Example name Weight loss

Effect size Risk difference Analysis type Subgroups analysis

Synopsis

This analysis includes 21 studies where patients were randomized to receive either a drug or placebo. Outcome was the proportion of patients meeting a criterion for success in losing weight. The effect size was the risk difference, i.e. the difference in success rates between the two groups.

Some studies compared Orlistat vs. placebo while others compared Sibutramine vs. placebo. The primary goal of the meta-analysis was to compare subgroups of studies, i.e. to see if the risk difference is higher (or lower) in studies that used Orlistat as compared with studies that used Sibutramine.

We use this example to show

- How to enter data for a moderator
- How to compare subgroups
- How to choose a method computing T^2 in the presence of subgroups
- How to understand the statistics for a mixed-effect analysis

To open a CMA file > Download and Save file | Start CMA | Open file from within CMA

Download CMA file for computers that use a period to indicate decimals Download CMA file for computers that use a comma to indicate decimals

Download this PDF Download data in Excel Download trial of CMA

Start the program

- Select the option [Start a blank spreadsheet]
- Click [Ok]

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Click Insert > Column for > Study names

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Click Insert > Column for > Effect size data

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The program displays this wizard

Select [Comparison of two groups...]

Select [Show all 100 formats] Click [Next]



Drill down to

Click [Next]

Dichotomous (number of events) Unmatched groups, prospective ... Events and sample size in each group



The program displays this wizard

Enter the following labels into the wizard

- First group > Drug
- Second group > Control
- Name for events > Success
- Name for non-events > Failure

Click [Ok] and the program will copy the names into the grid

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We also need to add a column for the moderator, Drug

Click Insert > Column for > Moderator variable

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- Name the moderator > Drug
- Set the data type to Categorical
- Click Ok

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Rather than enter the data directly into CMA we will copy the data from Excel

- Switch to Excel and open the file "Weight loss"
- Highlight the rows and columns as shown (Columns A to E only), and press CTRL-C to copy to clipboard

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4	XENDOS	866	1640	611	1637 Orlistat						
5	Rossner, 2000	155	242	107	237 Orlistat						
6	Kelley, 2002	87	266	35	269 Orlistat						
7	Hauptman, 2000	106	210	65	212 Orlistat						
8	Sjostrom, 1998	237	343	167	340 Orlistat						
9	Krempf, 2003	130	223	74	196 Orlistat						
10	Davidson, 1999	434	657	98	223 Orlistat						
1	1 Miles, 2002	98	250	41	254 Orlistat						
1	2 Bakris, 2002	122	267	58	265 Orlistat						
1	B Hollander, 1998	80	163	37	159 Orlistat						
14	4 Broom, 2002	144	259	64	263 Orlistat						
1	5 Berne, 2004	51	. 111	12	109 Orlistat						
1	5 Hauner, 2004	109	174	72	174 Sibutramine	2					
1	7 McMahon, 2000	57	142	6	69 Sibutramine	2					
1	Apfelbaum, 1999	71	. 82	43	78 Sibutramine	2					
1	McNulty, 2003	31	. 68	8	64 Sibutramine	2					
20	McMahon, 2002	62	145	6	72 Sibutramine	2					
2	1 Smith, 2001	87	153	32	157 Sibutramine	2					
2	2 Sanches-Reyes, 2004	26	44	7	42 Sibutramine	2					
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- Switch to CMA
- Click in cell Study-name 1
- Press [CTRL-V] to paste the data
- The screen should look like this

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2	Lindgarde, 2000	103	190	76	186	1.714	0.539	0.208	0.043						
3	Finer, 2000	39	110	23	108	2.030	0.708	0.308	0.095						
4	XENDOS	866	1640	611	1637	1.879	0.631	0.071	0.005						
5	Rossner, 2000	155	242	107	237	2.165	0.772	0.187	0.035						
6	Kelley, 2002	87	266	35	269	3.249	1.178	0.223	0.050						
7	Hauptman, 2000	106	210	65	212	2.305	0.835	0.203	0.041						
8	Sjostrom, 1998	237	343	167	340	2.316	0.840	0.159	0.025						
9	Krempf, 2003	130	223	74	196	2.305	0.835	0.200	0.040						
10	Davidson, 1999	434	657	98	223	2.482	0.909	0.158	0.025						
11	Miles, 2002	98	250	41	254	3.349	1.209	0.214	0.046						
12	Bakris, 2002	122	267	58	265	3.003	1.100	0.193	0.037						
13	Hollander, 1998	80	163	37	159	3.178	1.156	0.244	0.060						
14	Broom, 2002	144	259	64	263	3.893	1.359	0.190	0.036						
15	Berne, 2004	51	111	12	109	6.871	1.927	0.360	0.130						
16	Hauner, 2004	109	174	72	174	2.376	0.865	0.220	0.048						
17	McMahon, 2000	57	142	6	69	7.041	1.952	0.460	0.212						
18	Apfelbaum, 1999	71	82	43	78	5.254	1.659	0.396	0.157						
19	McNulty, 2003	31	68	8	64	5.865	1.769	0.450	0.202						
20	McMahon, 2002	62	145	6	72	8.217	2.106	0.458	0.210						
21	Smith, 2001	87	153	32	157	5.149	1.639	0.257	0.066						
22	Sanches-Reyes,	26	44	7	42	7.222	1.977	0.515	0.265						
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Click here

- Switch to Excel
- Highlight the Dose column as shown and click [CTRL-C]

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2	Lindgarde, 2000	103	190	76	186	Orlistat								
3	Finer, 2000	39	110	23	108	Orlistat								
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21	Smith, 2001	87	153	32	157	Sibutramine								
22	Sanches-Reyes, 2004	26	44	7	42	Sibutramine								
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- Switch to CMA
- Click the cell Dose 1
- Press CTRL-V to paste the data

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	1 Study	Tx Success	Tx N	Ctrl	Ctrl N					V					
	2 Lindgarde, 2000	103	190	76	186	1.714	0.539	0.208	0.043						
	3 Finer, 2000	39	110	23	108	2.030	0.708	0.308	0.095						
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At this point we should check that the data has been copied correctly

The column that had been called "Tx infection" is now "Drug infection". Similarly, all columns have the intended labels

