evaluating the standard normal distribution in that percentile gives us **Z=-1.33**.

Note: when a *p*-value or p*p*-value is smaller than 2.22e-16 the app uses that value instead. The calculati only approximate for extremely significant results (e.g., t(98)=7.12).

Diagnostic plot for power estimation

This figure plots how consistent the observed *p*-curve is with each possible value of power between 5% To create the figure we compute *pp*-values for the null that all studies are powered with a given level combine those pp-values using Stouffer's method. The best fitting level of power will lead to an ov Z=0, p=.5.

This approach is different from the one used with App 3.0 where instead the Kolmogorov-Smirnov te the resulting distribution of pp-values and the uniform. The results with both methods are very simi advantage of the KS test approach is that it reports absolute fit between expected and observed *p*-cur advantage of the Stouffer method is that it is the approach used to compute the confidence interval and i parsimonious.
The table with results at the top of this page reports **98%** as the estimate of power. This means that if the set were truly powered to 98%, half the time we would see a flatter p-curve than the one we see time we would see a more right-skewed one. So 98% is our best guess.



Confidence interval for power

To build the confidence interval for power we proceed as we do to obtain the estimate of power, bu finding the underlying statistical power that leads to an overall Stouffer test combining the resulting *p*=.5, we find the level of power that gives *p*=.05 and *p*=.95.

For example, above we saw that the lower end of the confidence interval for power was **97%**. This me assume that's the level of power we would observe a p-curve this right-skewed, or more right-skewed, a the Stouffer combination of the resulting pp-values, only 5% of the time. The other end of the confic (**99%**), in turn, means that if power were that high, we would see as flat a p-curve, or flatter, 95% of t that this is a 90% confidence interval (for a 95% one, we would look for levels of power leading to ov of 2.5% and 97.5% respectively). We use 90% to make it consistent with the one-sided test against th null. If p-curve is significantly flatter than expected with 33% power, then the (90%) confidence inter will not include 33% power.

Thank you for using the *p*-curve app.