

RAČUNARSKA STATISTIKA

PROJEKT 4.

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ZADATAK

- Provesti MC studiju za ispitivanje utjecaja distribucije i varijance podataka na snagu t testa za testiranje hipoteze $H_0: \mu_1 - \mu_2 = 0$

Utjecaj različitih faktora na snagu dvostranog t testa:

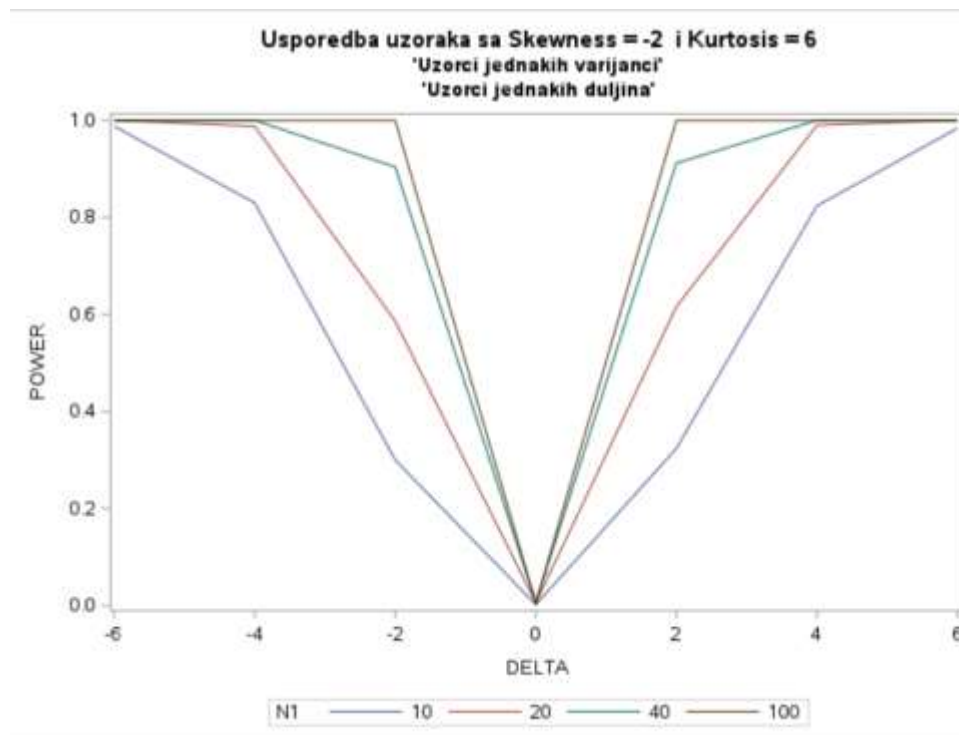
- veličina uzorka
- standardna devijacija
- koeficijent spljoštenosti i asimetrije
- razlika sredina grupa

Usporedba uzoraka sa Skewness = -2 i Kurtosis = 6

'Uzorci jednakih varijanci'

'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	494	0.988	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	415	0.830	10	10
6	1	-4	494	0.988	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	150	0.300	10	10
10	1	-2	293	0.586	20	20
11	1	-2	452	0.904	40	40
12	1	-2	500	1.000	100	100
13	1	0	1	0.002	10	10
14	1	0	3	0.006	20	20
15	1	0	3	0.006	40	40
16	1	0	3	0.006	100	100
17	1	2	162	0.324	10	10
18	1	2	308	0.616	20	20
19	1	2	456	0.912	40	40
20	1	2	500	1.000	100	100
21	1	4	412	0.824	10	10
22	1	4	495	0.990	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	492	0.984	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

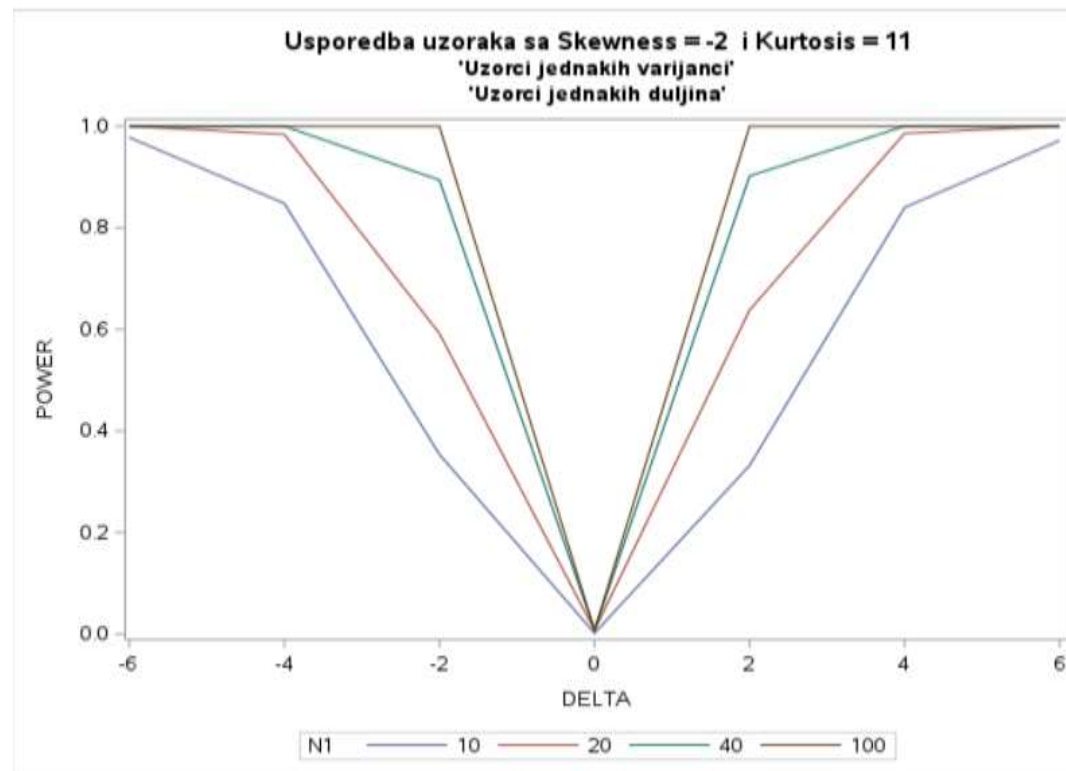


Usporedba uzoraka sa Skewness = -2 i Kurtosis = 11

'Uzorci jednakih varijanci'

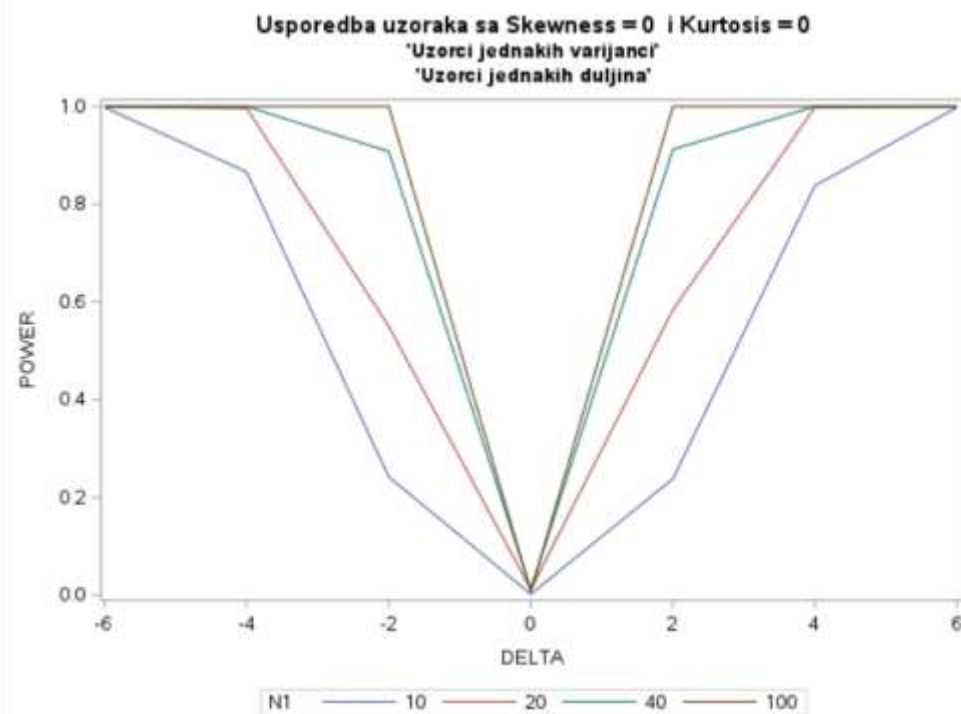
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	489	0.978	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	424	0.848	10	10
6	1	-4	492	0.984	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	177	0.354	10	10
10	1	-2	296	0.592	20	20
11	1	-2	447	0.894	40	40
12	1	-2	500	1.000	100	100
13	1	0	1	0.002	10	10
14	1	0	4	0.008	20	20
15	1	0	4	0.008	40	40
16	1	0	4	0.008	100	100
17	1	2	166	0.332	10	10
18	1	2	319	0.638	20	20
19	1	2	451	0.902	40	40
20	1	2	500	1.000	100	100
21	1	4	420	0.840	10	10
22	1	4	493	0.986	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	486	0.972	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0
 'Uzorci jednakih varijanci'
 'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	499	0.998	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	433	0.866	10	10
6	1	-4	498	0.996	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	121	0.242	10	10
10	1	-2	275	0.550	20	20
11	1	-2	454	0.908	40	40
12	1	-2	500	1.000	100	100
13	1	0	1	0.002	10	10
14	1	0	6	0.012	20	20
15	1	0	6	0.012	40	40
16	1	0	4	0.008	100	100
17	1	2	119	0.238	10	10
18	1	2	292	0.584	20	20
19	1	2	456	0.912	40	40
20	1	2	500	1.000	100	100
21	1	4	419	0.838	10	10
22	1	4	499	0.998	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	499	0.998	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

'Uzorci jednakih varijanci'

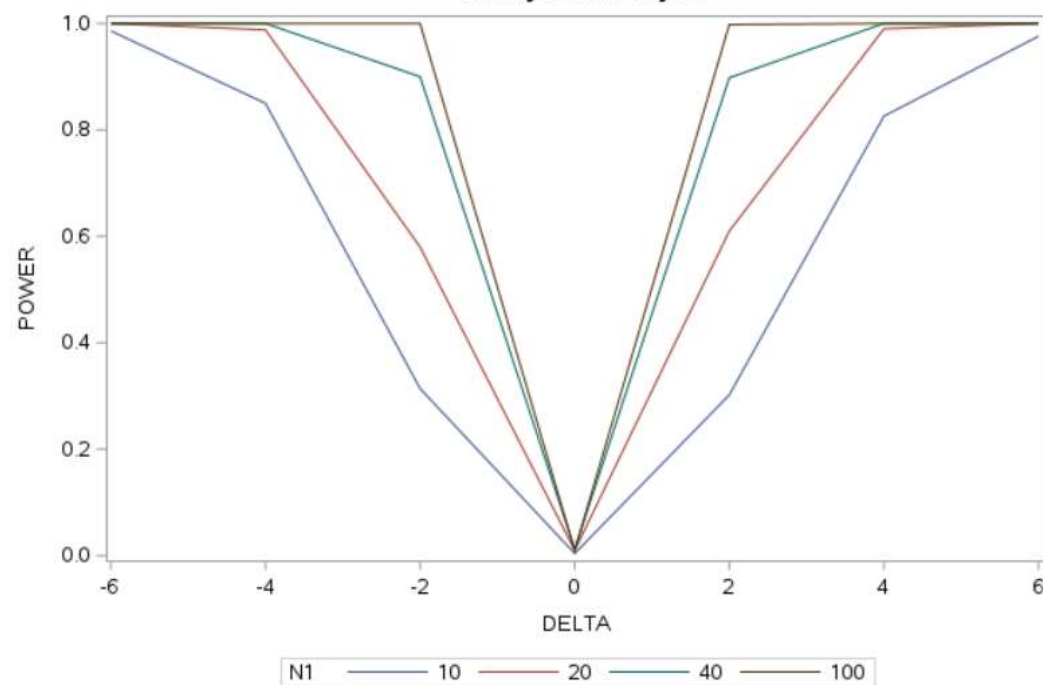
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	493	0.986	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	425	0.850	10	10
6	1	-4	494	0.988	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	157	0.314	10	10
10	1	-2	290	0.580	20	20
11	1	-2	450	0.900	40	40
12	1	-2	500	1.000	100	100
13	1	0	2	0.004	10	10
14	1	0	5	0.010	20	20
15	1	0	6	0.012	40	40
16	1	0	5	0.010	100	100
17	1	2	151	0.302	10	10
18	1	2	305	0.610	20	20
19	1	2	449	0.898	40	40
20	1	2	499	0.998	100	100
21	1	4	413	0.826	10	10
22	1	4	495	0.990	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	488	0.976	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