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3	Finer, 2000	39	110	23	108	2.030	0.708	0.308	0.095	Orlistat					
4	XENDOS	866	1640	611	1637	1.879	0.631	0.071	0.005	Orlistat					
5	Rossner, 2000	155	242	107	237	2.165	0.772	0.187	0.035	Orlistat					
6	Kelley, 2002	87	266	35	269	3.249	1.178	0.223	0.050	Orlistat					
7	Hauptman, 2000	106	210	65	212	2.305	0.835	0.203	0.041	Orlistat					
8	Sjostrom, 1998	237	343	167	340	2.316	0.840	0.159	0.025	Orlistat					
9	Krempf, 2003	130	223	74	196	2.305	0.835	0.200	0.040	Orlistat					
10	Davidson, 1999	434	657	98	223	2.482	0.909	0.158	0.025	Orlistat					
11	Miles, 2002	98	250	41	254	3.349	1.209	0.214	0.046	Orlistat					
12	Bakris, 2002	122	267	58	265	3.003	1.100	0.193	0.037	Orlistat					
13	Hollander, 1998	80	163	37	159	3.178	1.156	0.244	0.060	Orlistat					
14	Broom, 2002	144	259	64	263	3.893	1.359	0.190	0.036	Orlistat					
15	Berne, 2004	51	111	12	109	6.871	1.927	0.360	0.130	Orlistat					
16	Hauner, 2004	109	174	72	174	2.376	0.865	0.220	0.048	Sibutramine					
17	McMahon, 2000	57	142	6	69	7.041	1.952	0.460	0.212	Sibutramine					
18	Apfelbaum, 1999	71	82	43	78	5.254	1.659	0.396	0.157	Sibutramine					
19	McNulty, 2003	31	68	8	64	5.865	1.769	0.450	0.202	Sibutramine					
20	McMahon, 2002	62	145	6	72	8.217	2.106	0.458	0.210	Sibutramine					
21	Smith, 2001	87	153	32	157	5.149	1.639	0.257	0.066	Sibutramine					
22	Sanches-Reyes,	26	44	7	42	7.222	1.977	0.515	0.265	Sibutramine					
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	Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	Std Err	Variance	Drug	к	L	м	N	
1	Study	Tx Success	Tx N	Ctrl	Ctrl N					Drug					
2	Lindgarde, 2000	103	190	76	186	1.714	0.539	0.208	0.043	Orlistat					
3	Finer, 2000	39	110	23	108	2.030	0.708	0.308	0.095	Orlistat					
4	XENDOS	866	1640	611	1637	1.879	0.631	0.071	0.005	Orlistat					
5	Rossner, 2000	155	242	107	237	2.165	0.772	0.187	0.035	Orlistat					
6	Kelley, 2002	87	266	35	269	3.249	1.178	0.223	0.050	Orlistat					
7	Hauptman, 2000	106	210	65	212	2.305	0.835	0.203	0.041	Orlistat					
8	Sjostrom, 1998	237	343	167	340	2.316	0.840	0.159	0.025	Orlistat					
9	Krempf, 2003	130	223	74	196	2.305	0.835	0.200	0.040	Orlistat					
10	Davidson, 1999	434	657	98	223	2.482	0.909	0.158	0.025	Orlistat					
11	Miles, 2002	98	250	41	254	3.349	1.209	0.214	0.046	Orlistat					
12	Bakris, 2002	122	267	58	265	3.003	1.100	0.193	0.037	Orlistat					
13	Hollander, 1998	80	163	37	159	3.178	1.156	0.244	0.060	Orlistat					
14	Broom, 2002	144	259	64	263	3.893	1.359	0.190	0.036	Orlistat					
15	Berne, 2004	51	111	12	109	6.871	1.927	0.360	0.130	Orlistat					
16	Hauner, 2004	109	174	72	174	2.376	0.865	0.220	0.048	Sibutramine					
17	McMahon, 2000	57	142	6	69	7.041	1.952	0.460	0.212	Sibutramine					
18	Apfelbaum, 1999	71	82	43	78	5.254	1.659	0.396	0.157	Sibutramine					
19	McNulty, 2003	31	68	8	64	5.865	1.769	0.450	0.202	Sibutramine					
20	McMahon, 2002	62	145	6	72	8.217	2.106	0.458	0.210	Sibutramine					
21	Smith, 2001	87	153	32	157	5.149	1.639	0.257	0.066	Sibutramine					
22	Sanches-Reyes,	26	44	7	42	7.222	1.977	0.515	0.265	Sibutramine					
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4		Copy entire grid		1640	107	1637	1.873	0.531	0.071	0.005	Orlistat				
- C	CL.	Paste	Ctrl+V	242	107	237	2.160	0.772	0.187	0.030	Orlistat				
		-		200	30	203	3.243	0.025	0.223	0.000	Orlistat				
	ጭ	C <u>u</u> t	Ctrl+X	210	107	212	2.300	0.030	0.203	0.041	Orlistat				
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10		Delete row	N	223	74	130	2.300	0.000	0.200	0.040	Orlistat				
11		Delete study	12	250	30	223	2.402	1 200	0.100	0.020	Orlistat				
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12		Delete column		162	27	159	2 1 7 0	1.100	0.133	0.037	Orlistat				
14		Edit group names	5	259	57	263	2.002	1.150	0.244	300.0	Orlistat				
15	Born	a 2004	51	111	12	109	6.971	1.000	0.150	0.000	Orlistat				
16	Haur	e, 2004	109	174	72	174	2.376	0.865	0.000	0.130	Sibutramine				
17	McM	lahon 2000	57	142	6	69	7 041	1 952	0.460	0.040	Sibutramine				
18	Anfe	Ibaum 1999	71	82	43	78	5 254	1.659	0.396	0.157	Sibutramine				
19	McN	ulty 2003	31	68	8	64	5.865	1.000	0.000	0.202	Sibutramine				
20	McM	ahon. 2002	62	145	6	72	8,217	2,106	0.458	0.210	Sibutramine				
21	Smith	n. 2001	87	153	32	157	5.149	1.639	0.257	0.066	Sibutramine				
22	Sand	ches-Reves,	26	44	7	42	7.222	1.977	0.515	0.265	Sibutramine				
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	Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	Std Err	Variance	Drug	к	L	м	N	
	1 Lindgarde, 2000	103	190	76	186	1.714	0.539	0.208	0.043	Orlistat					
	2 Finer, 2000	39	110	23	108	2.030	0.708	0.308	0.095	Orlistat					
	3 XENDOS	866	1640	611	1637	1.879	0.631	0.071	0.005	Orlistat					
	4 Rossner, 2000	155	242	107	237	2.165	0.772	0.187	0.035	Orlistat					
	5 Kelley, 2002	87	266	35	269	3.249	1.178	0.223	0.050	Orlistat					
	6 Hauptman, 2000	106	210	65	212	2.305	0.835	0.203	0.041	Orlistat					
	7 Sjostrom, 1998	237	343	167	340	2.316	0.840	0.159	0.025	Orlistat					
	8 Krempf, 2003	130	223	74	196	2.305	0.835	0.200	0.040	Orlistat					
	9 Davidson, 1999	434	657	98	223	2.482	0.909	0.158	0.025	Orlistat					
1	0 Miles, 2002	98	250	41	254	3.349	1.209	0.214	0.046	Orlistat					
1	1 Bakris, 2002	122	267	58	265	3.003	1.100	0.193	0.037	Orlistat					
1	2 Hollander, 1998	80	163	37	159	3.178	1.156	0.244	0.060	Orlistat					
1	3 Broom, 2002	144	259	64	263	3.893	1.359	0.190	0.036	Orlistat					
1	4 Berne, 2004	51	111	12	109	6.871	1.927	0.360	0.130	Orlistat					
1	5 Hauner, 2004	109	174	72	174	2.376	0.865	0.220	0.048	Sibutramine					
1	6 McMahon, 2000	57	142	6	69	7.041	1.952	0.460	0.212	Sibutramine					
1	7 Apfelbaum, 1999	71	82	43	78	5.254	1.659	0.396	0.157	Sibutramine					
1	8 McNulty, 2003	31	68	8	64	5.865	1.769	0.450	0.202	Sibutramine					
1	9 McMahon, 2002	62	145	6	72	8.217	2.106	0.458	0.210	Sibutramine					
2	0 Smith, 2001	87	153	32	157	5.149	1.639	0.257	0.066	Sibutramine					
2	1 Sanches-Reyes,	26	44	7	42	7.222	1.977	0.515	0.265	Sibutramine					
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6	Print	Ctrl+P	16	210	65	212	2.305	0.835	0.203	0.041	Orlistat				
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11	Bakris, 2002	1	22	267	58	265	3.003	1.100	0.193	0.037	Orlistat				
12	Hollander, 1998		80	163	37	159	3.178	1.156	0.244	0.060	Orlistat				
13	8 Broom, 2002	1	44	259	64	263	3.893	1.359	0.190	0.036	Orlistat				
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15	i Hauner, 2004	1	09	174	72	174	2.376	0.865	0.220	0.048	Sibutramine				
16	McMahon, 2000		57	142	6	69	7.041	1.952	0.460	0.212	Sibutramine				
17	Apfelbaum, 1999	1	71	82	43	78	5.254	1.659	0.396	0.157	Sibutramine				
18	8 McNulty, 2003		31	68	8	64	5.865	1.769	0.450	0.202	Sibutramine				
19	McMahon, 2002		62	145	6	72	8.217	2.106	0.458	0.210	Sibutramine				
20) Smith, 2001		87	153	32	157	5.149	1.639	0.257	0.066	Sibutramine				
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Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	Std Err	Variance	Drug	к	L	м	N												
1 Lindgarde, 2000	103	190	76	186	1.714	0.539	0.208	0.043	Orlistat																
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18 McNulty, 2003	31	68	8	64	5.865	1.769	0.450	0.202	Sibutramine																
19 McMahon, 2002	62	145	6	72	8.217	2.106	0.458	0.210	Sibutramine																
20 Smith, 2001	87	153	32	157	5.149	1.639	0.257	0.066	Sibutramine																
21 Sanches-Reyes,	26	44	7	42	7.222	1.977	0.515	0.265	Sibutramine																
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Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	Std Err	Variance	Drug	к	L	м	N	C
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2 Finer, 2000	39	110	23	108	2.030	0.708	0.308	0.095	orlistat					
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5 Kelley, 2002	87	266	35	269	3.249	1.178	0.223	0.050) Orlistat					
6 Hauptman, 2000	106	210	65	212	2.305	0.835	0.203	0.041	Orlistat					
7 Sjostrom, 1998	237	343	167	340	2.316	0.840	0.159	0.025	5 Orlistat					
8 Krempf, 2003	130	223	74	196	2.305	0.835	0.200	0.040) Orlistat					
9 Davidson, 1999	434	657	98	223	2.482	0.909	0.158	0.025	5 Orlistat					
10 Miles, 2002	98	250	41	254	3.349	1.209	0.214	0.046	Orlistat					
11 Bakris, 2002	122	267	58	265	3.003	1.100	0.193	A Sort A	-Z					
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13 Broom, 2002	144	259	64	263	3.893	1.359	0.190	At						
14 Berne, 2004	51	111	12	109	6.871	1.927	0.360	Colur	nn propertie	25				
15 Hauner, 2004	109	174	72	174	2.376	0.865	0.220	Data	nto accista					
16 McMahon, 2000	57	142	6	69	7.041	1.952	0.460		intry assista	nı				
17 Apfelbaum, 1999	71	82	43	78	5.254	1.659	0.396	E Form	ulas					
18 McNulty, 2003	31	68	8	64	5,865	1.769	0.450	Show	all selected	indices				
19 McMahon, 2002	62	145	6	72	8.217	2.106	0.458		anh tha nri	in any index				
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1 Lindgarde. 2000 103 190 76 166 1714 0.539 2 Finer, 2000 39 110 23 168 2.030 0.539 3 KENDOS 666 1640 611 1637 1673 0.631 4 Rosener, 2000 155 242 107 237 2165 0.772 6 Hauptman, 2000 106 210 65 212 2.305 0.835 7 Section, 1398 237 343 167 340 2.316 0.840 8 Kenerg, 2003 130 223 74 136 2.035 0.835 9 Davidson, 1939 434 657 38 2.23 2.482 0.039 11 Bakin, 2002 122 267 58 2.65 3.003 1.106 11 Bakin, 2002 122 267 58 2.65 3.003 1.156 13 Broom, 2000 57 142 6 57 7.657 1.151 14 Br		Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	▶ Effect size indices
2 Firer, 2000 39 110 2.3 106 2.030 0.706 3 XENDOS 666 1640 611 1637 1.879 0.631 4 Rossner, 2000 155 2.42 1107 2.37 2.1165 0.723 5 Kelay, 2002 87 2.266 3.52 2.93 0.835 7 Spectrom, 1989 2.37 3.43 167 3.40 2.316 0.835 8 Kempf, 2003 130 2.23 7.4 198 2.035 0.835 9 Davidson, 1993 4.34 657 9.82 2.442 0.906 10 Mes, 2002 9.8 2.50 4.11 2.56 3.033 1.106 11 Balance, 2004 153 3.7 159 3.178 1.156 12 Holander, 1998 80 163 3.7 159 3.178 1.156 14 Berne, 2004 151 112 2.056 3.003 1.106 1.167 1.952 16 Haure, 2004 </td <td>1</td> <td>Lindgarde, 2000</td> <td>103</td> <td>190</td> <td>76</td> <td>186</td> <td>1.714</td> <td>0.539</td> <td></td>	1	Lindgarde, 2000	103	190	76	186	1.714	0.539	
3 ×ENDOS 866 1640 611 1673 1.673 0.631 4 Rosener, 2000 155 242 107 237 2165 0.772 6 Hauptman, 2000 106 210 655 212 2.305 0.835 7 Spotton, 1993 237 340 167 300 2.305 0.835 9 Davidson, 1999 434 657 98 2.2305 0.835 9 Davidson, 1999 434 657 98 2.2305 0.835 9 Davidson, 1999 434 657 98 2.2305 0.835 11 Bakins, 2002 132 256 3.003 1.100 12 Hollander, 1989 80 163 37 159 3.178 1.156 13 Broom, 2002 144 259 64 2.53 3.893 1.991 14 Brene, 2004 159 111 12 109 6.871 1.927 15 Haure, 2004 109 174 72 174 2.665 1.763 19 McMahon, 2002 62 145 6 72	2	Finer, 2000	39	110	23	108	2.030	0.708	Use the following as the primary index
4 Rosener, 2000 155 242 107 227 2165 0.772 5 Kelley, 2002 67 266 35 269 3.249 1.178 6 Hauptman, 2000 106 210 65 212 2305 0.835 7 Spektron, 1998 237 343 167 340 2.316 0.840 8 Krenpf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 667 98 223 2.462 0.909 10 Miles, 2002 182 257 58 223 2.462 0.909 12 Hollander, 1998 80 163 37 159 3.178 1.156 18 Broom, 2002 144 259 64 2.376 0.965 111 12 198 Nik difference 100 111 12 113 113 12 1143	3	XENDOS	866	1640	611	1637	1.879	0.631	
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6 H Aughran 2000 106 210 65 212 2305 0.835 7 Sjostrom, 1939 237 343 167 340 2.316 0.840 9 Davidson, 1939 434 657 98 223 2.482 0.903 10 Miles, 2002 98 250 411 254 3.349 1.061 11 Bakris, 2002 122 267 559 265 3.003 1.106 12 Hollander, 1939 80 163 3.77 159 3.178 1.156 13 Brom, 2002 144 259 64 263 3.893 1.957 15 Hauner, 2004 151 111 12 108 6.667 1.927 15 Hauner, 2004 109 174 7.72 174 2.376 0.865 16 McMahon, 2002 157 14.2 6.66 7.041 1.952 16 McMahon, 2002 161 6.7 7.8217 2.166 1.672 9.217 2.166 20 Smih, 2001 87 15.3 3.2 157 5.149 1.639 1.674	5	Kelley, 2002	87	266	35	269	3.249	1.178	
7 Stortom, 1938 237 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1939 434 657 98 223 2.482 0.939 10 Miles, 2002 98 250 41 2.54 3.349 1.209 11 Bakris, 2002 122 267 58 2.65 3.003 1.100 12 Hollander, 1939 80 153 37 1.156 Bisk ratio □	6	Hauptman, 2000	106	210	65	212	2.305	0.835	Display columns for these indices
8 Kernpf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 38 250 41 254 3.349 1.209 11 Bakis, 2002 122 267 58 265 3.003 1.109 12 Hollander, 1998 80 163 37 159 3.178 1.156 13 Broom, 2002 144 259 64 263 3833 1.399 14 Berne, 2004 51 111 12 109 6.871 1.927 15 Hauner, 2004 109 174 72 174 2.376 0.865 1.789 16 McMulty, 2003 31 68 64 5.524 1.559 Std dfi means Hedges's g 17 Aplebaum, 1999 71 82 43 76 5.149 1.539 20 Smith, 201 87 153 3.22 157 5.149 1.53	- 7	Sjostrom, 1998	237	343	167	340	2.316	0.840	
9 Davidson, 1999 434 667 98 223 2.482 0.909 10 Miles, 2002 98 250 41 254 3.349 1.209 11 Bakis, 2002 112 2267 58 265 3.003 1.100 Disk difference Log odds ratio 12 Hollander, 1998 80 163 37 159 3.170 1.156 18 Boron, 2002 144 259 64 253 3.893 1.599 15 Hauner, 2004 109 174 72 174 2.376 0.865 16 McMahon, 2000 57 142 6 659 7.041 1.952 17 Apfebaum, 1999 71 82 43 78 5.254 1.659 18 McNuty, 2003 31 68 8 6.45 5.065 1.769 19 McMahon, 2002 62 145 6 72 8.217 2.106 21 Sanches-Reyes, 26 144 7 42 7.222 1.977 22 23 24 24 24 24 24 <t< td=""><td>8</td><td>Krempf, 2003</td><td>130</td><td>223</td><td>74</td><td>196</td><td>2.305</td><td>0.835</td><td>✓ Odds ratio</td></t<>	8	Krempf, 2003	130	223	74	196	2.305	0.835	✓ Odds ratio
10 Miles, 2002 98 250 41 254 3.349 1.209 11 Bakris, 2002 122 267 58 265 3.003 1.106 12 Hollander, 1998 80 153 37 159 3.178 1.156 13 Broom, 2002 144 259 64 263 3.893 1.359 14 Berne, 2004 51 111 12 109 6.871 1.927 15 Hauner, 2004 109 174 72 174 2.376 0.856 1.689 16 McMahon, 2000 57 142 6 69 7.041 1952 17 Apfebaum, 1999 71 82 43 78 5.254 1.659 18 McNutly, 2003 31 68 8 64 5.865 1.768 19 McMahon, 2002 62 145 6 72 2.105 Fisher's Z Rate difference 20 Smith, 2001 87 153 32 157 5.149 1.639	9	Davidson, 1999	434	657	98	223	2.482	0.909	✓ Log odds ratio
11 Backris, 2002 122 267 58 265 3.003 1.100 12 Hollander, 1998 80 163 37 159 3.178 1.156 18 Bronz, 2002 144 229 6.64 263 3.893 1.359 14 Berne, 2004 51 111 12 109 6.871 1.927 15 Hauner, 2004 109 174 72 174 2.376 0.857 1.927 16 McMahon, 2000 57 142 6 69 7.041 1.952 17 Aprelbaum, 1939 71 82 43 78 5.254 1.659 19 McMahon, 2002 62 145 6 72 8.217 2.163 20 Smith, 201 87 153 32 157 5.149 1.639 21 Sanches-Reyes, 26 44 7 42 7.222 1.977 23 3 4 4 4 4 4 4 4 4 4	10	Miles, 2002	98	250	41	254	3.349	1.209	Peto odds ratio
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18 McNulty, 2003 31 68 8 64 5.865 1.769 19 McMahon, 2002 62 145 6 72 8.217 2.106 20 Smith, 2001 87 153 32 157 5.149 1.639 21 Sanches-Reyes, 26 44 7 42 7.222 1.977 22	17	Apfelbaum, 1999	71	82	43	78	5.254	1.659	Std Paired Difference
19 McMahon, 2002 62 145 6 72 8.217 2.106 20 Smith, 2001 87 153 32 157 5.143 1.639 21 Sanches-Reyes, 26 44 7 42 7.222 1.977 22 23	18	McNulty, 2003	31	68	8	64	5.865	1.769	
20 Smith. 2001 87 153 32 157 5.149 1.639 21 Sanches-Reyes, 26 44 7 42 7.222 1.977 22 23 24 24 24 24 24 24 24 24 24 24 24 24 24 26 24 26 24 26 26 27 26 26 26 27 26 26 27 27 28 26 26 26 26 26 26 26 27 28 26 26 26 26 26 26 26 26 26 27 28 26 26 26 26 27 28 27 28 26 <td< td=""><td>19</td><td>McMahon, 2002</td><td>62</td><td>145</td><td>6</td><td>72</td><td>8.217</td><td>2.106</td><td>🔲 🗆 Fisher's Z</td></td<>	19	McMahon, 2002	62	145	6	72	8.217	2.106	🔲 🗆 Fisher's Z
21 Sanches-Reyes. 26 44 7 42 7.222 1.977 22	20	Smith, 2001	87	153	32	157	5.149	1.639	Rate ratio
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Study name Drug Success Drug Total N Control Success Odds ratio Total N Odds ratio ratio Cast of ratio Control Total N Odds ratio Cast of ratio N O 1 Lindgarde, 2000 103 190 76 186 1.774 0.631 0 Effect size indices N O 2 Finer, 2000 39 110 23 108 2.030 0.708 Use the following as the primary index N O 3 XENDDS 866 1640 611 1637 1.879 0.631 Use the following as the primary index N O 4 Rossner, 2000 155 242 107 237 2.165 0.772 Ibit difference Ibit dibit difference Ibit dibit difference								.0 .00		
1 Lindgarde, 2000 103 190 76 186 1.714 0.533 2 Finer, 2000 39 110 23 108 2.030 0.708 3 XENDOS 866 1640 611 1637 1.879 0.631 4 Rossner, 2000 155 242 107 237 2.165 0.772 5 Kelley, 2002 87 266 35 269 3.249 1.178 6 Hauptman, 2000 106 210 65 212 2.305 0.835 7 Sjostrom, 1998 237 343 167 340 2.316 0.840 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 192 267 58 265 3.003 1.100 11 Bakris, 2002 122 267 58 265 3.003 1.100 12 Hollender, 1938 80 163 37 159 3.178 1.156 13		Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	N Effect size indices	0
2 Finer, 2000 39 110 23 108 2.030 0.708 3 XENDOS 866 1640 611 1637 1.879 0.631 4 Rossner, 2000 155 2.42 107 237 2.165 0.772 5 Kelley, 2002 87 266 35 269 3.249 1.178 6 Hauptman, 2000 106 210 65 212 2.305 0.835 7 Sjostrom, 1998 2.37 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 136 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 132 267 58 265 3.003 1.100 12 Hollander, 1998 80 163 37 159 3.178 1.156 13 Broon, 2002 144 259 64 263 3.893 1.359 14 <	1	Lindgarde, 2000	103	190	76	186	1.714	0.539		
3 XENDOS 866 1640 611 1637 1.879 0.631 4 Rossner, 2000 155 242 107 237 2.165 0.772 5 Kelley, 2002 87 266 35 269 3.249 1.178 6 Haupman, 2000 106 210 65 212 2.305 0.835 7 Sjostrom, 1998 237 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 182 267 58 265 3.003 1.100 12 Hollander, 1988 80 163 37 159 3.178 1.156 14 Brew 2004 51 111 12 199 688, 11 1.897 14 Brew 2004 51 111 12 198 687 1.897 14 Brew	2	Finer, 2000	39	110	23	108	2.030	0.708	Use the following as the primary index	
4 Rossner, 2000 155 242 107 237 2.165 0.772 5 Kelley, 2002 87 266 35 269 3.249 1.178 6 Hauptman, 2000 106 210 65 212 2.305 0.835 7 Sjostrom, 1998 2.37 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 98 250 41 254 3.349 1.209 11 Bakris, 2002 122 267 58 265 3.003 1.100 12 Hollander, 1998 80 163 37 159 3.178 1.156 13 Broom, 2002 144 259 64 263 3.883 1.389 14 Berne 2004 51 111 12 198 6871 1.997	3	XENDOS	866	1640	611	1637	1.879	0.631		
5 Kelley, 2002 87 266 35 269 3.249 1.178 6 Hauptman, 2000 106 210 65 212 2.305 0.835 7 Sjostrom, 1998 237 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 38 250 41 254 3.349 1.209 11 Bakris, 2002 122 267 58 265 3.003 1.100 12 Hollander, 1938 80 163 37 159 3.178 1.156 13 Broom, 2002 144 259 64 263 3.893 1.359 14 Berne 2004 51 111 12 198 6821 1.997	4	Rossner, 2000	155	242	107	237	2.165	0.772	Risk difference	
6 Hauptman, 2000 106 210 65 212 2.305 0.835 7 Sjöstrom, 1998 237 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 38 250 41 254 3.349 1.209 11 Bakris, 2002 122 267 58 265 3.003 1.100 12 Hollander, 1938 80 163 37 159 3.178 1.156 13 Broom, 2002 144 259 64 263 3.893 1.359 14 Broom 2004 51 111 12 198 68.871 1.997 14 Broom 2004 51 111 12 199 68.871 1.997	5	Kelley, 2002	87	266	35	269	3.249	1.178		
7 Sjostrom, 1998 237 343 167 340 2.316 0.840 8 Krempf, 2003 130 223 74 196 2.305 0.835 9 Davidson, 1999 434 657 98 223 2.482 0.909 10 Miles, 2002 98 250 41 254 3.349 1.209 11 Bakris, 2002 122 267 58 265 3.003 1.100 12 Hollander, 1998 80 163 37 159 3.178 1.156 13 Broom, 2002 144 259 64 263 3.893 1.359 14 Berne 2004 51 111 12 198 68,871 1.997 14 Berne 2004 51 111 12 1987 Risk difference	6	Hauptman, 2000	106	210	65	212	2.305	0.835	Display columns for these indices	
8 Krempf, 2003 130 223 74 196 2.305 0.835 ✓ 0 dds ratio ▲ 9 Davidson, 1999 434 657 98 223 2.482 0.909 ✓ Log odds ratio ▲ 10 Miles, 2002 98 250 41 254 3.349 1.209 Peto odds ratio ■ 11 Bakris, 2002 122 267 58 265 3.003 1.100 □ □ GPeto odds ratio ■ 12 Hollander, 1998 80 163 37 159 3.178 1.156 □ Log risk ratio ■ 13 Broom, 2002 144 259 64 263 3.893 1.359 Pisk difference 14 Brow 51 111 12 198 6871 1.997 Pisk difference	7	Sjostrom, 1998	237	343	167	340	2.316	0.840		
9 Davidson, 1999 434 657 98 223 2.482 0.909 ✓ Log odds ratio 10 Miles, 2002 98 250 41 254 3.349 1.209 11 Bakris, 2002 122 267 58 265 3.003 1.100 Log odds ratio ■ 12 Hollander, 1998 80 163 37 159 3.178 1.156 Bisk ratio ■ 13 Broom, 2002 144 259 64 263 3.893 1.359 ■ Pisk difference 14 Berne 2004 51 111 12 109 6.871 1.977 ■ ■ Pisk difference	8	Krempf, 2003	130	223	74	196	2.305	0.835	✓ Odds ratio	
10 Miles, 2002 98 250 41 254 3,349 1.209 Peto odds ratio 11 Bakris, 2002 122 267 58 265 3,003 1.100 Log Peto odds ratio E 12 Hollander, 1998 80 163 37 159 3,178 1.156 Log Peto odds ratio E 13 Broom, 2002 144 259 64 263 3.893 1.359 Log risk ratio 14 Berne 2004 51 111 12 198 6.871 1.997 Pisk difference	9	Davidson, 1999	434	657	98	223	2.482	0.909	Log odds ratio	
11 Bakris, 2002 122 267 58 265 3.003 1.100 □ Log Peto odds ratio ■ 12 Hollander, 1998 80 163 37 159 3.178 1.156 □ Risk ratio 13 Broom, 2002 144 259 64 263 3.893 1.359 □ Risk ratio 14 Berne 2004 51 111 12 198 6.821 1.927 ♥ Risk difference	10	Miles, 2002	98	250	41	254	3.349	1.209	Peto odds ratio	
12 Hollander, 1998 80 163 37 159 3.178 1.156 □ Hisk ratio 13 Broom, 2002 144 259 64 263 3.893 1.359 □ Log risk ratio 14 Berne, 2004 51 111 12 109 6.871 1.97 Nisk difference	11	Bakris, 2002	122	267	58	265	3.003	1.100	Log Peto odds ratio	
13 Broom, 2002 144 259 64 263 3.893 1.359 □ Log risk ratio 14 Berne, 2004 51 111 12 109 6.871 1.927 ✓ Risk difference	12	Hollander, 1998	80	163	37	159	3.178	1.156	Hisk ratio	
14 Berne 2004 51 111 12 109 6871 1927	13	Broom, 2002	144	259	64	263	3.893	1.359		
	14	Berne, 2004	51	111	12	109	6.871	1.927	✓ Hisk difference	
15 Hauner, 2004 109 174 72 174 2.376 0.865 Storm Internet Storm In	15	Hauner, 2004	109	174	72	174	2.376	0.865		
16 McMahon, 2000 57 142 6 69 7.041 1.952 Difference in means	16	McMahon, 2000	57	142	6	69	7.041	1.952	Difference in means	
17 Apfelbaum, 1999 71 82 43 78 5.254 1.659 Std Paired Difference	17	Apfelbaum, 1999	71	82	43	78	5.254	1.659	Std Paired Difference	
18 McNulty 2003 31 68 8 64 5.865 1.769 Correlation	18	McNulty, 2003	31	68	8	64	5.865	1.769		
19 McMahon, 2002 62 145 6 72 8.217 2.106 G Fisher's Z	19	McMahon, 2002	62	145	6	72	8.217	2.106	Fisher's Z	
20 Smith, 2001 87 153 32 157 5.149 1.639 B Rate ratio	20	Smith, 2001	87	153	32	157	5.149	1.639	Rate ratio	
21 Sanches-Reyes, 26 44 7 42 7.222 1.977 C Log rate ratio	21	Sanches-Reyes,	26	44	7	42	7.222	1.977	Log rate ratio	
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Study name	Drug Success	Drug Total N	Control Success	Control Total N	Odds ratio	Log odds ratio	Ch. Effect size indices
1 Lindgarde, 2000	103	190	76	186	1.714	0.539	
2 Finer, 2000	39	110	23	108	2.030	0.708	Use the following as the primary index
3 XENDOS	866	1640	611	1637	1.879	0.631	
4 Rossner, 2000	155	242	107	237	2.165	0.772	Risk difference
5 Kelley, 2002	87	266	35	269	3.249	1.178	
6 Hauptman, 2000	106	210	65	212	2.305	0.835	Display columns for these indices
7 Sjostrom, 1998	237	343	167	340	2.316	0.840	
8 Krempf, 2003	130	223	74	196	2.305	0.835	🗌 Odds ratio 🔺
9 Davidson, 1999	434	657	98	223	2.482	0.909	Log odds ratio
10 Miles, 2002	98	250	41	254	3.349	1.209	Peto odds ratio
11 Bakris, 2002	122	267	58	265	3.003	1.100	□ Log Peto odds ratio
12 Hollander, 1998	80	163	37	159	3.178	1.156	Risk ratio
13 Broom, 2002	144	259	64	263	3.893	1.359	Log risk ratio
14 Berne, 2004	51	111	12	109	6.871	1.927	Hisk difference
15 Hauner, 2004	109	174	72	174	2.376	0.865	Std diff in means
16 McMahon, 2000	57	142	6	69	7.041	1.952	Hedgessig
17 Apfelbaum, 1999	71	82	43	78	5.254	1.659	Difference in means
18 McNulty, 2003	31	68	8	64	5.865	1.769	
19 McMahon, 2002	62	145	6	72	8.217	2.106	
20 Smith, 2001	87	153	32	157	5.149	1.639	Bate ratio
21 Sanches-Reyes,	26	44	7	42	7.222	1.977	Log rate ratio
22							Rate difference
23							Hazard ratio
24							Also show standard error
25							
26							Also show variance
27							
28							C Show the primary index only
29							Show all selected indices
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34							