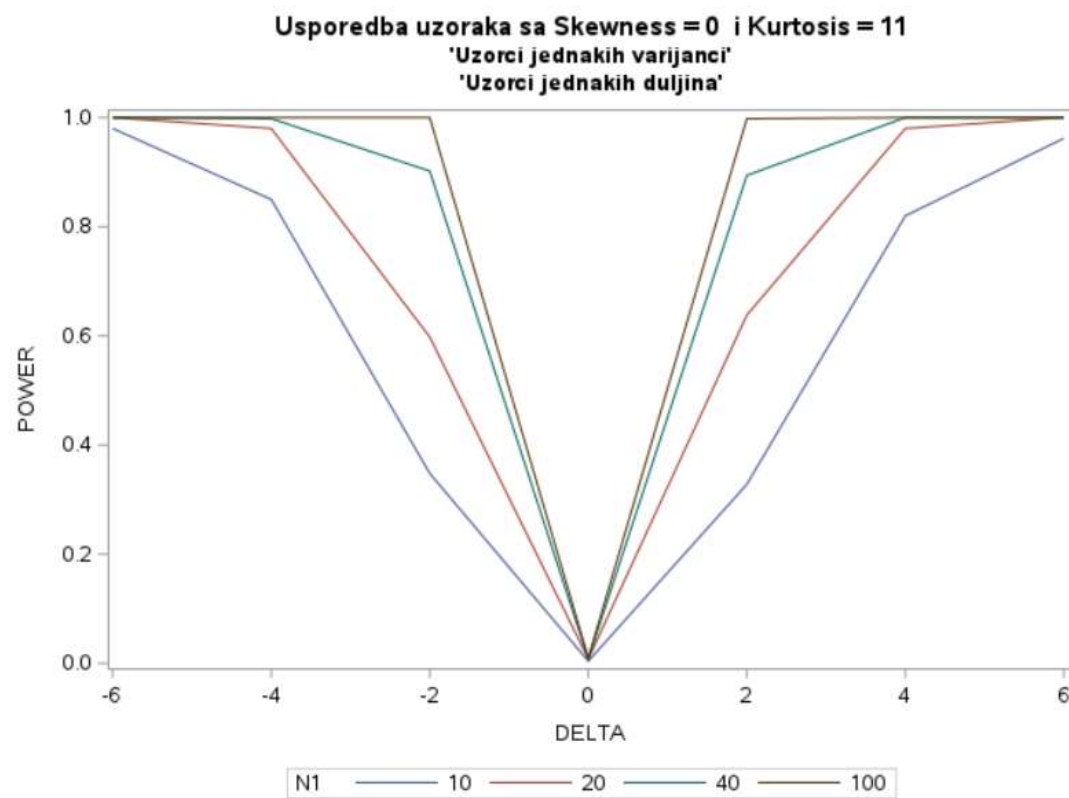
'Uzorci jednakih varijanci'

'Uzorci jednakih duljina'



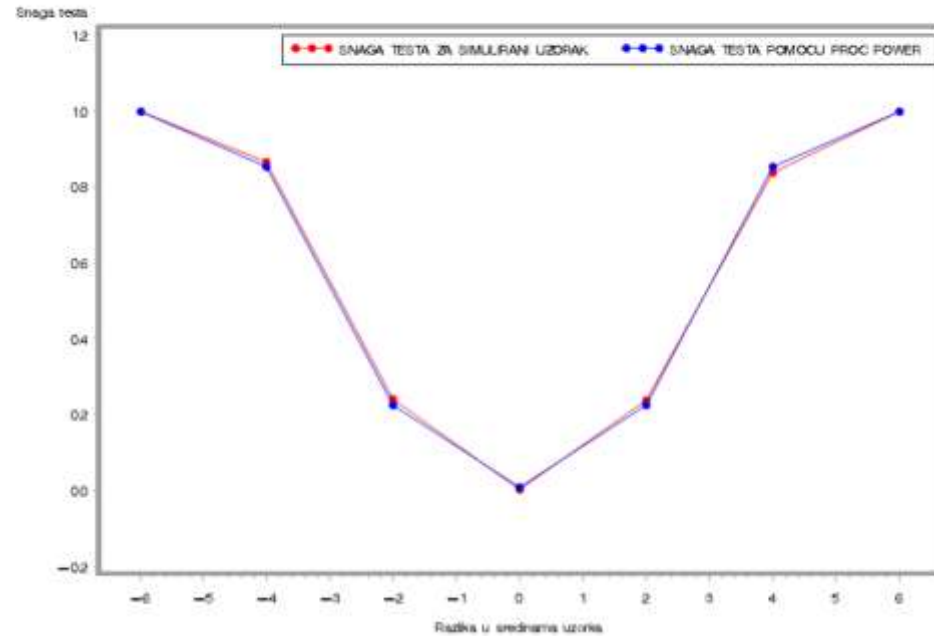
Usporedba uzoraka sa Skewness = 0 i Kurtosis = 11
 'Uzorci jednakih varijanci'
 'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	490	0.980	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	425	0.850	10	10
6	1	-4	490	0.980	20	20
7	1	-4	499	0.998	40	40
8	1	-4	500	1.000	100	100
9	1	-2	174	0.348	10	10
10	1	-2	299	0.598	20	20
11	1	-2	451	0.902	40	40
12	1	-2	500	1.000	100	100
13	1	0	2	0.004	10	10
14	1	0	4	0.008	20	20
15	1	0	4	0.008	40	40
16	1	0	5	0.010	100	100
17	1	2	164	0.328	10	10
18	1	2	319	0.638	20	20
19	1	2	447	0.894	40	40
20	1	2	499	0.998	100	100
21	1	4	410	0.820	10	10
22	1	4	490	0.980	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	481	0.962	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100



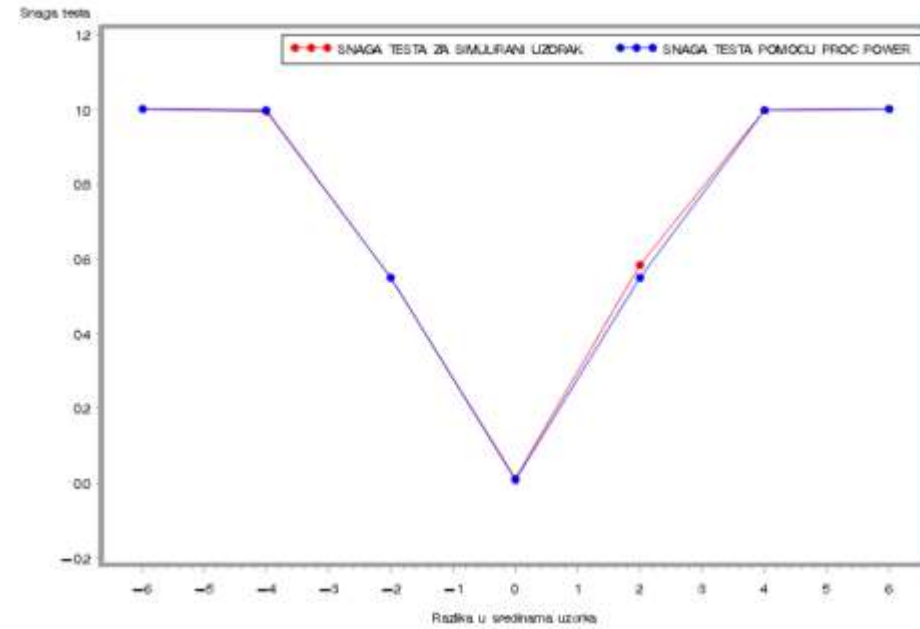
SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 10, dužina drugog uzorka 10



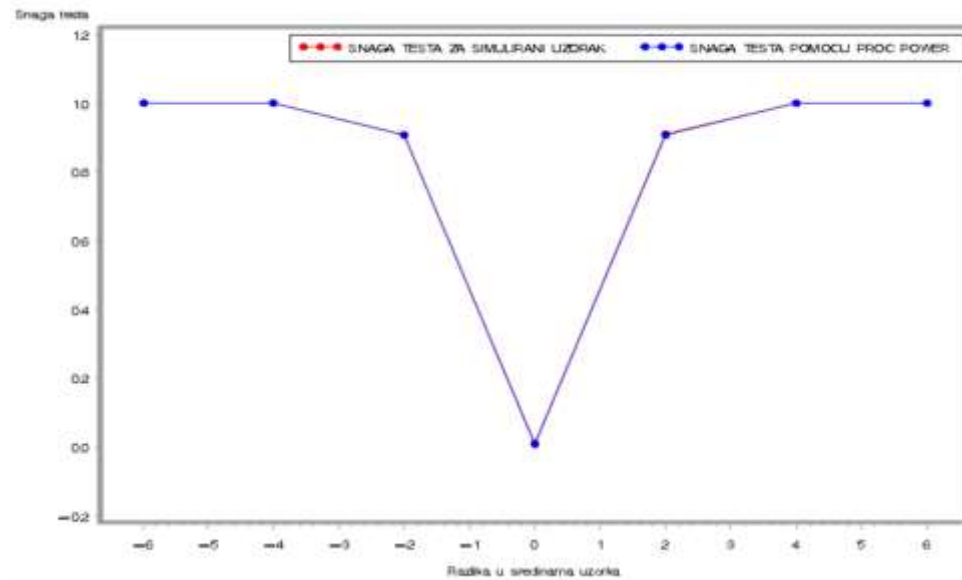
SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 20, dužina drugog uzorka 20



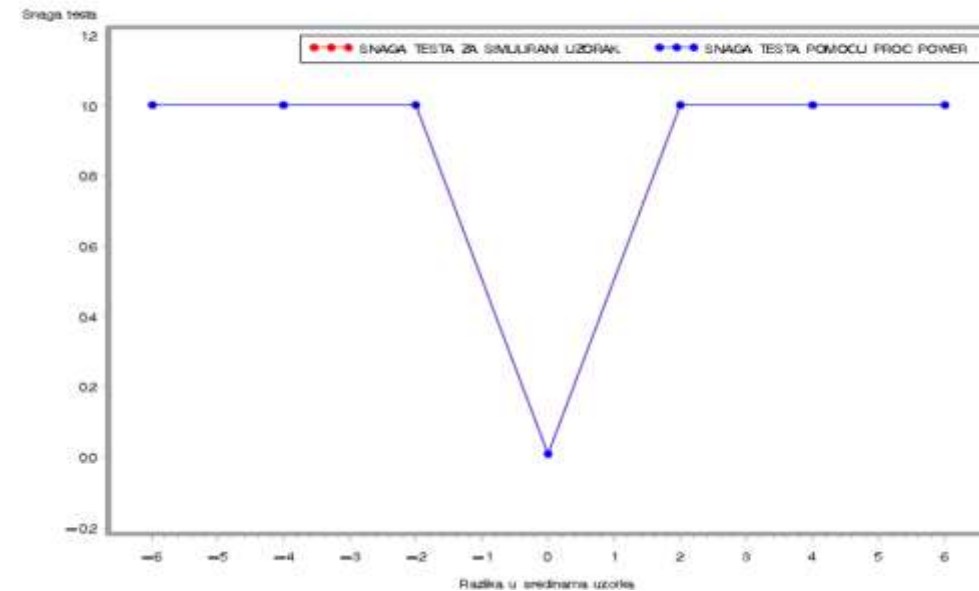
SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 40, dužina drugog uzorka 40



SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 100, dužina drugog uzorka 100



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6

'Uzorci jednakih varijanci'

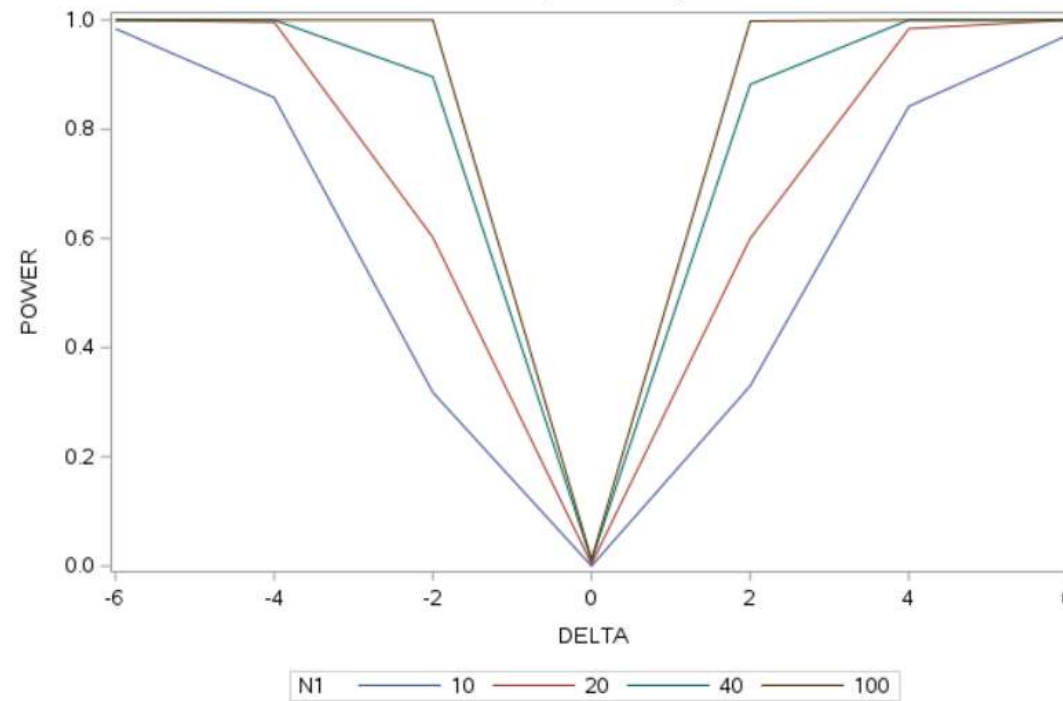
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	492	0.984	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	429	0.858	10	10
6	1	-4	498	0.996	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	159	0.318	10	10
10	1	-2	301	0.602	20	20
11	1	-2	448	0.896	40	40
12	1	-2	500	1.000	100	100
13	1	0	0	0.000	10	10
14	1	0	2	0.004	20	20
15	1	0	5	0.010	40	40
16	1	0	6	0.012	100	100
17	1	2	165	0.330	10	10
18	1	2	300	0.600	20	20
19	1	2	441	0.882	40	40
20	1	2	499	0.998	100	100
21	1	4	421	0.842	10	10
22	1	4	492	0.984	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	486	0.972	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6

'Uzorci jednakih varijanci'

'Uzorci jednakih duljina'



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

'Uzorci jednakih varijanci'