Un-check the boxes for odds ratio and log odds ratio

- Check the box for Also show standard error
- Check the box for Also show variance
- Click Ok

The screen should look like this

• To run the analysis, click [Run analysis]

<mark>⊒</mark> ∓ C	omprehensive met	a analysis - [C:\Users\M	lichael\Drop	box\Works	hops 2\Weig	ght Loss\We	ght Loss.cm	ia]					
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Run	analyses → 🏷	🗅 😅 👬 🛛	3 6 8	% i 🖻 🛍	/ 2010	} = } ≣ ≠		$\downarrow \downarrow \rightarrow$	+ 🗸 🗌		Q			
	Study name	Drug Success	Drug Total N	Control Success	Control Total N	Risk difference	Std Err	Variance	Drug	J	к	L	м	N
1	Lindgarde, 2000	103	190	76	186	0.134	0.051	0.003	Orlistat					
2	Finer, 2000	39	110	23	108	0.142	0.060	0.004	Orlistat					
3	XENDOS	866	1640	611	1637	0.155	0.017	0.000	Orlistat					
4	Rossner, 2000	155	242	107	237	0.189	0.045	0.002	Orlistat					
5	Kelley, 2002	87	266	35	269	0.197	0.035	0.001	Orlistat					
6	Hauptman, 2000	106	210	65	212	0.198	0.047	0.002	Orlistat					
7	Sjostrom, 1998	237	343	167	340	0.200	0.037	0.001	Orlistat					
8	Krempf, 2003	130	223	74	196	0.205	0.048	0.002	Orlistat					
9	Davidson, 1999	434	657	98	223	0.221	0.038	0.001	Orlistat					
10	Miles, 2002	98	250	41	254	0.231	0.039	0.001	Orlistat					
11	Bakris, 2002	122	267	58	265	0.238	0.040	0.002	Orlistat					
12	Hollander, 1998	80	163	37	159	0.258	0.052	0.003	Orlistat					
13	Broom, 2002	144	259	64	263	0.313	0.041	0.002	Orlistat					
14	Berne, 2004	51	111	12	109	0.349	0.056	0.003	Orlistat					
15	Hauner, 2004	109	174	72	174	0.213	0.052	0.003	Sibutramine					
16	McMahon, 2000	57	142	6	69	0.314	0.053	0.003	Sibutramine					
17	Apfelbaum, 1999	71	82	43	78	0.315	0.068	0.005	Sibutramine					
18	McNulty, 2003	31	68	8	64	0.331	0.073	0.005	Sibutramine					
19	McMahon, 2002	62	145	6	72	0.344	0.052	0.003	Sibutramine					
20	Smith, 2001	87	153	32	157	0.365	0.051	0.003	Sibutramine					
21	Sanches-Reyes,	26	44	7	42	0.424	0.094	0.009	Sibutramine					
22														
23														

This is the basic analysis screen

Initially, the program displays the fixed-effect analysis. This is indicated by the tab at the bottom and the label in the plot.