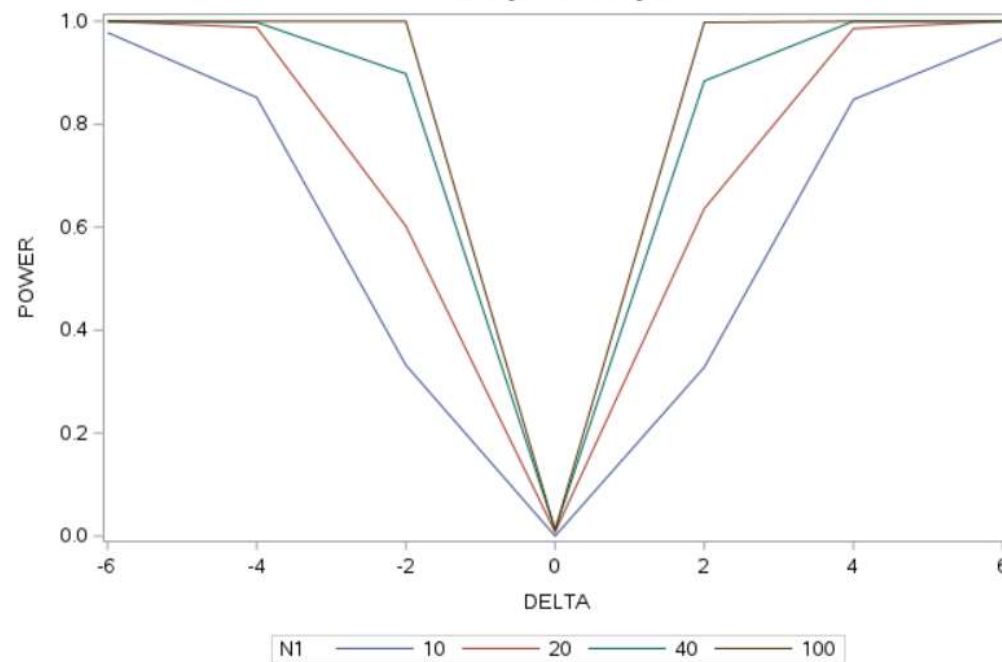
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	489	0.978	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	426	0.852	10	10
6	1	-4	494	0.988	20	20
7	1	-4	499	0.998	40	40
8	1	-4	500	1.000	100	100
9	1	-2	166	0.332	10	10
10	1	-2	301	0.602	20	20
11	1	-2	449	0.898	40	40
12	1	-2	500	1.000	100	100
13	1	0	0	0.000	10	10
14	1	0	4	0.008	20	20
15	1	0	6	0.012	40	40
16	1	0	6	0.012	100	100
17	1	2	164	0.328	10	10
18	1	2	318	0.636	20	20
19	1	2	442	0.884	40	40
20	1	2	499	0.998	100	100
21	1	4	424	0.848	10	10
22	1	4	493	0.986	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	483	0.966	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

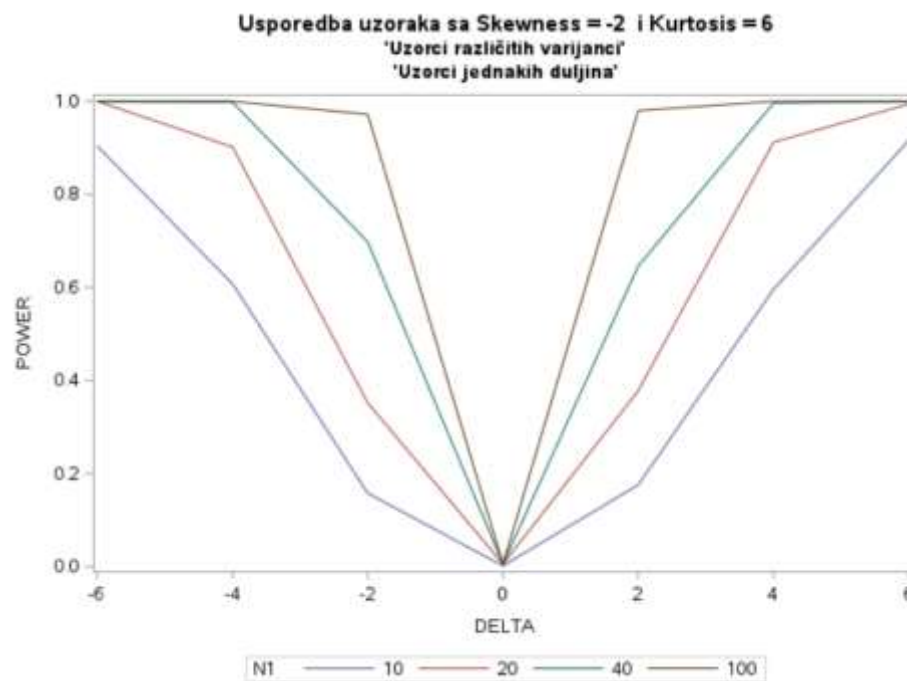
'Uzorci jednakih varijanci'

'Uzorci jednakih duljina'



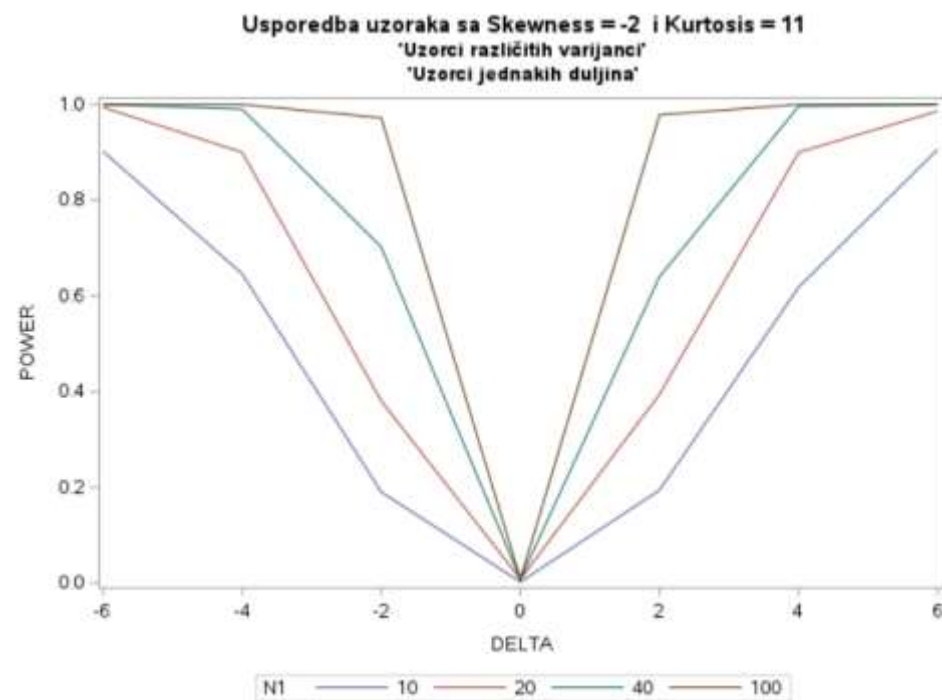
Usporedba uzoraka sa Skewness = -2 i Kurtosis = 6
 'Uzorci različitih varijanci'
 'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	500	1.000	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	472	0.944	10	10
6	1	-4	500	1.000	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	91	0.182	10	10
10	1	-2	309	0.618	20	20
11	1	-2	489	0.978	40	40
12	1	-2	500	1.000	100	100
13	1	0	18	0.036	10	10
14	1	0	16	0.032	20	20
15	1	0	11	0.022	40	40
16	1	0	5	0.010	100	100
17	1	2	197	0.394	10	10
18	1	2	308	0.616	20	20
19	1	2	429	0.858	40	40
20	1	2	500	1.000	100	100
21	1	4	386	0.772	10	10
22	1	4	482	0.964	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	469	0.938	10	10
26	1	6	499	0.998	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100



Usporedba uzoraka sa Skewness = -2 i Kurtosis = 11
 'Uzorci različitih varijanci'
 'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	495	0.990	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	454	0.908	10	10
6	1	-4	498	0.996	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	146	0.292	10	10
10	1	-2	312	0.624	20	20
11	1	-2	479	0.958	40	40
12	1	-2	500	1.000	100	100
13	1	0	8	0.016	10	10
14	1	0	10	0.020	20	20
15	1	0	11	0.022	40	40
16	1	0	5	0.010	100	100
17	1	2	214	0.428	10	10
18	1	2	329	0.658	20	20
19	1	2	436	0.872	40	40
20	1	2	500	1.000	100	100
21	1	4	403	0.806	10	10
22	1	4	479	0.958	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	468	0.936	10	10
26	1	6	497	0.994	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0

'Uzorci različitih varijanci'

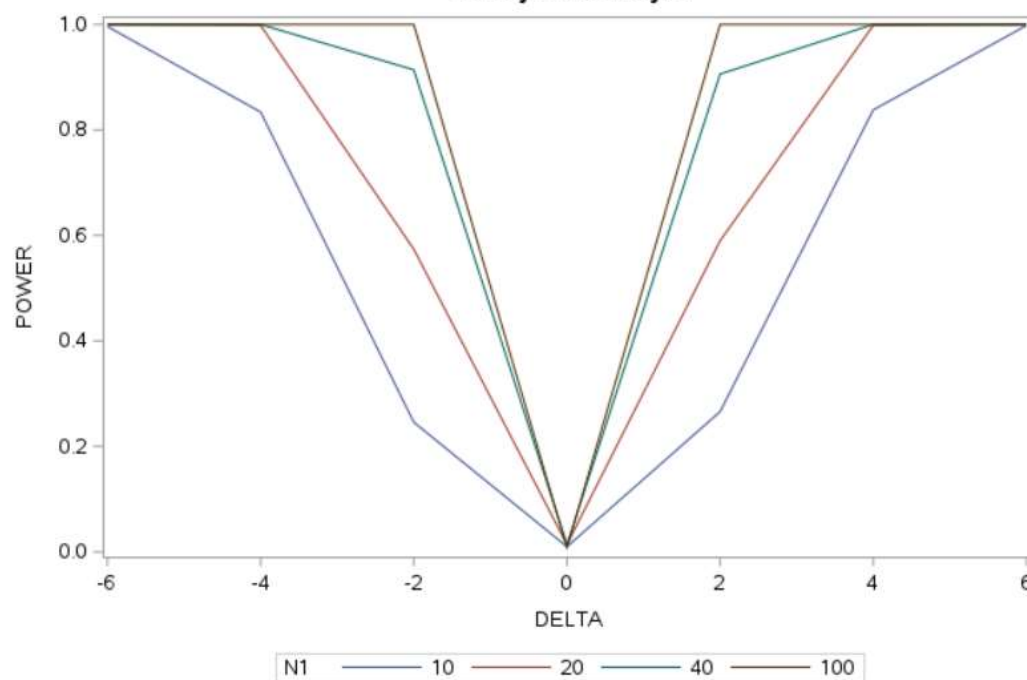
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	498	0.996	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	417	0.834	10	10
6	1	-4	499	0.998	20	20
7	1	-4	500	1.000	40	40
8	1	-4	500	1.000	100	100
9	1	-2	123	0.246	10	10
10	1	-2	287	0.574	20	20
11	1	-2	457	0.914	40	40
12	1	-2	500	1.000	100	100
13	1	0	5	0.010	10	10
14	1	0	7	0.014	20	20
15	1	0	7	0.014	40	40
16	1	0	4	0.008	100	100
17	1	2	133	0.266	10	10
18	1	2	295	0.590	20	20
19	1	2	453	0.906	40	40
20	1	2	500	1.000	100	100
21	1	4	419	0.838	10	10
22	1	4	499	0.998	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	499	0.998	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0

'Uzorci različitih varijanci'

'Uzorci jednakih duljina'



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

'Uzorci različitih varijanci'

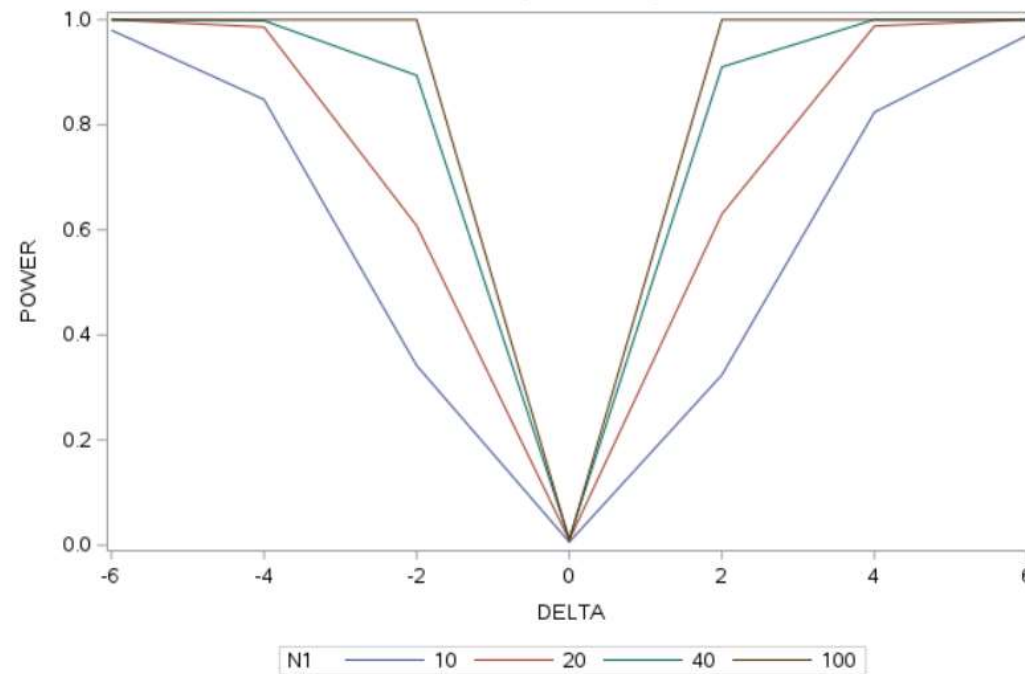
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	490	0.980	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	424	0.848	10	10
6	1	-4	493	0.986	20	20
7	1	-4	499	0.998	40	40
8	1	-4	500	1.000	100	100
9	1	-2	171	0.342	10	10
10	1	-2	304	0.608	20	20
11	1	-2	447	0.894	40	40
12	1	-2	500	1.000	100	100
13	1	0	3	0.006	10	10
14	1	0	5	0.010	20	20
15	1	0	6	0.012	40	40
16	1	0	5	0.010	100	100
17	1	2	162	0.324	10	10
18	1	2	315	0.630	20	20
19	1	2	455	0.910	40	40
20	1	2	500	1.000	100	100
21	1	4	412	0.824	10	10
22	1	4	494	0.988	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	485	0.970	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

'Uzorci različitih varijanci'

'Uzorci jednakih duljina'

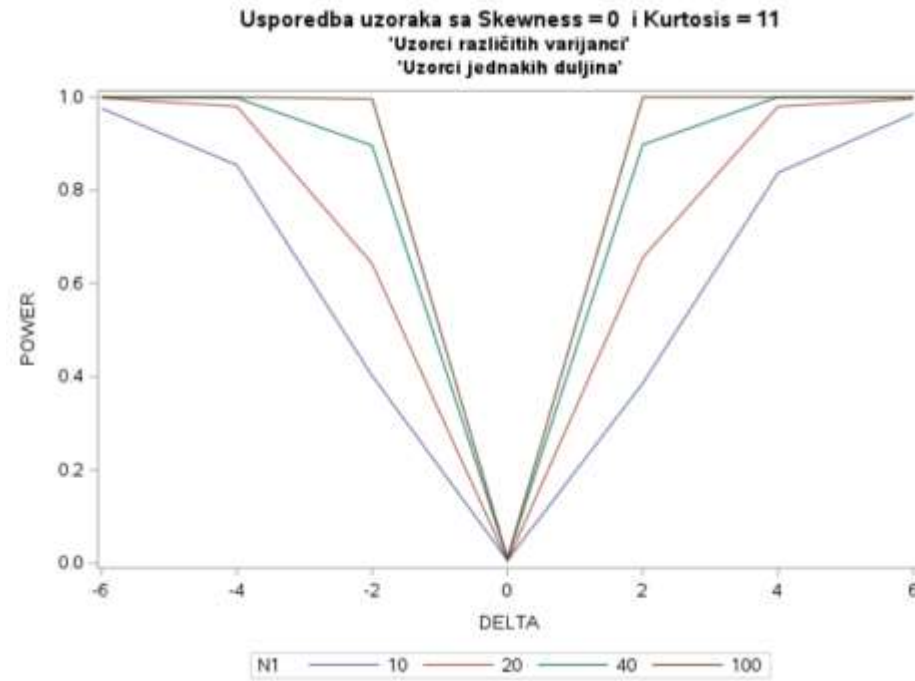


Usporedba uzoraka sa Skewness = 0 i Kurtosis = 11

'Uzorci različitih varijanci'

'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	488	0.976	10	10
2	1	-6	499	0.998	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	427	0.854	10	10
6	1	-4	490	0.980	20	20
7	1	-4	499	0.998	40	40
8	1	-4	500	1.000	100	100
9	1	-2	201	0.402	10	10
10	1	-2	321	0.642	20	20
11	1	-2	448	0.896	40	40
12	1	-2	498	0.996	100	100
13	1	0	3	0.006	10	10
14	1	0	2	0.004	20	20
15	1	0	5	0.010	40	40
16	1	0	5	0.010	100	100
17	1	2	193	0.386	10	10
18	1	2	328	0.656	20	20
19	1	2	449	0.898	40	40
20	1	2	500	1.000	100	100
21	1	4	419	0.838	10	10
22	1	4	490	0.980	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	482	0.964	10	10
26	1	6	498	0.996	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6

'Uzorci različitih varijanci'

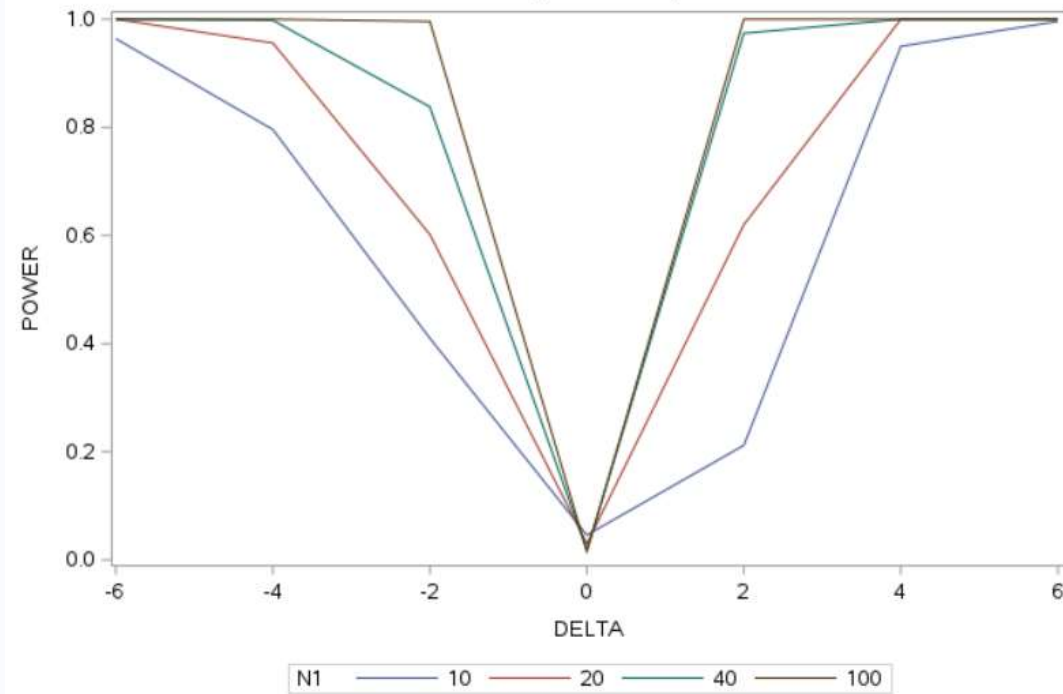
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	482	0.964	10	10
2	1	-6	500	1.000	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	398	0.796	10	10
6	1	-4	478	0.956	20	20
7	1	-4	499	0.998	40	40
8	1	-4	500	1.000	100	100
9	1	-2	205	0.410	10	10
10	1	-2	301	0.602	20	20
11	1	-2	419	0.838	40	40
12	1	-2	498	0.996	100	100
13	1	0	23	0.046	10	10
14	1	0	15	0.030	20	20
15	1	0	9	0.018	40	40
16	1	0	8	0.016	100	100
17	1	2	106	0.212	10	10
18	1	2	310	0.620	20	20
19	1	2	487	0.974	40	40
20	1	2	500	1.000	100	100
21	1	4	475	0.950	10	10
22	1	4	500	1.000	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	498	0.996	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6

'Uzorci različitih varijanci'

'Uzorci jednakih duljina'



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

'Uzorci različitih varijanci'

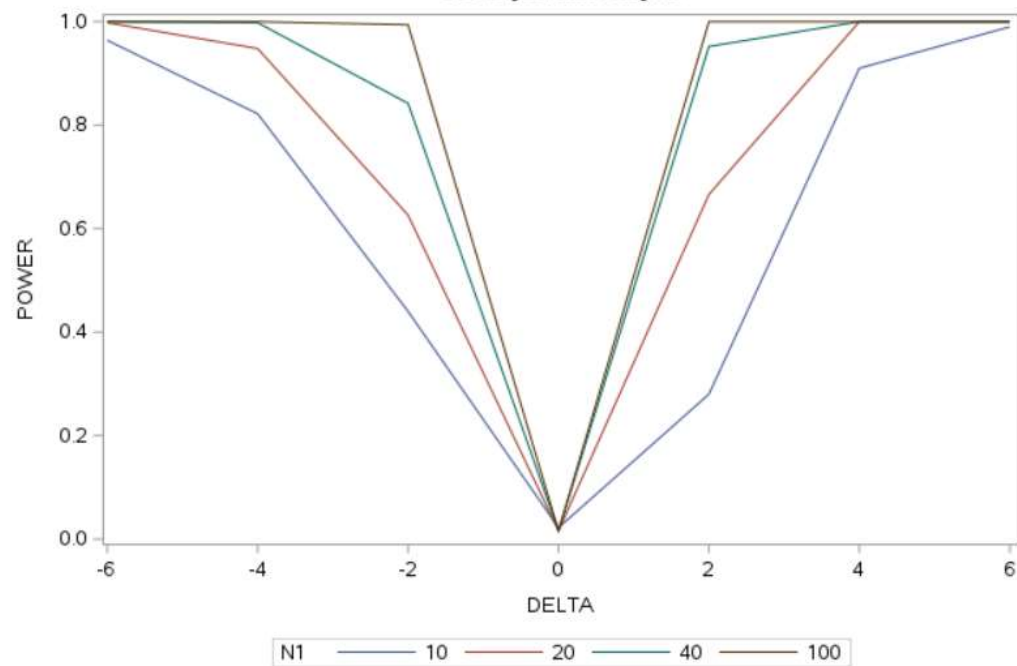
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	482	0.964	10	10
2	1	-6	499	0.998	20	20
3	1	-6	500	1.000	40	40
4	1	-6	500	1.000	100	100
5	1	-4	411	0.822	10	10
6	1	-4	474	0.948	20	20
7	1	-4	499	0.998	40	40
8	1	-4	500	1.000	100	100
9	1	-2	220	0.440	10	10
10	1	-2	313	0.626	20	20
11	1	-2	421	0.842	40	40
12	1	-2	497	0.994	100	100
13	1	0	11	0.022	10	10
14	1	0	8	0.016	20	20
15	1	0	8	0.016	40	40
16	1	0	8	0.016	100	100
17	1	2	140	0.280	10	10
18	1	2	333	0.666	20	20
19	1	2	476	0.952	40	40
20	1	2	500	1.000	100	100
21	1	4	455	0.910	10	10
22	1	4	500	1.000	20	20
23	1	4	500	1.000	40	40
24	1	4	500	1.000	100	100
25	1	6	495	0.990	10	10
26	1	6	500	1.000	20	20
27	1	6	500	1.000	40	40
28	1	6	500	1.000	100	100

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

'Uzorci različitih varijanci'

'Uzorci jednakih duljina'



Usporedba uzoraka sa Skewness = -2 i Kurtosis = 6

'Uzorci jednakih varijanci'

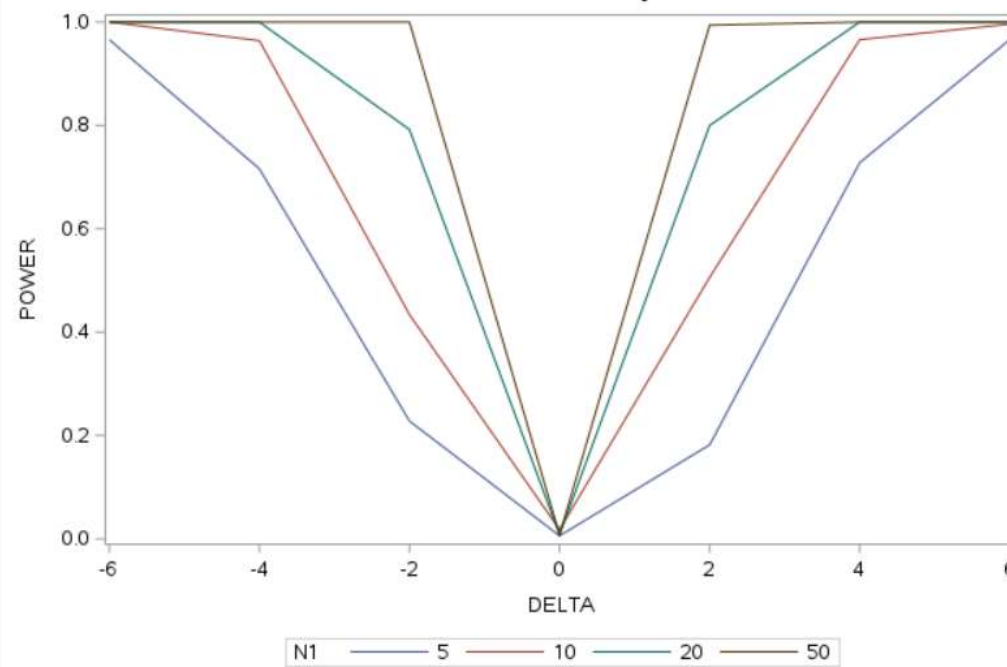
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	483	0.966	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	358	0.716	5	15
6	1	-4	482	0.964	10	30
7	1	-4	500	1.000	20	60
8	1	-4	500	1.000	50	150
9	1	-2	114	0.228	5	15
10	1	-2	217	0.434	10	30
11	1	-2	396	0.792	20	60
12	1	-2	500	1.000	50	150
13	1	0	3	0.006	5	15
14	1	0	9	0.018	10	30
15	1	0	4	0.008	20	60
16	1	0	4	0.008	50	150
17	1	2	91	0.182	5	15
18	1	2	253	0.506	10	30
19	1	2	400	0.800	20	60
20	1	2	497	0.994	50	150
21	1	4	364	0.728	5	15
22	1	4	483	0.966	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	483	0.966	5	15
26	1	6	498	0.996	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = -2 i Kurtosis = 6