<u>File E</u> dit	Format View Compu	tational optio	ins Analyse	s <u>H</u> elp										
🕂 Data en	try tJ Next table	🚁 High	resolution pl	lot 🔁 Se	lect by	+ Effect mea	sure: Risk di	fference	-=	III II I	<mark>د</mark> ا£	•		
Model	Study name			Statis	tics for each	study				Risk dif	ference and S	95% CI		
		Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00	
	Lindgarde, 2000	0.134	0.051	0.003	0.033	0.234	2.615	0.009						
	Finer, 2000	0.142	0.060	0.004	0.023	0.260	2.349	0.019						
	XENDOS	0.155	0.017	0.000	0.121	0.188	9.015	0.000			+			
	Rossner, 2000	0.189	0.045	0.002	0.101	0.277	4.230	0.000				-		
	Kelley, 2002	0.197	0.035	0.001	0.128	0.266	5.575	0.000			+	·		
	Hauptman, 2000	0.198	0.047	0.002	0.106	0.290	4.231	0.000			-+	-		
	Sjostrom, 1998	0.200	0.037	0.001	0.128	0.272	5.422	0.000			-+	·		
	Krempf, 2003	0.205	0.048	0.002	0.112	0.299	4.293	0.000			-+	-		
	Davidson, 1999	0.221	0.038	0.001	0.147	0.296	5.815	0.000			-+	-		
	Miles, 2002	0.231	0.039	0.001	0.155	0.306	5.981	0.000			-+	-		
	Bakris, 2002	0.238	0.040	0.002	0.160	0.316	5.999	0.000			-	-		
	Hollander, 1998	0.258	0.052	0.003	0.157	0.359	5.008	0.000				-		
	Broom, 2002	0.313	0.041	0.002	0.233	0.392	7.689	0.000			-			
	Berne, 2004	0.349	0.056	0.003	0.240	0.459	6.238	0.000			-			
	Hauner, 2004	0.213	0.052	0.003	0.110	0.315	4.063	0.000			-+	-		
	McMahon, 2000	0.314	0.053	0.003	0.210	0.419	5.898	0.000						
	Apfelbaum, 1999	0.315	0.068	0.005	0.182	0.447	4.644	0.000						
	McNulty, 2003	0.331	0.073	0.005	0.187	0.474	4.521	0.000						
	McMahon, 2002	0.344	0.052	0.003	0.241	0.447	6.566	0.000						
_	Smith, 2001	0.365	0.051	0.003	0.264	0.465	7.104	0.000						
	Sanches-Reyes, 2004	0.424	0.094	0.009	0.240	0.608	4.522	0.000						
ixed		0.219	0.009	0.000	0.201	0.236	24.225	0.000			+			
	J													
ined D	a dom Both models													
ixeu R	a dom both models													
asic stat	One study removed	Cumulativ	e analysis	Calculation	s									

Click [Both models]

The program displays results for both the fixed-effect and the random-effects analysis.

Data ent	ry t∓ Next table		n resolution p	ot 🔁 Se	ect by	 Effect mea 	Isure: Risk di	fference			17 E	-E 3 🤍	,		
Model	Study name			Statis	tics for each :	study					Risk differe	nce and 95% I	CI		
		Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00) -0.	50	0.00	0.50	1.00	
	Lindgarde, 2000	0.134	0.051	0.003	0.033	0.234	2.615	0.009							
	Finer, 2000	0.142	0.060	0.004	0.023	0.260	2.349	0.019							
	XENDOS	0.155	0.017	0.000	0.121	0.188	9.015	0.000				+			
	Rossner, 2000	0.189	0.045	0.002	0.101	0.277	4.230	0.000							
	Kelley, 2002	0.197	0.035	0.001	0.128	0.266	5.575	0.000							
	Hauptman, 2000	0.198	0.047	0.002	0.106	0.290	4.231	0.000							
	Sjostrom, 1998	0.200	0.037	0.001	0.128	0.272	5.422	0.000							
	Krempf, 2003	0.205	0.048	0.002	0.112	0.299	4.293	0.000							
	Davidson, 1999	0.221	0.038	0.001	0.147	0.296	5.815	0.000							
	Miles, 2002	0.231	0.039	0.001	0.155	0.306	5.981	0.000							
	Bakris, 2002	0.238	0.040	0.002	0.160	0.316	5.999	0.000							
	Hollander, 1998	0.258	0.052	0.003	0.157	0.359	5.008	0.000							
	Broom, 2002	0.313	0.041	0.002	0.233	0.392	7.689	0.000							
	Berne, 2004	0.349	0.056	0.003	0.240	0.459	6.238	0.000					-		
	Hauner, 2004	0.213	0.052	0.003	0.110	0.315	4.063	0.000							
	McMahon, 2000	0.314	0.053	0.003	0.210	0.419	5.898	0.000							
	Apfelbaum, 1999	0.315	0.068	0.005	0.182	0.447	4.644	0.000				_ <u>→</u>	-		
	McNulty, 2003	0.331	0.073	0.005	0.187	0.474	4.521	0.000					-		
	McMahon, 2002	0.344	0.052	0.003	0.241	0.447	6.566	0.000					-		
	<u>S</u> mith, 2001	0.365	0.051	0.003	0.264	0.465	7.104	0.000					-		
	Sanches-Reyes, 2004	0.424	0.094	0.009	0.240	0.608	4.522	0.000					+		
		0.219	0.009	0.000	0.201	0.236	24.225	0.000				+			
ixed					0.011	0.076	14 CEC	0.000							
ixed andom		0.243	0.017	0.000	0.211	0.276	14.000	0.000							

The fact that the two results differ tells us that the RE weights are different from the FE weights. This means that T^2 , the estimate of between-study variance in true effects is not zero.

The confidence interval is wider for random-effects than for fixed-effects. This will always be the case when T^2 is not zero.

The random-effects model is a better fit for the way the studies were sampled, and therefore that is the model we will use in the analysis.

• Click Random on the tab at the bottom

The plot now displays the random-effects analysis alone.

 Data entry 	/ t₁ Next table	井 Higi	n resolution pl	ot 🔁 Se	lect by	+ Effect mea	sure: Risk di	fference	- 🔳 🗖	≣≣ ∏ ‡	1 E - E - B	Q		
Model	Study name			Statis	tics for each	study				Risk d	lifference and 9	95% CI		
		Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00	
L	indgarde, 2000	0.134	0.051	0.003	0.033	0.234	2.615	0.009						
F	Finer, 2000	0.142	0.060	0.004	0.023	0.260	2.349	0.019			—+—			
>	KENDOS	0.155	0.017	0.000	0.121	0.188	9.015	0.000			+			
F	Rossner, 2000	0.189	0.045	0.002	0.101	0.277	4.230	0.000				.		
ŀ	Kelley, 2002	0.197	0.035	0.001	0.128	0.266	5.575	0.000						
ł	Hauptman, 2000	0.198	0.047	0.002	0.106	0.290	4.231	0.000				-		
9	Sjostrom, 1998	0.200	0.037	0.001	0.128	0.272	5.422	0.000						
ł	Krempf, 2003	0.205	0.048	0.002	0.112	0.299	4.293	0.000			-+	-		
[Davidson, 1999	0.221	0.038	0.001	0.147	0.296	5.815	0.000			-+	-		
۱.	diles, 2002	0.231	0.039	0.001	0.155	0.306	5.981	0.000			-+	-		
E	Bakris, 2002	0.238	0.040	0.002	0.160	0.316	5.999	0.000			-+	-		
H	Hollander, 1998	0.258	0.052	0.003	0.157	0.359	5.008	0.000				-		
E	Broom, 2002	0.313	0.041	0.002	0.233	0.392	7.689	0.000			-	+-		
E	Berne, 2004	0.349	0.056	0.003	0.240	0.459	6.238	0.000			-			
ł	Hauner, 2004	0.213	0.052	0.003	0.110	0.315	4.063	0.000				-		
h	McMahon, 2000	0.314	0.053	0.003	0.210	0.419	5.898	0.000			- -	+		
A	Apfelbaum, 1999	0.315	0.068	0.005	0.182	0.447	4.644	0.000				+		
1	vicNulty, 2003	0.331	0.073	0.005	0.187	0.474	4.521	0.000						
1	vicMahon, 2002	0.344	0.052	0.003	0.241	0.447	6.566	0.000						
	Smith, 2001	0.365	0.051	0.003	0.264	0.465	7.104	0.000						
	anches-Reyes, 2004	0.424	0.094	0.009	0.240	0.608	4.522	0.000						
		0.242	0.017	0.000	0.211	0.276	14,656	0.000			+			

A quick view of the plot suggests the following

- All of the studies suggest an advantage for treatment over placebo
- The observed effect size ranges over a wide area. The dispersion appears to be more than we would expect based on the precision of each study.
- The summary effect is 0.243. On average, the success rate on drug was 24 percentage points higher than the success rate on placebo. The CI is 0.211 to 0.276, which tells us that the mean effect is clearly in the clinically important range.
- The summary effect has a Z-value 14.656 and a *p*-value of < 0.001. Thus we can reject the null hypotheses that the true risk difference is 0.0.
- To have a closer look at this variance we turn to the next table.



The statistics at the left duplicate those we saw on the prior screen.

- Under the random-effects model the risk difference is 0.243 with a 95% confidence interval of 0.211 to 0.276. The test of the null (that the true risk difference is 0.0) yields a Z-value of 14.656 and a corresponding p-value of < 0.001.
- The statistics at the upper right relate to the dispersion of effect sizes across studies.
- The Q-value is 57.546 with df=20 and p < 0.001. Q reflects the distance of each study from the mean effect (weighted, squared, and summed over all studies). Q is always computed using FE weights (which is the reason it is displayed on the "Fixed" row, but applies to both FE and RE analyses.</p>
- If all studies actually shared the same true effect size, the expected value of Q would be equal to df (which is 20). Here, Q exceeds that value, and so the estimate of T2 for the sample will be greater than zero. Additionally, Q exceeds that value by a large enough margin, so that we can find that T2 exceeds zero not only in the sample, but also for the population. Concretely, p < 0.001, and we reject the null hypothesis that all studies in the universe from which the sample was drawn share the same true effect size.
- T^2 is the estimate of the between-study variance in true effects. This estimate is 0.003. *T* is the estimate of the between-study standard deviation in true effects. This estimate is 0.059.
- I2 reflects the proportion of true variance to observed variance. This estimate is 65%. This
 means that if each of the studies had a huge sample size (and therefore estimated the effect in
 its population with little error) the variance in observed effect sizes would shrink to about 65%
 of the current value.
- Click [Next table] to return to this screen

In this analysis we want to focus on the treatment effect as a function of Drug. Specifically, we're going to run the analysis separately (a) for studies that compared Orlistat vs. placebo and (b) for studies that compared Sibutramine vs. placebo.