'Uzorci jednakih varijanci'

'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = -2 i Kurtosis = 11

'Uzorci jednakih varijanci'

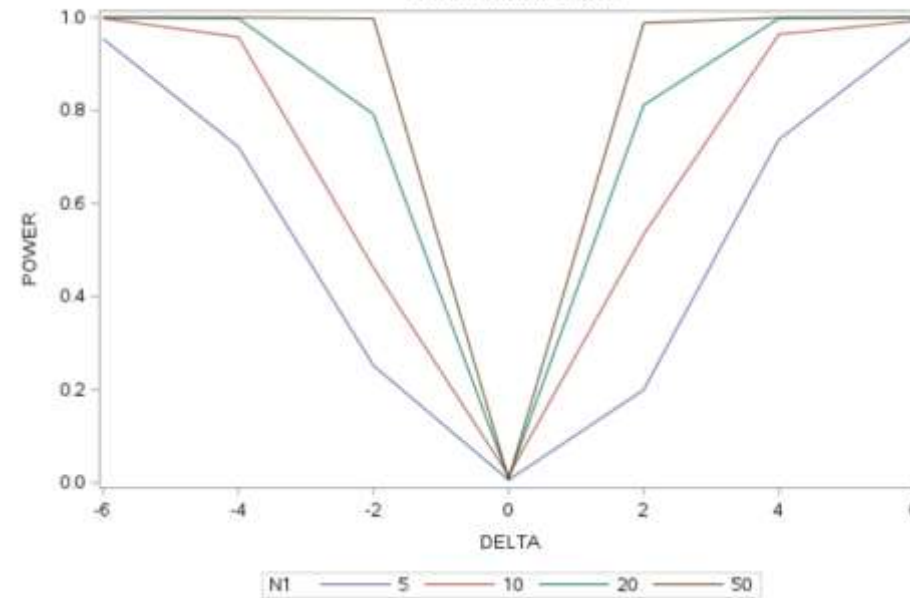
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	477	0.954	5	15
2	1	-6	499	0.998	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	361	0.722	5	15
6	1	-4	479	0.958	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	126	0.252	5	15
10	1	-2	231	0.462	10	30
11	1	-2	396	0.792	20	60
12	1	-2	499	0.998	50	150
13	1	0	3	0.006	5	15
14	1	0	8	0.016	10	30
15	1	0	5	0.010	20	60
16	1	0	4	0.008	50	150
17	1	2	100	0.200	5	15
18	1	2	267	0.534	10	30
19	1	2	406	0.812	20	60
20	1	2	494	0.988	50	150
21	1	4	369	0.738	5	15
22	1	4	482	0.964	10	30
23	1	4	499	0.998	20	60
24	1	4	500	1.000	50	150
25	1	6	480	0.960	5	15
26	1	6	496	0.992	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = -2 i Kurtosis = 11

'Uzorci jednakih varijanci'

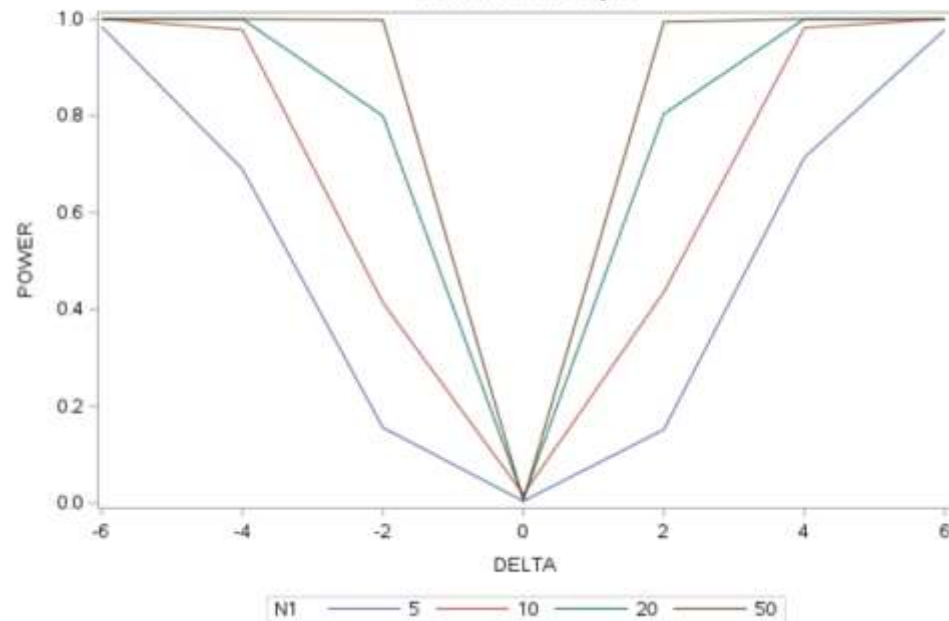
'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0
 'Uzorci jednakih varijanci'
 'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	492	0.984	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	345	0.690	5	15
6	1	-4	489	0.978	10	30
7	1	-4	500	1.000	20	60
8	1	-4	500	1.000	50	150
9	1	-2	78	0.156	5	15
10	1	-2	207	0.414	10	30
11	1	-2	400	0.800	20	60
12	1	-2	499	0.998	50	150
13	1	0	2	0.004	5	15
14	1	0	9	0.018	10	30
15	1	0	5	0.010	20	60
16	1	0	3	0.006	50	150
17	1	2	76	0.152	5	15
18	1	2	218	0.436	10	30
19	1	2	402	0.804	20	60
20	1	2	497	0.994	50	150
21	1	4	357	0.714	5	15
22	1	4	491	0.982	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	489	0.978	5	15
26	1	6	500	1.000	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0
 'Uzorci jednakih varijanci'
 'Uzorci različitih duljina'

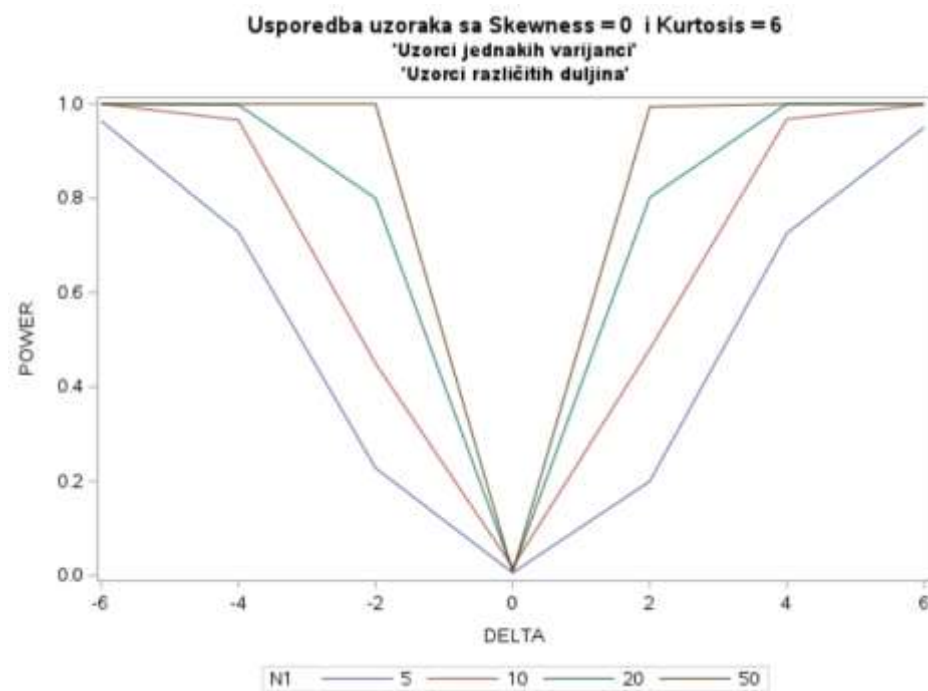


Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

'Uzorci jednakih varijanci'

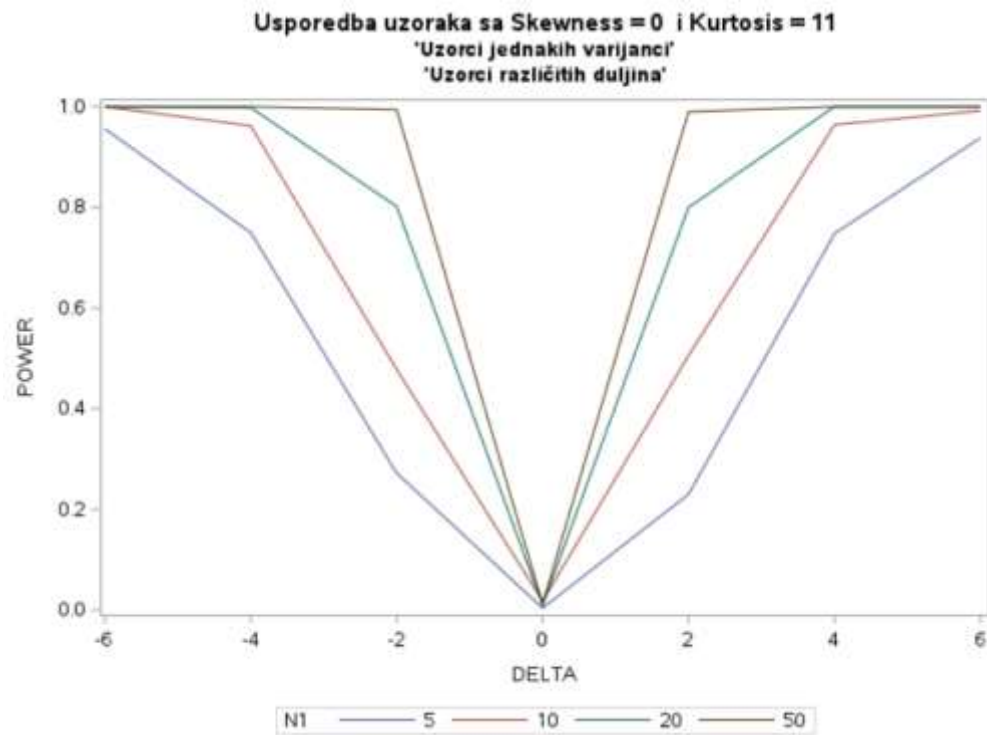
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	482	0.964	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	364	0.728	5	15
6	1	-4	483	0.966	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	114	0.228	5	15
10	1	-2	225	0.450	10	30
11	1	-2	400	0.800	20	60
12	1	-2	500	1.000	50	150
13	1	0	3	0.006	5	15
14	1	0	9	0.018	10	30
15	1	0	5	0.010	20	60
16	1	0	4	0.008	50	150
17	1	2	100	0.200	5	15
18	1	2	240	0.480	10	30
19	1	2	401	0.802	20	60
20	1	2	497	0.994	50	150
21	1	4	363	0.726	5	15
22	1	4	484	0.968	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	475	0.950	5	15
26	1	6	499	0.998	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150



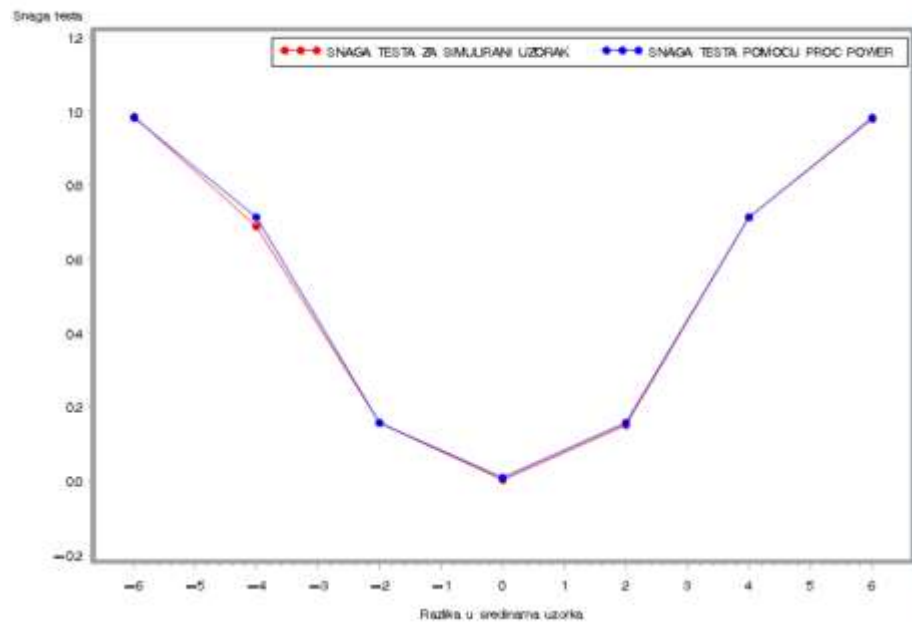
Usporedba uzoraka sa Skewness = 0 i Kurtosis = 11
 'Uzorci jednakih varijanci'
 'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	478	0.956	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	375	0.750	5	15
6	1	-4	481	0.962	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	136	0.272	5	15
10	1	-2	239	0.478	10	30
11	1	-2	401	0.802	20	60
12	1	-2	497	0.994	50	150
13	1	0	2	0.004	5	15
14	1	0	9	0.018	10	30
15	1	0	5	0.010	20	60
16	1	0	6	0.012	50	150
17	1	2	115	0.230	5	15
18	1	2	253	0.506	10	30
19	1	2	400	0.800	20	60
20	1	2	495	0.990	50	150
21	1	4	374	0.748	5	15
22	1	4	482	0.964	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	469	0.938	5	15
26	1	6	496	0.992	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150



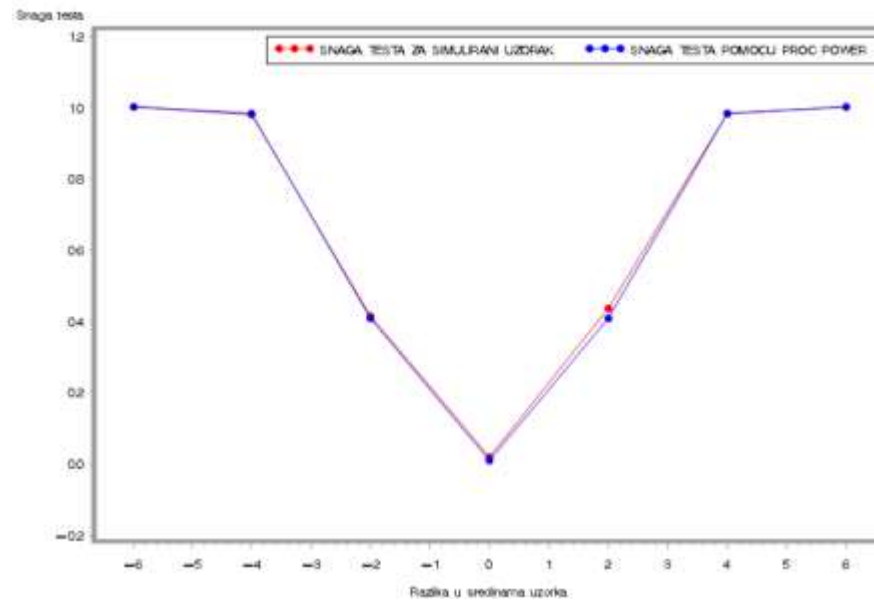
SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 5, dužina drugog uzorka 15



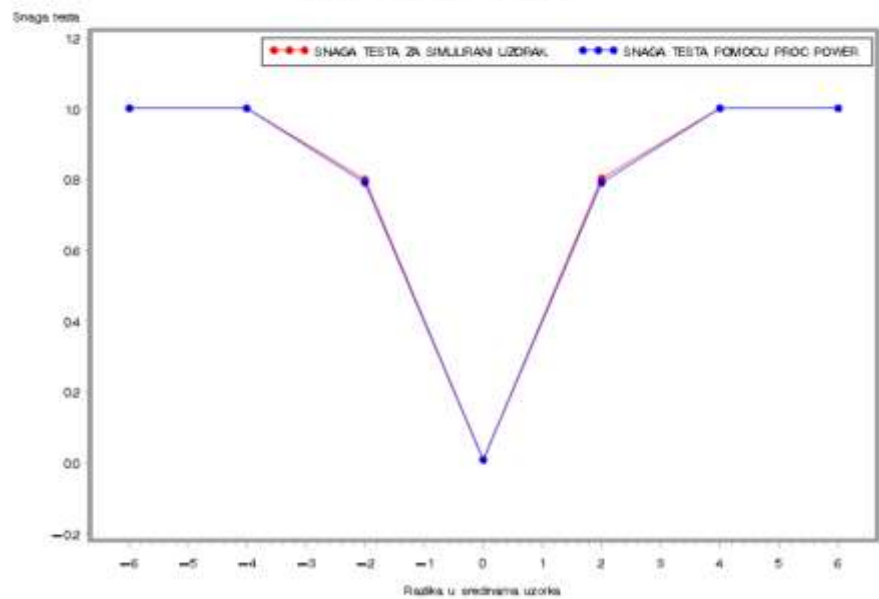
SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 10, dužina drugog uzorka 30



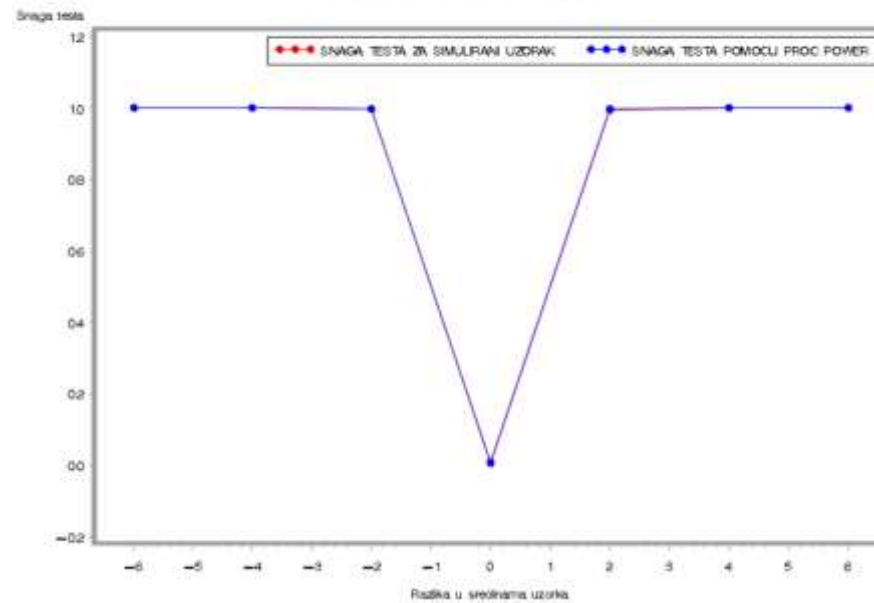
SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 20, dužina drugog uzorka 60



SNAGA TESTA ZA $N(0,2.24)$

dužina prvog uzorka 50, dužina drugog uzorka 150



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6

'Uzorci jednakih varijanci'

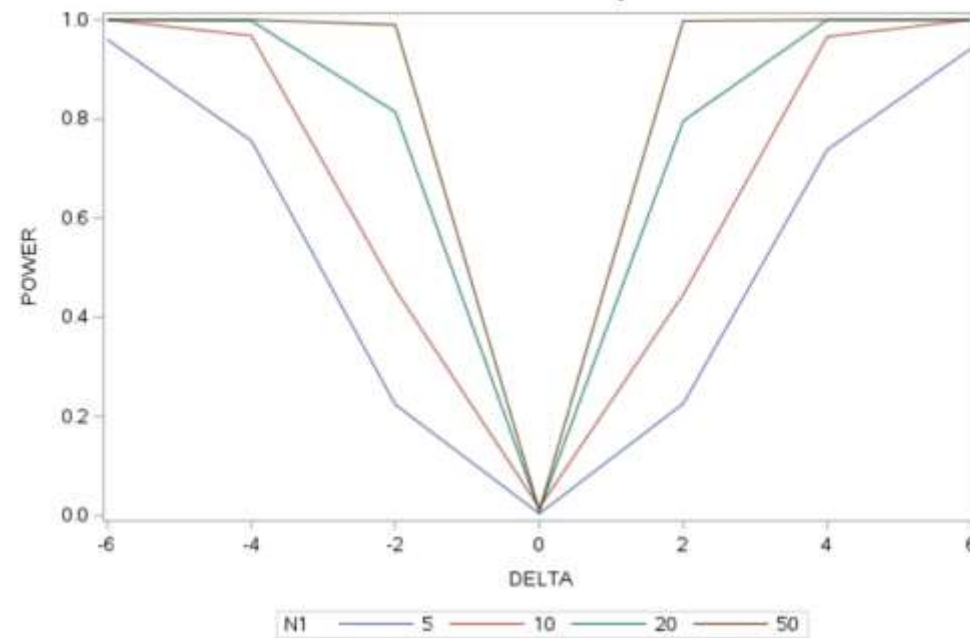
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	480	0.960	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	378	0.756	5	15
6	1	-4	484	0.968	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	112	0.224	5	15
10	1	-2	228	0.456	10	30
11	1	-2	407	0.814	20	60
12	1	-2	495	0.990	50	150
13	1	0	2	0.004	5	15
14	1	0	8	0.016	10	30
15	1	0	5	0.010	20	60
16	1	0	5	0.010	50	150
17	1	2	113	0.226	5	15
18	1	2	223	0.446	10	30
19	1	2	398	0.796	20	60
20	1	2	499	0.998	50	150
21	1	4	369	0.738	5	15
22	1	4	483	0.966	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	471	0.942	5	15
26	1	6	500	1.000	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6

'Uzorci jednakih varijanci'

'Uzorci različitih duljina'

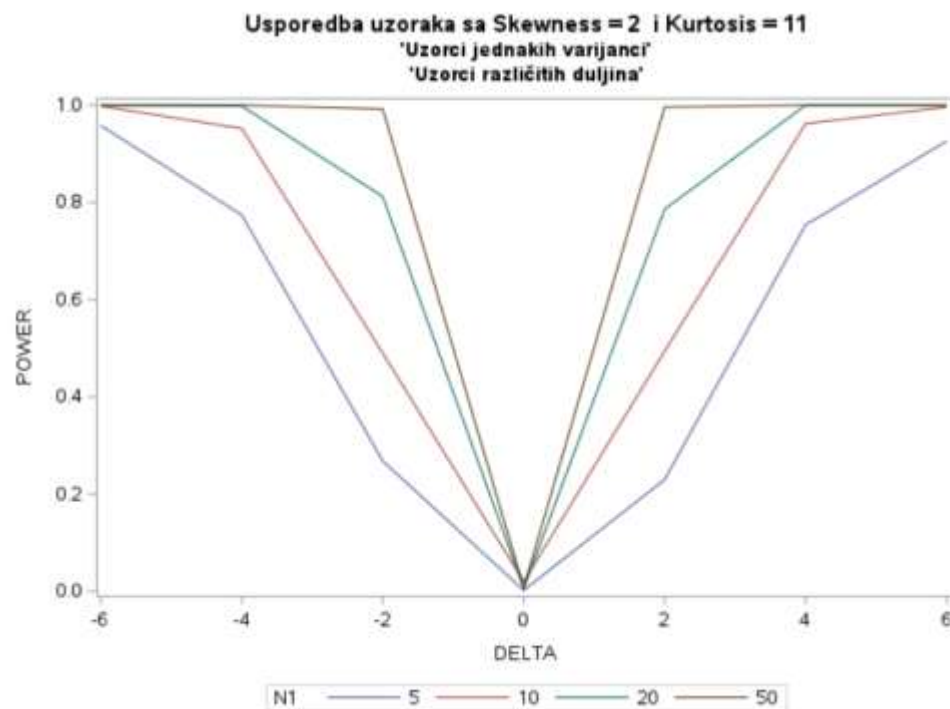


Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

'Uzorci jednakih varijanci'

'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	479	0.958	5	15
2	1	-6	499	0.998	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	387	0.774	5	15
6	1	-4	476	0.952	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	134	0.268	5	15
10	1	-2	245	0.490	10	30
11	1	-2	406	0.812	20	60
12	1	-2	496	0.992	50	150
13	1	0	1	0.002	5	15
14	1	0	10	0.020	10	30
15	1	0	3	0.006	20	60
16	1	0	4	0.008	50	150
17	1	2	115	0.230	5	15
18	1	2	247	0.494	10	30
19	1	2	393	0.786	20	60
20	1	2	498	0.996	50	150
21	1	4	377	0.754	5	15
22	1	4	481	0.962	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	463	0.926	5	15
26	1	6	498	0.996	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150



Usporedba uzoraka sa Skewness = -2 i Kurtosis = 6

'Uzorci različitih varijanci'

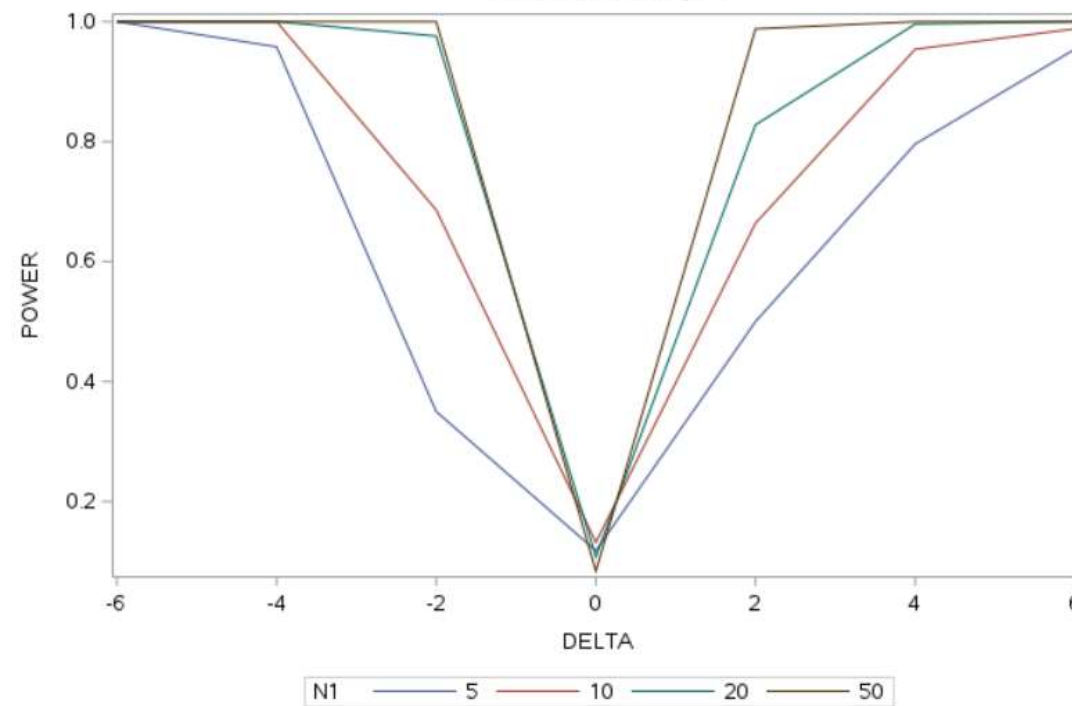
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	500	1.000	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	479	0.958	5	15
6	1	-4	500	1.000	10	30
7	1	-4	500	1.000	20	60
8	1	-4	500	1.000	50	150
9	1	-2	175	0.350	5	15
10	1	-2	343	0.686	10	30
11	1	-2	488	0.976	20	60
12	1	-2	500	1.000	50	150
13	1	0	59	0.118	5	15
14	1	0	66	0.132	10	30
15	1	0	54	0.108	20	60
16	1	0	42	0.084	50	150
17	1	2	250	0.500	5	15
18	1	2	332	0.664	10	30
19	1	2	414	0.828	20	60
20	1	2	494	0.988	50	150
21	1	4	398	0.796	5	15
22	1	4	477	0.954	10	30
23	1	4	498	0.996	20	60
24	1	4	500	1.000	50	150
25	1	6	477	0.954	5	15
26	1	6	494	0.988	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = -2 i Kurtosis = 6