When we're dividing the studies into two subgroups, the between-studies variance (T^2) must be computed within subgroups. However, we have two options. We can then pool the separate estimates, and use the pooled value for all subgroups. Or, we can use a separate estimate for each subgroup.

Our plan at the moment is to use a separate estimate for each subgroup. To select that option

Click Computational options > Mixed and random effects options

Comprei	hensive meta analysis -	[Analysis]															
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		oun by			Lower limit	Upperimit	Z-Value	p-Value	-1.00	-0.5	50	0.00	0.50	1.00			
	Lindgar le, 2000	mpare groups		3	0.033	234	2.615	0.009	1	1							
	Finer, 2100	inpure groups	effects enti-	4	0.023	260	2.349	0.019									
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	Kelley 2002	0.197	0.035	0.001	0.129	0.277	4.230	0.000									
	Hauptman, 2000	0.198	0.047	0.002	0.106	0.200	4.231	0.000									
	Sjostrom, 1998	0.200	0.037	0.001	0.128	0.272	5.422	0.000									
	Krempf, 2003	0.205	0.048	0.002	0.112	0.299	4.293	0.000									
	Davidson, 1999	0.221	0.038	0.001	0.147	0.296	5.815	0.000									
	Miles, 2002	0.231	0.039	0.001	0.155	0.306	5.981	0.000				+					
	Bakris, 2002	0.238	0.040	0.002	0.150	0.315	5.999	0.000									
	Proom 2002	0.258	0.052	0.003	0.107	0.309	5.008	0.000					_				
	Berne 2004	0.349	0.041	0.002	0.233	0.352	6.238	0.000					⊢				
	Hauner, 2004	0.213	0.052	0.003	0.110	0.315	4.063	0.000									
	McMahon, 2000	0.314	0.053	0.003	0.210	0.419	5.898	0.000				_ →	-				
	Apfelbaum, 1999	0.315	0.068	0.005	0.182	0.447	4.644	0.000					-1				
	McNulty, 2003	0.331	0.073	0.005	0.187	0.474	4.521	0.000									
	McMahon, 2002	0.344	0.052	0.003	0.241	0.447	6.566	0.000									
	Smith, 2001	0.365	0.051	0.003	0.264	0.465	7.104	0.000				-	+				
Random	Sanches-Heyes, 2004	0.424	0.017	0.009	0.240	0.608	4.522	0.000				-					
mandolli		0.243	0.017	0.000	0.211	0.276	14.000	0.000									
Fixed Ra	ndom Both models																
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The program displays this wizard

- At the top select the first option, to "Assume a common among-study variance"
- At the bottom select the first option, to "Combine subgroups using a fixed-effect model"

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Model	Study name			Stati	stics for each	study				Risk d	ifference and 9	5% CI		
		Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00	
	Lindgarde, 2000	0.134	0.051	0.003	0.033	0.234	2.615	0.009						
	Finer, 2000	0.142	0.060	0.004	0.023	0.260	2.349	0.019						
	XENDOS	0.155	0.017	0.000	0.121	0.188	9.015	0.000			+			
	Rossner, 2000	0.189	0.045	0.002	0.101	0.277	1 220	0.000	_					
	Kelley, 2002	0.197	0.035	0.001	0.128	🔄 🖏 Miz	ed and rand	om effects o	options		_	×		
	Hauptman, 2000	0.198	0.047	0.002	0.106									
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	Krempf, 2003	0.205	0.048	0.002	0.112		2							
	Davidson, 1999	0.221	0.038	0.001	0.147		ssume a com	oon among-st	ludu varianc	e component ac		-		
	Miles, 2002	0.231	0.039	0.001	0.155	•	cool within-aro	up estimates :	of tau-squar	ed).	ioss subgroups	·		
	Bakris, 2002	0.238	0.040	0.002	0.160		······			6)		
	Hollander, 1998	0.258	0.052	0.003	0.157		lo not assume	a common ai	monaletuduu	vatiance compo	nent across sut	aroune (do		
	Broom, 2002	0.313	0.041	0.002	0.233	11 ° °	ot pool within-	group estimat	tes of tau-sq	uared). This is th	e option used b	oy RevMan.		
	Berne, 2004	0.349	0.056	0.003	0.240		•					-		
	Hauner, 2004	0.213	0.052	0.003	0.110									
	McMahon, 2000	0.314	0.053	0.003	0.210									
	Apfelbaum, 1999	0.315	0.068	0.005	0.182	Con	bining subg	roups to yie	eld an ove	rall effect				
	McNulty, 2003	0.331	0.073	0.005	0.187									
	McMahon, 2002	0.344	0.052	0.003	0.241		ombine subgr	oups using hix	ed effect mo	odel				
	Smith, 2001	0.365	0.051	0.003	0.264		`ombine subar	oune using rai	ndom effect	s model				
	Sanches-Reyes,	0.424	0.094	0.009	0.240		ombine subgr	superaining ra	naom ellect	s moder				
Random		0.243	0.017	0.000	0.211									
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Now, we can tell the program to run the analysis by subgroups.

Click Computational options > Group by

Compre	hensive meta analysis - [/	Analysis]											
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	XENDOS XENDOS	ed and random e	effects options	_000	0.121	0.188	9.015	0.000			+		
	Rossner, 2000	0.189	0.045	0.002	0.101	0.277	4.230	0.000					
	Kelley, 2002	0.197	0.035	0.001	0.128	0.266	5.575	0.000					
	Hauptman, 2000	0.198	0.047	0.002	0.106	0.290	4.231	0.000					
	Sjostrom, 1998	0.200	0.037	0.001	0.128	0.272	5.422	0.000					
	Krempt, 2003	0.205	0.048	0.002	0.112	0.299	4.293	0.000					
	Davidson, 1999 Miles 2002	0.221	0.038	0.001	0.147	0.295	5,815	0.000					
	Pakris 2002	0.231	0.035	0.001	0.155	0.306	5,999	0.000					
	Hollander 1998	0.258	0.040	0.002	0.157	0.310	5.008	0.000					
	Broom, 2002	0.313	0.041	0.002	0.233	0.392	7.689	0.000					
	Berne, 2004	0.349	0.056	0.003	0.240	0.459	6.238	0.000					
	Hauner, 2004	0.213	0.052	0.003	0.110	0.315	4.063	0.000					
	McMahon, 2000	0.314	0.053	0.003	0.210	0.419	5.898	0.000					
	Apfelbaum, 1999	0.315	0.068	0.005	0.182	0.447	4.644	0.000					
	McNulty, 2003	0.331	0.073	0.005	0.187	0.474	4.521	0.000					
	McMahon, 2002	0.344	0.052	0.003	0.241	0.447	6.566	0.000					
	Smith, 2001	0.365	0.051	0.003	0.264	0.465	7.104	0.000				·	
Dender	Sanches-Heyes, 2004	0.424	0.094	0.009	0.240	0.608	4.522	0.000				_	
nariu0m		0.243	0.017	0.000	0.211	0.276	14.606	0.000			+		
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- Click Ok

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Model	Study name			Statis	ics for each	study				Risk dil	ference and	95% CI			
		Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00		
	Lindgarde, 2000 Finer, 2000 XENDOS Rosener, 2000 Kelley, 2002 Hauptman, 2000 Sioatron, 1998 Miles, 2002 Bakris, 2002 Hollander, 1998 Broom, 2002 Berner, 2004 Hauner, 2004	0.134 0.142 0.155 0.189 0.200 0.205 0.221 0.231 0.238 0.258 0.313 0.349 0.213 0.314	0.051 0.060 0.017 0.045 0.045 0.047 0.037 0.048 0.038 0.040 0.039 0.040 0.052 0.041 0.056 0.052 0.052	0.003 0.004 0.000 0.002 0.001 0.002 0.001 0.002 0.001 0.002 0.003 0.003 0.003 0.003		0.234 0.260 Group by Pun a sepa Drug V Also run a Compare	2.615 2.349	0.009 0.019 is for each I s levels of drug rent levels of d	evel of	set					
	Apfelbaum, 1999 McNulty, 2003 McMahon, 2002 Smith, 2001 Sanches-Reyes, 2004	0.315 0.331 0.344 0.365 0.424	0.068 0.073 0.052 0.051 0.094	0.005 0.005 0.003 0.003 0.003 0.009	0 0.241 0.264 0.240	0.447 0.465 0.608	6.566 7.104 4.522	0.000 0.000 0.000		-					
Random		0.243	0.017	0.000	0.211	0.276	14.656	0.000				+			
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Model	Group by Drug	Study name			Statis	tics for each	study				Risk dil	ference and 95	% CI		
			Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00	
	Orlistat	Lindgarde, 2000	0.134	0.051	0.003	0.033	0.234	2.615	0.009						
	Orlistat	Finer, 2000 XENDOS	0.142	0.060	0.004	0.023	0.260	2.349	0.019			+			
	Orlistat	Rossner, 2000	0.189	0.045	0.002	0.101	0.277	4.230	0.000						
	Orlistat	Kelley, 2002	0.197	0.035	0.001	0.128	0.266	5.575	0.000						
	Orlistat	Hauptman, 2000	0.198	0.047	0.002	0.106	0.290	4.231	0.000						
	Orlistat	Sjostrom, 1998	0.200	0.037	0.001	0.128	0.272	5.422	0.000						
	Unistat Spetrom, 1998 0.200 0.037 0.001 0.128 0.272 5.422 0.000 Oristat Kempf, 2003 0.205 0.048 0.002 0.112 0.299 4.293 0.000														
	Orlistat	Davidson, 1999	0.221	0.038	0.001	0.147	0.296	5.815	0.000			-			
	Urlistat	Miles, 2002 Distuite 2002	0.231	0.039	0.001	0.155	0.305	5.981	0.000						
	Orlistat	Bakris, 2002 Hallandar, 1999	0.238	0.040	0.002	0.160	0.315	5.999	0.000						
	Orlistat	Broom 2002	0.236	0.032	0.003	0.107	0.303	7,689	0.000				_		
	Orlistat	Berne 2004	0.349	0.041	0.002	0.233	0.352	6,238	0.000				-		
Random	Orlistat		0.213	0.015	0.000	0.183	0.242	14.102	0.000			+			
	Sibutramine	Hauner, 2004	0.213	0.052	0.003	0.110	0.315	4.063	0.000						
	Sibutramine	McMahon, 2000	0.314	0.053	0.003	0.210	0.419	5.898	0.000				-		
	Sibutramine	Apfelbaum, 1999	0.315	0.068	0.005	0.182	0.447	4.644	0.000				-		
	Sibutramine	McNulty, 2003	0.331	0.073	0.005	0.187	0.474	4.521	0.000				+		
	Sibutramine	McMahon, 2002	0.344	0.052	0.003	0.241	0.447	6.566	0.000						
	Sibutramine	Smith, 2001	0.365	0.051	0.003	0.264	0.465	7.104	0.000						
Baudan	Sibutramine	Sanches-Heyes, 2004	0.424	0.094	0.009	0.240	0.608	4.522	0.000				_		
Bandom	Overall		0.320	0.027	0.001	0.267	0.373	18.091	0.000			+	-		
Tandoni	o vordii		0.230	0.013	0.000	0.213	0.204	10.031	0.000						
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For the Orlistat studies the mean effect size is a risk difference of 0.213 with a confidence interval of 0.183 to 0.242, a Z-value of 14.102 and a corresponding p-value of < 0.001. It's clear that the drug is more effective than placebo, and that the impact is clinically as well as statistically significant.