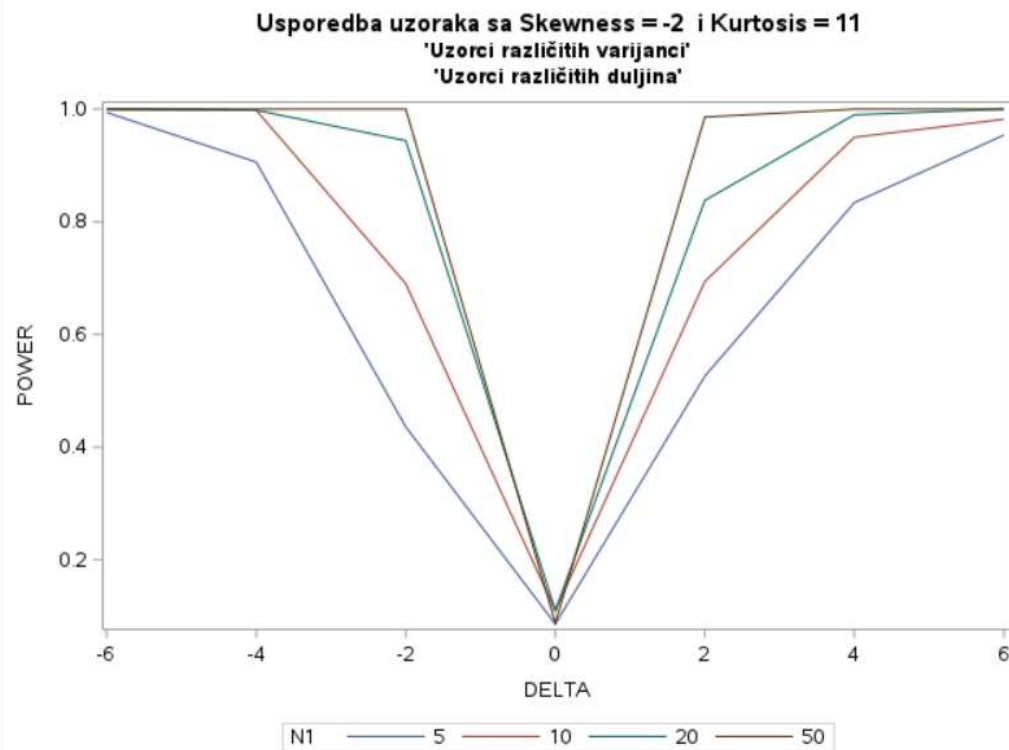
'Uzorci različitih varijanci'

'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = -2 i Kurtosis = 11
'Uzorci različitih varijanci'
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	497	0.994	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	453	0.906	5	15
6	1	-4	499	0.998	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	218	0.436	5	15
10	1	-2	345	0.690	10	30
11	1	-2	472	0.944	20	60
12	1	-2	500	1.000	50	150
13	1	0	43	0.086	5	15
14	1	0	55	0.110	10	30
15	1	0	55	0.110	20	60
16	1	0	44	0.088	50	150
17	1	2	263	0.526	5	15
18	1	2	347	0.694	10	30
19	1	2	419	0.838	20	60
20	1	2	493	0.986	50	150
21	1	4	417	0.834	5	15
22	1	4	475	0.950	10	30
23	1	4	495	0.990	20	60
24	1	4	500	1.000	50	150
25	1	6	477	0.954	5	15
26	1	6	491	0.982	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0

'Uzorci različitih varijanci'

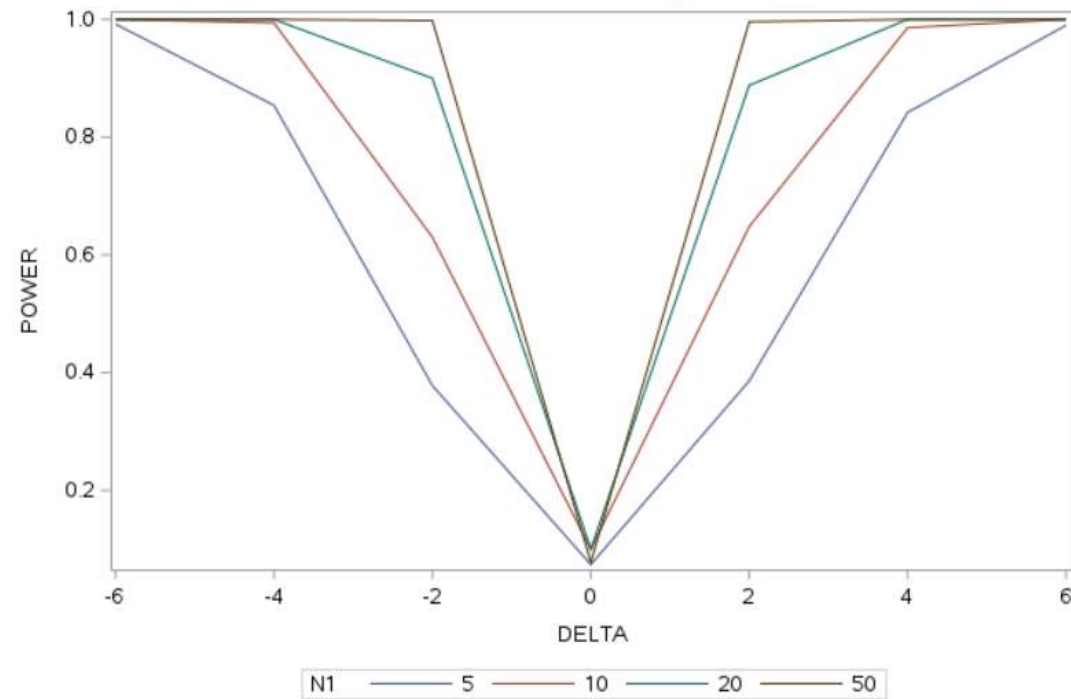
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	496	0.992	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	427	0.854	5	15
6	1	-4	497	0.994	10	30
7	1	-4	500	1.000	20	60
8	1	-4	500	1.000	50	150
9	1	-2	189	0.378	5	15
10	1	-2	315	0.630	10	30
11	1	-2	450	0.900	20	60
12	1	-2	499	0.998	50	150
13	1	0	37	0.074	5	15
14	1	0	50	0.100	10	30
15	1	0	50	0.100	20	60
16	1	0	39	0.078	50	150
17	1	2	193	0.386	5	15
18	1	2	324	0.648	10	30
19	1	2	444	0.888	20	60
20	1	2	498	0.996	50	150
21	1	4	421	0.842	5	15
22	1	4	493	0.986	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	495	0.990	5	15
26	1	6	500	1.000	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0

'Uzorci različitih varijanci'

'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

'Uzorci različitih varijanci'

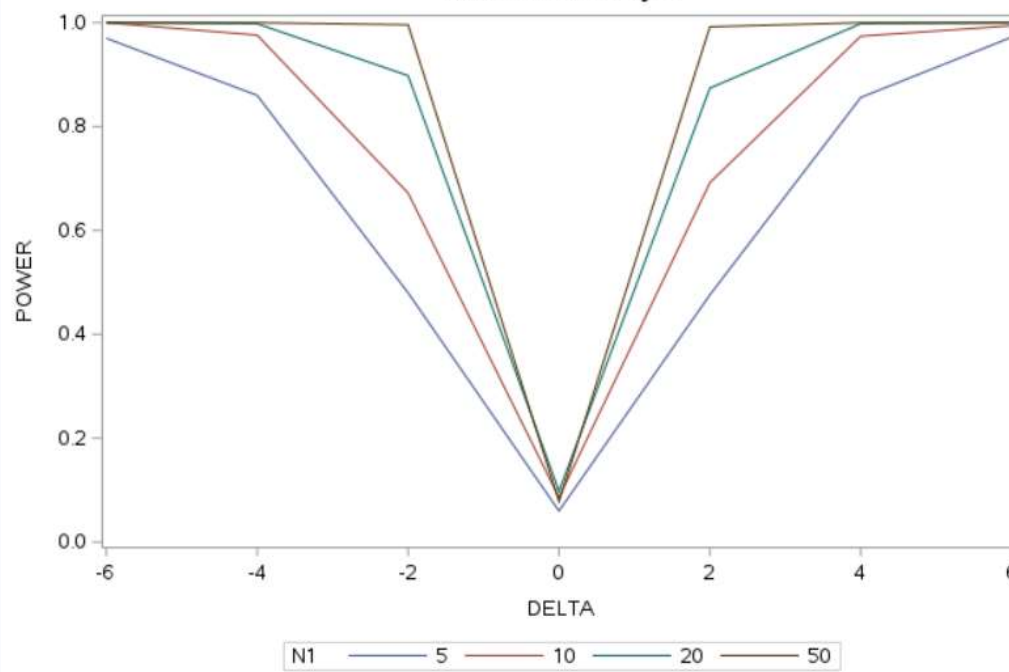
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	485	0.970	5	15
2	1	-6	500	1.000	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	430	0.860	5	15
6	1	-4	488	0.976	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	240	0.480	5	15
10	1	-2	336	0.672	10	30
11	1	-2	449	0.898	20	60
12	1	-2	498	0.996	50	150
13	1	0	30	0.060	5	15
14	1	0	43	0.086	10	30
15	1	0	49	0.098	20	60
16	1	0	39	0.078	50	150
17	1	2	238	0.476	5	15
18	1	2	346	0.692	10	30
19	1	2	437	0.874	20	60
20	1	2	496	0.992	50	150
21	1	4	428	0.856	5	15
22	1	4	487	0.974	10	30
23	1	4	499	0.998	20	60
24	1	4	500	1.000	50	150
25	1	6	486	0.972	5	15
26	1	6	497	0.994	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 6

'Uzorci različitih varijanci'

'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 11

'Uzorci različitih varijanci'

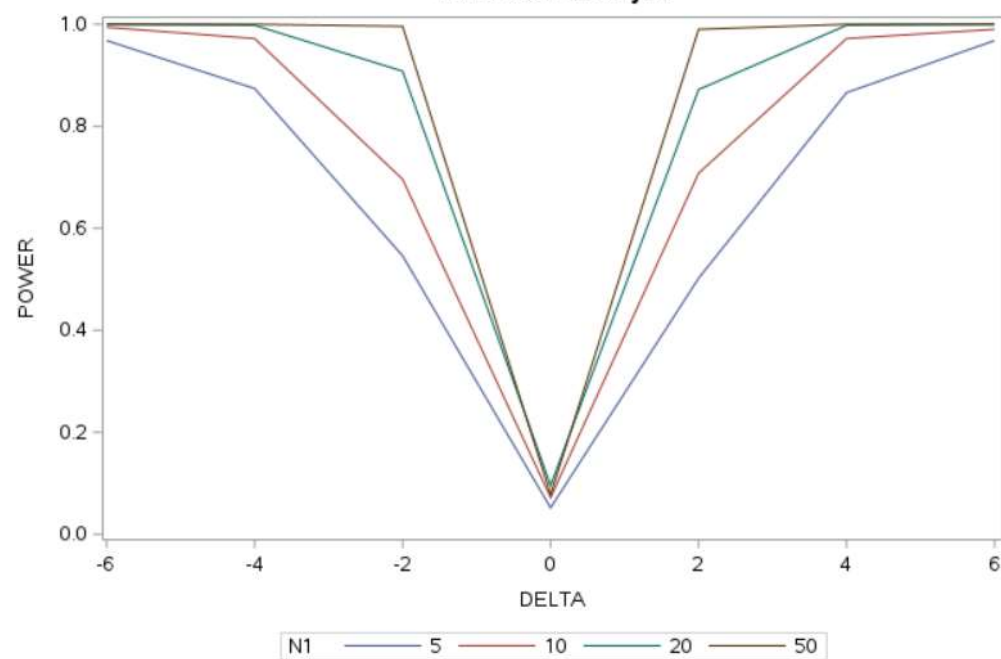
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	484	0.968	5	15
2	1	-6	497	0.994	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	437	0.874	5	15
6	1	-4	486	0.972	10	30
7	1	-4	499	0.998	20	60
8	1	-4	500	1.000	50	150
9	1	-2	273	0.546	5	15
10	1	-2	348	0.696	10	30
11	1	-2	454	0.908	20	60
12	1	-2	498	0.996	50	150
13	1	0	26	0.052	5	15
14	1	0	36	0.072	10	30
15	1	0	48	0.096	20	60
16	1	0	39	0.078	50	150
17	1	2	251	0.502	5	15
18	1	2	354	0.708	10	30
19	1	2	436	0.872	20	60
20	1	2	495	0.990	50	150
21	1	4	433	0.866	5	15
22	1	4	486	0.972	10	30
23	1	4	499	0.998	20	60
24	1	4	500	1.000	50	150
25	1	6	484	0.968	5	15
26	1	6	495	0.990	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = 0 i Kurtosis = 11