For the Sibutramine studies the mean effect size is a risk difference of 0.320 with a confidence interval of 0.267 to 0.373, a Z-value of 11.853 and a corresponding p-value of < 0.001. It's clear that the drug is more effective than placebo, and that the impact is clinically as well as statistically significant.

For all studies together the mean effect size is a risk difference of 0.238 with a confidence interval of 0.213 to 0.264, a Z-value of 18.091 and a corresponding p-value of < 0.001. However, given that we had intended a priori to study the effect as a function of drug, this overall effect has limited meaning. In particular, the overall mean will depend on what proportion of the studies employed one drug rather than the other.

Therefore, we are better off focusing on the mean effect for each subgroup.

We want to know if the difference between the two effect sizes (0.213 vs. 0. 320) is statistically significant, and we'll run a test for this.

To get a better sense of what we're testing, click the "All studies" button. This will hide all of the individual studies and display the summary effects only as shown here.

The test will compare the two mean effects relative to the precision of each effect. For two groups we can think of this as a Z-test for the ratio of the difference in means to the standard error of the difference.

Toggle the "All studies button" to display the studies again.

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Model	Group by Drug	Study name			Stati	stics for each	study	C			Risk d	ifference and	95% CI		
			Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00	
Random Bandom	Orlistat Sibutramine		0.213	0.015 0.027	0.000	0.183	0.242	14.102 11.853	0.000				+		
Random	Overall		0.238	0.013	0.000	0.213	0.264	18.091	0.000				+		
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We can right-click on the plot and expand the scale to see this more clearly

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Model	Group by Drug	Study name			Stati	stics for each	study				Risk	difference and 9	5% CI		
			Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00	
Random	Orlistat		0.213	0.015	0.000	0.183	0.242	14.102	0.000			+			
Random	Sibutramine		0.320	0.027	0.001	0.267	0.373	11.853	0.000		- Show/	hide forest plot		_	
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Model	Group by Drug	Study name			Stati	stics for each	study				Risk d	ifference and !	95% CI		
			Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-0.50	-0.25	0.00	0.25	0.50	
Random Random	Orlistat Sibutramine		0.213 0.320	0.015 0.027	0.000 0.001	0.183 0.267	0.242 0.373	14.102 11.853	0.000 0.000				+		
Random	Overall		0.238	0.013	0.000	0.213	0.264	18.091	0.000				+		
Fixed Ra Basic stat	ndom Bot s Calculati	h models													

Here, it seems clear that there is no overlap between the confidence intervals for the two subgroups. We would therefore expect that the test to compare the two means will yield a statistically significant p-value.

Click Next Table to see the results

The top section of the page (labeled Fixed-effect analysis) is for an analysis where we compute the summary effect in each group using FE weights, and then compare these values

The bottom section of the page (Mixed-effects analysis) is for an analysis where we compute the summary effect for each group using RE weights, and then compare these values.

We want to use the bottom section. The RE model is a better fit for the way the studies were sampled, and so this is the appropriate analysis.

Click Format > Increase decimals

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Groups		Eff	ect size and	d 95% confid	ence interv	ence interval		ıll (2-Tail)		Hetero	geneity			Tau-so	uared	
Group	Number Studies	Point estimate	Standard error	Variance	Lower limit	Upper limit	Z-value	P-value	Q-value	df (Q)	P-value	I-squared	Tau Squared	Standard Error	Variance	Tau
Fixed effect analys	is															
Orlistat Sibutramine Total within	14 7	0.1996 0.3187	0.0099 0.0225	0.0001 0.0005	0.1802 0.2746	0.2189 0.3627	20.2356 14.1731	0.0000 0.0000	27.5603 6.4538 34.0141	13.0000 6.0000 19.0000	0.0104 0.3743 0.0183	52.8306 7.0313	0.0017 0.0003	0.0013 0.0022	0.0000 0.0000	0.040 0.016
Total between Overall	21	0.2188	0.0090	0.0001	0.2011	0.2365	24.2245	0.0000	23.5324 57.5465	1.0000	0.0000	65.2455	0.0034	0.0019	0.0000	0.058
Mixed effects analy	vsis 14	0.2128	0.0151	0.0002	0.1832	0.2424	14.1022	0.0000								
Sibutramine Total between Overall	7 21	0.3205 0.2384	0.0270	0.0007	0.2675 0.2125	0.3735 0.2642	11.8530 18.0905	0.0000	12.0983	1.0000	0.0005					
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Toward the left of the screen the program displays the same numbers, we saw a moment ago.

For the Orlistat studies the mean effect size is a risk difference of 0.213 with a confidence interval of 0.183 to 0.242, a Z-value of 14.102 and a corresponding p-value of < 0.001. It's clear that the drug is more effective than placebo, and that the impact is clinically as well as statistically significant.

For the Sibutramine studies the mean effect size is a risk difference of 0.320 with a confidence interval of 0.267 to 0.373, a Z-value of 11.853 and a corresponding p-value of < 0.001. It's clear that the drug is more effective than placebo, and that the impact is clinically as well as statistically significant.

The test to compare the two effect sizes (0.213 vs. 0.320) yields a Q-value of 12.098 with 1 df and a corresponding p-value of 0.001.

Toward the right of the screen the program displays information about between-study heterogeneity. As was true for the single-group of studies, these statistics are based on FE weights and are therefore displayed in the top section, but they apply to the RE analysis as well.

Groups		Eff	ect size and	l 95% confid	ence interv	al	Test of nu	ıll (2-Tail)	\square	Hetero	ogeneity			Tau-so	uared	
Group	Number Studies	Point estimate	Standard error	Variance	Lower limit	Upper limit	Z-value	P-value	Q-value	df (Q)	P-value	l-squared	Tau Squared	Standard Error	Variance	Tau
Fixed effect analy	sis															
Orlistat Sibutramine Total within	14 7	0.1996 0.3187	0.0099 0.0225	0.0001 0.0005	0.1802 0.2746	0.2189 0.3627	20.2356 14.1731	0.0000 0.0000	27.5603 6.4538 24.0141	13.0000 6.0000	0.0104 0.3743	52.8306 7.0313	0.0017 0.0003	0.0013 0.0022	0.0000 0.0000	0.04 0.01
Total between Overall	21	0.2188	0.0090	0.0001	0.2011	0.2365	24.2245	0.0000	23.5324 57.5465	1.0000	0.0000	65.2455	0.0034	0.0019	0.0000	0.05
Mixed effects ana	lysis															
Orlistat Sibutramine Tatal batusan	14 7	0.2128 0.3205	0.0151 0.0270	0.0002 0.0007	0.1832 0.2675	0.2424 0.3735	14.1022 11.8530	0.0000 0.0000	12 0992	1 0000	0.0005					
Overall	21	0.2384	0.0132	0.0002	0.2125	0.2642	18.0905	0.0000	12.0365	1.0000	0.0005					

For the Orlistat studies the variance in effects yields a *Q*-value of 27.560 with 13 *df* and p = 0.010. T^2 is estimated at 0.002, *T* is 0.041, and I^2 is 52.831%

For the Sibutramine studies the variance in effects yields a *Q*-value of 6.454 with 6 *df* and p = 0.374. T^2 is estimated at 0.0003, *T* is 0.017, and I^2 is 7.031%

We can also perform an omnibus test by pooling the Q values and df across subgroups. The pooled Q is 34.014 with df = 19 and p = 0.018.

These tests are goodness-of-fit tests. They ask if the grouping (Orlistat vs. Sibutramine) explains all of the variance in true effect sizes, or if some true variance remains, even within subgroups. Here, there is evidence of true variance within subgroups.

Note that the tests of homogeneity are displayed in the fixed-effect section, even though we're using the random-effects model within subgroups. This is because these tests always are always based on using within-study (fixed-effect) weights. That is, we pose the null (that T^2 is zero) and then see is the variance is consistent with the null.

Click Next table to return to this screen.

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Model	Drug	Study name			Stati	stics for each	study				F	Risk differe	ence and 95	% CI				
			Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	·1.00	-0.5	i0	0.00	0.50	1.00			
	Orlistat	Lindgarde, 2000	0.1335	0.0510	0.0026	0.0335	0.2336	2.6154	0.0089									
	Orlistat	Finer, 2000	0.1416	0.0603	0.0036	0.0235	0.2597	2.3492	0.0188									
	Orlistat	XENDOS	0.1548	0.0172	0.0003	0.1211	0.1885	9.0152	0.0000				+					
	Orlistat	Rossner, 2000	0.1890	0.0447	0.0020	0.1014	0.2766	4.2304	0.0000									
	Unistat	Kelley, 2002	0.1970	0.0353	0.0012	0.1277	0.2662	5.5748	0.0000									
	Unistat	Hauptman, 2000	0.1982	0.0468	0.0022	0.1064	0.2899	4.2313	0.0000									
	Orlistat	5 jostrom, 1998	0.1998	0.0368	0.0014	0.12/6	0.2720	0.4222	0.0000									
	Orlistat	Davidson 1999	0.2054	0.0476	0.0023	0.1110	0.2332	4.2331 E 01E0	0.0000									
	Onistat	Miles 2002	0.2211	0.0386	0.0014	0.1400	0.2336	5 9811	0.0000									
	Orlistat	Bakris 2002	0.2381	0.0307	0.0016	0.1603	0.3051	5,9995	0.0000				1 +					
	Onistat	Hollander 1998	0.2581	0.0515	0.0010	0.1571	0.3591	5.0078	0.0000					.				
	Orlistat	Broom, 2002	0.3126	0.0407	0.0017	0.2329	0.3923	7.6890	0.0000				_ →	-				
	Orlistat	Berne, 2004	0.3494	0.0560	0.0031	0.2396	0.4591	6.2384	0.0000					⊷				
Random	Orlistat		0.2128	0.0151	0.0002	0.1832	0.2424	14.1022	0.0000				+					
	Sibutramine	Hauner, 2004	0.2126	0.0523	0.0027	0.1101	0.3152	4.0631	0.0000									
	Sibutramine	McMahon, 2000	0.3145	0.0533	0.0028	0.2100	0.4190	5.8977	0.0000					-				
	Sibutramine	Apfelbaum, 1999	0.3146	0.0677	0.0046	0.1818	0.4473	4.6442	0.0000					-				
	Sibutramine	McNulty, 2003	0.3309	0.0732	0.0054	0.1874	0.4743	4.5208	0.0000					-				
	Sibutramine	McMahon, 2002	0.3443	0.0524	0.0027	0.2415	0.4470	6.5659	0.0000									
	Sibutramine	Smith, 2001	0.3648	0.0514	0.0026	0.2642	0.4654	7.1043	0.0000					+-				
	Sibutramine	Sanches-Heyes, 2004	0.4242	0.0938	0.0088	0.2404	0.6081	4.5222	0.0000				-	-+				
Handom	Sibutramine		0.3205	0.0270	0.0007	0.25/5	0.3735	10.0005	0.0000									
riandom	overall		0.2384	0.0132	0.0002	0.2125	0.2642	10.0305	0.0000									
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Next, we want to create a high-resolution plot

- Right-click on the statistics section
- Select Customize basic stats

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Model	Group by Drug	Study name			Stati	Statistics for each study					Risk dif	iference and 95				
	-		Risk difference	Standard error	Variance	Lower limit	Upper limit	Z-Value	p-Value	-1.00	-0.50	0.00	0.50	1.00		
	Orlistat	Lindgarde, 2000	0.1335	0.0510	0.0026	0.0335	0.2336	2.6154	0.0089				- I			
	Orlistat	Finer, 2000	0.1416	0.0603	0.0036	0.0235	0.2597	2.3492	0.0188							
	Orlistat	XENDOS	0.1548	0.0172	0.0003	0.1211	0.1885	9.0152	0.0000			+				
	Orlistat	Rossner, 2000	0.1890	0.0447	0.0020	0.1014	0.2766	AL Sort	Lo-Hiby 7-	/alue						
	Orlistat	Kelley, 2002	0.1970	0.0353	0.0012	0.1277	0.2662	2+ 500	20 11 Dy 2							
	Orlistat	Hauptman, 2000	0.1982	0.0468	0.0022	0.16.04	0.2033	A* 500	111 EO DY 2	ronac						
	Urlistat	Sjostrom, 1998	0.1998	0.0368	0.0014	0. 276	0.2720	EE Sho	w/hide basic	stats						
	Unistat	Krempt, 2003	0.2054	0.0478	0.0023	0, 116	0.2992									
	Urlistat	Davidson, 1999	0.2211	0.0380	0.0014	U. 466	0.2956	Cus 🔁	tomize basic	stats						
	Orlistat	Miles, 2002 Policio 2002	0.2306	0.0385	0.0015	0, 500	0.3061	5.000F	0.0000	-v-						
	Orlistat	Bakris, 2002 Mallandar, 1999	0.2381	0.0337	0.0016	0.1503	0.3158	5.3335	0.0000							
	Orlistat	Proor 2002	0.2301	0.0010	0.0027	0.10/1	0.3531	7 6990	0.0000							
	Orlistat	Berne 2004	0.3494	0.0560	0.0031	0.2396	0.4591	6 2384	0.0000							
Bandom	Orlistat	20110, 2001	0.2128	0.0151	0.0002	0.1832	0.2424	14.1022	0.0000			+				
	Sibutramine	Hauner, 2004	0.2126	0.0523	0.0027	0.1101	0.3152	4.0631	0.0000							
	Sibutramine	McMahon, 2000	0.3145	0.0533	0.0028	0.2100	0.4190	5.8977	0.0000				-			
	Sibutramine	Apfelbaum, 1999	0.3146	0.0677	0.0046	0.1818	0.4473	4.6442	0.0000				-1			
	Sibutramine	McNulty, 2003	0.3309	0.0732	0.0054	0.1874	0.4743	4.5208	0.0000			-	⊷I			
	Sibutramine	McMahon, 2002	0.3443	0.0524	0.0027	0.2415	0.4470	6.5659	0.0000				←			
	Sibutramine	Smith, 2001	0.3648	0.0514	0.0026	0.2642	0.4654	7.1043	0.0000				+			
	Sibutramine	Sanches-Reyes, 2004	0.4242	0.0938	0.0088	0.2404	0.6081	4.5222	0.0000			-	-+			
Random	Sibutramine		0.3205	0.0270	0.0007	0.2675	0.3735	11.8530	0.0000							
Handom	Uverall		0.2384	0.0132	0.0002	0.2125	0.2642	18.0905	0.0000							
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- Check the boxes for risk difference and p-value
- Uncheck all other boxes
- Click Ok

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	Orlistat	Finer, 2000	0.1416	0.0603	0.0036	Show	Decimals	Alignment			
	Orlistat	XENDOS	0.1548	0.0172	0.0003					+	
	Orlistat	Rossner, 2000	0.1890	0.0447	0.0020	All columns in this block	-		•		
	Orlistat	Kelley, 2002	0.1970	0.0353	0.0012		-			+	
	Unistat	Hauptman, 2000	0.1982	0.0468	0.0022				-		
	Orlistat	Sjusitulli, 1330 Kremoti 2003	0.1550	0.0300	0.0014	Hisk difference	Auto	Auto	-		
	Orlistat	Davidson 1999	0.2004	0.0380	0.0024	Standard error	Auto 💌	Auto	•		
	Orlistat	Miles, 2002	0.2306	0.0386	0.0015				<u> </u>		
	Orlistat	Bakris, 2002	0.2381	0.0397	0.0016	Variance	Auto 💌	Auto	-	+	
	Orlistat	Hollander, 1998	0.2581	0.0515	0.0027	Lower limit	Auto 🔻	Auto	•		
	Orlistat	Broom, 2002	0.3126	0.0407	0.0017				<u> </u>		
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	Orlistat	Rossner, 2000	0.189	0.000									
	Orlistat	Kelley, 2002	0.197	0.000			+						
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	Orlistat	Bakris, 2002	0.238	0.000									
	Orlistat	Hollander, 1998	0.258	0.000									
	Orlistat	Broom, 2002	0.313	0.000									
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- Click High-Resolution plot
- Reset All
- The screen should look like this



It's always a good idea to double-check the labels, and ensure that the studies classified as "Favors Drug" did indeed have the higher lower event rate if the event is success, as it is here – or a lower event rate if the event is a bad outcome.

Now that we've established that the treatment effect varies by drug, we might want to run a completely separate analysis for the Orlistat studies and for the Sibutramine studies.

The basic idea would be Select by drug, and then to run the same kind of analysis that we normally use for a single set of studies.

Summary

This analysis includes 21 studies where patients were randomized to receive either a drug or placebo. Outcome was the proportion of patients meeting a criterion for success in losing weight. The effect size was the risk difference, i.e. the difference in success rates between the two groups.

Some studies compared Orlistat vs. placebo while others compared Sibutramine vs. placebo. The primary goal of the meta-analysis was to compare subgroups of studies, i.e. to see if the risk difference is higher (or lower) in studies that used Orlistat as compared with studies that used Sibutramine.

Are the drugs effective?

The mean risk difference is 0.243, which means that being assigned to a drug rather than a placebo resulted in a 24.3 point increase in the likelihood of success.

These studies were sampled from a universe of possible studies defined by certain inclusion/exclusion rules as outlined in the full paper. The confidence interval for the risk difference is 0.211 to 0.276, which tell us that the <u>mean</u> risk difference in the universe of studies could fall anywhere in this range. This range does not include a risk difference of zero, which tells us that the mean risk difference in the universe of studies is probably not zero.

Similarly, the Z-value for testing the null hypothesis (that the mean risk difference is zero) is 14.656, with a corresponding p-value is < 0.001. We can reject the null that the likelihood of success is the same in both groups, and conclude that the likelihood of success is higher in the drug group.

Is drug type (Orlistat vs. Sibutramine) related to the likelihood of success?

The mean effect for the Orlistat studies was 0.213 with a confidence interval of 0.183 to 0.252. The mean effect for the Sibutramine studies was 0.320 with a confidence interval of 0.268 to 0.374. The test for the difference between means yields a Q-value of 12.098 with 1 df and p=0.0005.

We reject the null that the mean true effect is identical in the two (in the universe from which the Orlistat studies were sampled and the universe from which the Sibutramine studies were sampled), and conclude that the effect is stronger in the Sibutramine studies.

In each study random-assignment was used to allocate patients to drug or placebo. Within a study we can assume that the patients in each condition are identical except for being given drug or placebo. Therefore, the main effect in each study (drug vs. placebo) can be attributed to the drug. Similarly, the main effect in the analysis (Drug vs. placebo across all studies) can be attributed to the drug.

By contrast, random-assignment was not used to allocate studies to Orlistat vs. Sibutramine. We cannot assume that the populations in the two subgroups of studies were identical in all respects except for the choice of drug. It's possible, for example, that one drug was favored at sites that had an older population while the other was favored at sites that had a younger population. Therefore, while we can report that one subgroup did better than the other, we cannot say definitively that this was due to the drug.