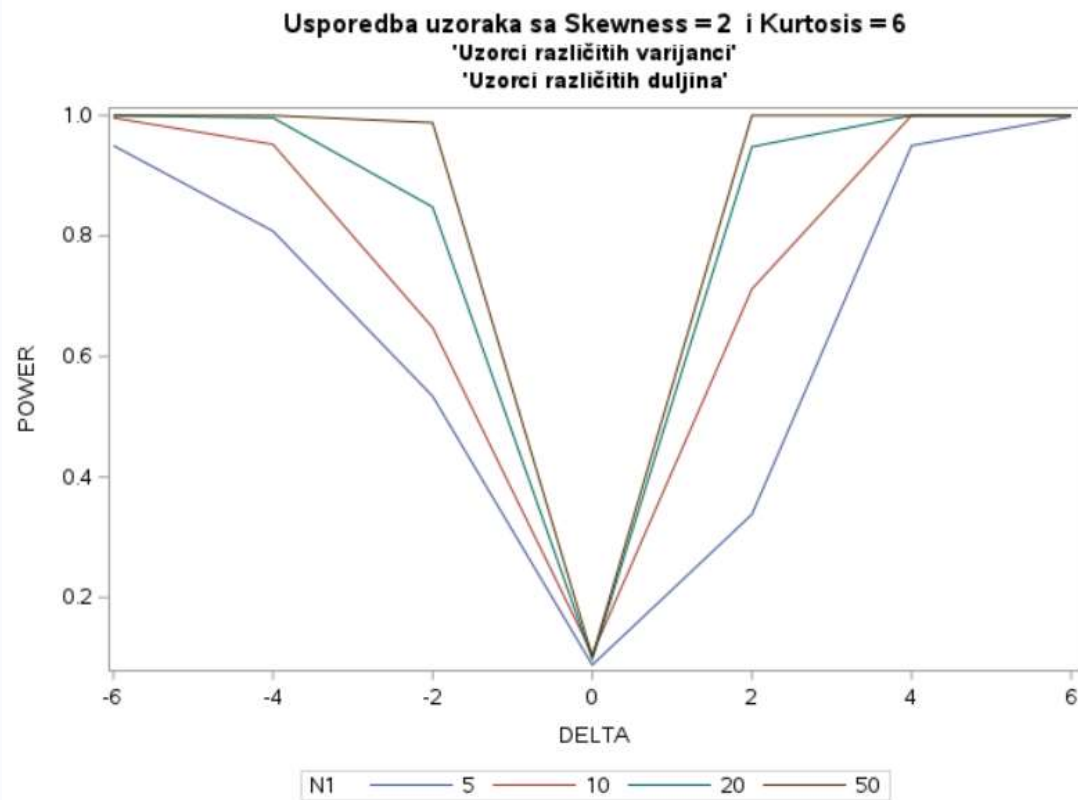
'Uzorci različitih varijanci'

'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 6
 'Uzorci različitih varijanci'
 'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	475	0.950	5	15
2	1	-6	498	0.996	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	404	0.808	5	15
6	1	-4	476	0.952	10	30
7	1	-4	498	0.996	20	60
8	1	-4	500	1.000	50	150
9	1	-2	267	0.534	5	15
10	1	-2	324	0.648	10	30
11	1	-2	424	0.848	20	60
12	1	-2	494	0.988	50	150
13	1	0	44	0.088	5	15
14	1	0	53	0.106	10	30
15	1	0	49	0.098	20	60
16	1	0	51	0.102	50	150
17	1	2	169	0.338	5	15
18	1	2	356	0.712	10	30
19	1	2	474	0.948	20	60
20	1	2	500	1.000	50	150
21	1	4	475	0.950	5	15
22	1	4	500	1.000	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	499	0.998	5	15
26	1	6	500	1.000	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150



Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

'Uzorci različitih varijanci'

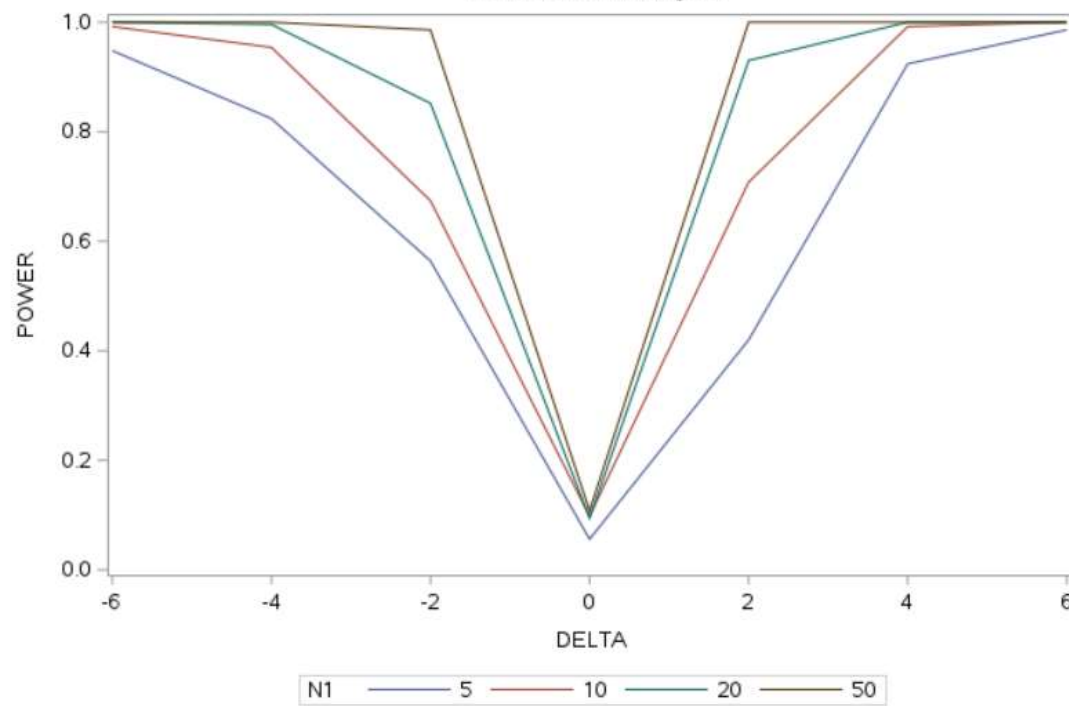
'Uzorci različitih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	-6	474	0.948	5	15
2	1	-6	496	0.992	10	30
3	1	-6	500	1.000	20	60
4	1	-6	500	1.000	50	150
5	1	-4	412	0.824	5	15
6	1	-4	477	0.954	10	30
7	1	-4	498	0.996	20	60
8	1	-4	500	1.000	50	150
9	1	-2	282	0.564	5	15
10	1	-2	337	0.674	10	30
11	1	-2	426	0.852	20	60
12	1	-2	493	0.986	50	150
13	1	0	28	0.056	5	15
14	1	0	49	0.098	10	30
15	1	0	47	0.094	20	60
16	1	0	54	0.108	50	150
17	1	2	210	0.420	5	15
18	1	2	354	0.708	10	30
19	1	2	465	0.930	20	60
20	1	2	500	1.000	50	150
21	1	4	462	0.924	5	15
22	1	4	496	0.992	10	30
23	1	4	500	1.000	20	60
24	1	4	500	1.000	50	150
25	1	6	493	0.986	5	15
26	1	6	500	1.000	10	30
27	1	6	500	1.000	20	60
28	1	6	500	1.000	50	150

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11

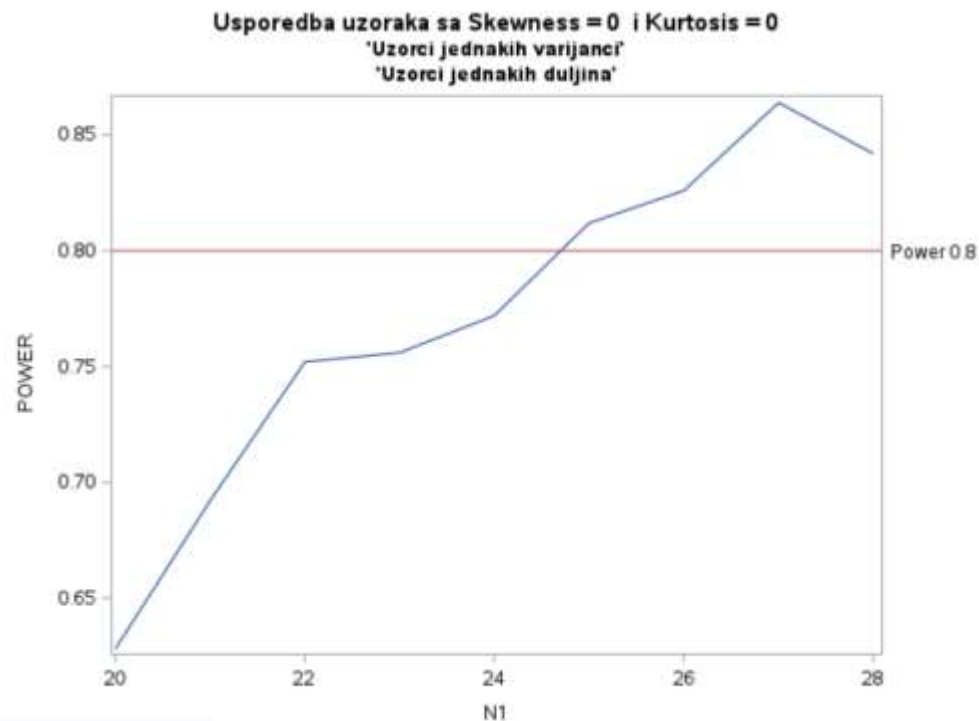
'Uzorci različitih varijanci'

'Uzorci različitih duljina'



Usporedba uzoraka sa Skewness = 0 i Kurtosis = 0 'Uzorci jednakih varijanci' 'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	1	314	0.628	20	20
2	1	1	346	0.692	21	21
3	1	1	376	0.752	22	22
4	1	1	378	0.756	23	23
5	1	1	386	0.772	24	24
6	1	1	406	0.812	25	25
7	1	1	413	0.826	26	26
8	1	1	432	0.864	27	27
9	1	1	421	0.842	28	28



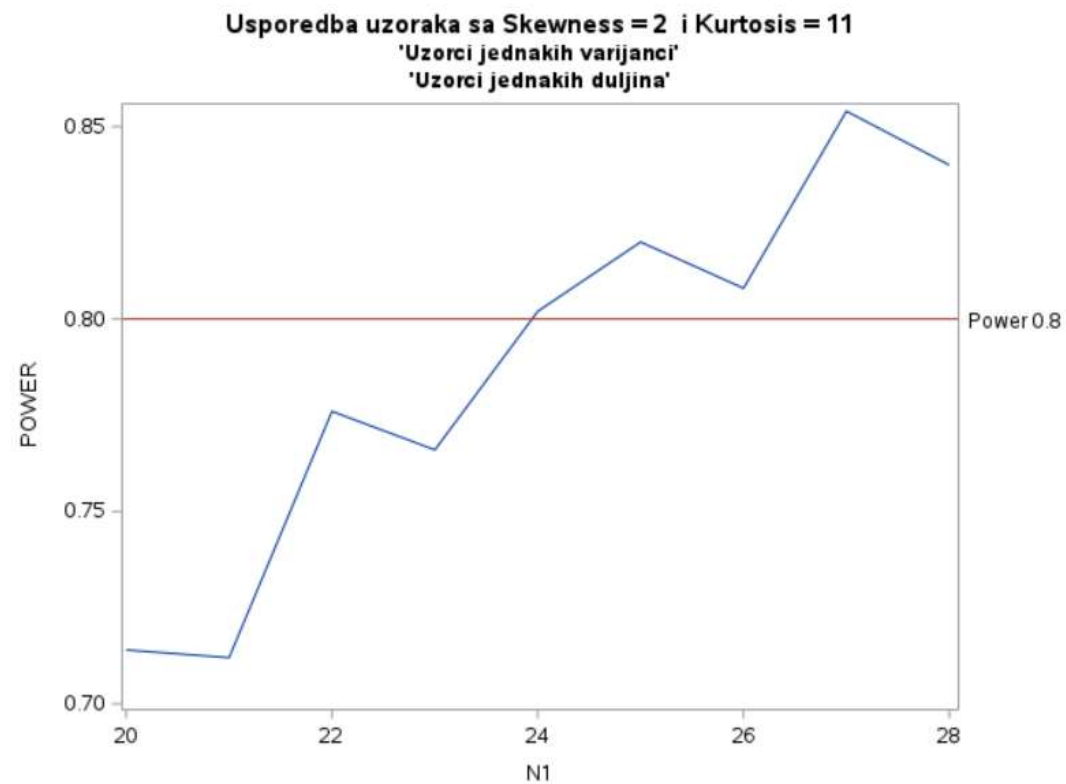
The POWER Procedure Two-Sample t Test for Mean Difference

Fixed Scenario Elements	
Distribution	Normal
Method	Exact
Number of Sides	2
Alpha	0.01
Mean Difference	1
Standard Deviation	1
Nominal Power	0.8
Null Difference	0
Group 1 Weight	1
Group 2 Weight	1

Computed N Total	
Actual Power	N Total
0.818	52

Usporedba uzoraka sa Skewness = 2 i Kurtosis = 11
'Uzorci jednakih varijanci'
'Uzorci jednakih duljina'

Obs	REJECTH0	DELTA	COUNT	P	N1	N2
1	1	1	357	0.714	20	20
2	1	1	356	0.712	21	21
3	1	1	388	0.776	22	22
4	1	1	383	0.766	23	23
5	1	1	401	0.802	24	24
6	1	1	410	0.820	25	25
7	1	1	404	0.808	26	26
8	1	1	427	0.854	27	27
9	1	1	420	0.840	28	28



ZAKLJUČAK

- ▶ Različitost standardnih devijacija ili različita duljina uzorka ne utječu previše pojedinačno na snagu testa
- ▶ Različitost standardnih devijacija i različita duljina uzorka u kombinaciji utječu na snagu testa
- ▶ Skewness i Kurtosis ne utječu previše na snagu testa

HVALA NA PAŽNJI!