

ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q2 Q1=1	Q2 Q1=0	Q7 Q1=1	Q7 Q1=0	Q8 Q1=1	Q8 Q1=0
1	1	0	0	0	5	1	75	7	0	0	75	58	7	6
3	1	0	0	0	3	4	76	5	0	1	76	89	5	6
6	1	0	1	0	3	4	73	6	0	1	73	77	6	7
7	1	0	0	0	4	1	72	6	0	0	72	93	6	6
8	1	0	0	0	4	1	88	6	0	0	88	41	6	6
9	1	0	0	0	4	3	90	6	0	1	90	65	6	7
10	1	0	0	0	3	4	39	5	0	0	39	70	5	6
11	1	0	0	0	5	2	40	4	0	0	40	65	4	5
12	1	1	1	0	5	5	68	9	1	1	68	89	9	7
13	1	1	1	1	5	1	71	8	1	1	71	64	8	4
14	1	0	1	0	3	1	98	4	0	0	98	82	4	5
15	1	1	0	1	3	1	80	7	1	1	80	82	7	4
18	1	0	1	1	4	2	42	8	0	1	42	75	8	7
19	1	0	0	0	3	3	39	6	0	1	39	80	6	5
22	1	0	1	0	5	4	55	6	0	0	55	83	6	6
23	1	1	0	0	4	2	74	6	1		74		6	
24	1	0	1	0	5	2	36	4	0		36		4	
26	1	1	1	1	5	2	49	7	1		49		7	
31	1	1	0	0	5	1	76	6	1		76		6	
32	1	0	0	0	3	1	92	4	0		92		4	
34	1	0	0	0	5	5	62	4	0		62		4	
35	1	0	0	0	5	4	54	7	0		54		7	
36	1	0	0	0	5	5	68	5	0		68		5	
38	1	1	0	1	5	5	60	6	1		60		6	
40	1	1	0	0	4	2	61	8	1		61		8	
2	0	0	1	0	1	1	58	6						
4	0	1	1	1	3	2	89	6						
5	0	1	1	1	4	4	77	7						
16	0	0	1	0	4	1	93	6						
17	0	0	1	0	3	1	41	6						
20	0	1	0	0	4	2	65	7						
21	0	0	0	0	4	2	70	6						
25	0	0	1	0	4	4	65	5						
27	0	1	1	1	1	2	89	7						
28	0	1	1	1	4	4	64	4						
29	0	0	0	0	5	3	82	5						
30	0	1	1	0	4	1	82	4						
33	0	1	1	1	3	4	75	7						
37	0	1	1	1	3	1	80	5						
39	0	0	0	0	4	2	83	6						

ASSIGNMENT

- Sort by Q1 Descending
- Create appropriate headings for copied data for Q2, Q7 and Q8
- Copy appropriate data to match each heading
- In Data Analysis, run Two-T test with unequal variances
- Comment on whether the difference in means is statistically significant

Note: Mean of binary data with 0 and 1 coding is the proportion of 1s.

Note: Use of reject (fail to reject) language is technical form. Shown but not to be used in your report.

t-Test: Two-Sample Assuming Unequal Variances

	Q2/Q1=1	Q2/Q1=0
Mean	0.32	0.533333
Variance	0.226667	0.266667
Observations	25	15
Hypothesized Mean Difference	0	
df	28	
t Stat	-1.30	
P(T<=t) one-tail	0.10	
t Critical one-tail	1.70	
P(T<=t) two-tail	0.20	
t Critical two-tail	2.05	

Difference in Q2 proportions (means) between Q1=1 and Q1=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population proportions (means) are equal.

t-Test: Two-Sample Assuming Unequal Variances

	Q7/Q1=1	Q7/Q1=0
Mean	65.52	74.2
Variance	318.9267	192.0286
Observations	25	15
Hypothesized Mean Difference	0	
df	35	
t Stat	-1.72	
P(T<=t) one-tail	0.05	
t Critical one-tail	1.69	
P(T<=t) two-tail	0.09	
t Critical two-tail	2.03	

Difference in Q7 means between Q1=1 and Q1=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.

t-Test: Two-Sample Assuming Unequal Variances

	Q8/Q1=1	Q8/Q1=0
Mean	6	5.8
Variance	2	1.028571
Observations	25	15
Hypothesized Mean Difference	0	
df	37	
t Stat	0.52	
P(T<=t) one-tail	0.30	
t Critical one-tail	1.69	
P(T<=t) two-tail	0.61	
t Critical two-tail	2.03	

Difference in Q8 means between Q1=1 and Q1=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.

ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q1 Q2=1	Q1 Q2=0	Q7 Q2=1	Q7 Q2=0	Q8 Q2=1	Q8 Q2=0
4	0	1	1	1	3	2	89	6	0	1	89	75	6	7
5	0	1	1	1	4	4	77	7	0	0	77	58	7	6
12	1	1	1	0	5	5	68	9	1	1	68	76	9	5
13	1	1	1	1	5	1	71	8	1	1	71	73	8	6
15	1	1	0	1	3	1	80	7	1	1	80	72	7	6
20	0	1	0	0	4	2	65	7	0	1	65	88	7	6
23	1	1	0	0	4	2	74	6	1	1	74	90	6	6
26	1	1	1	1	5	2	49	7	1	1	49	39	7	5
27	0	1	1	1	1	2	89	7	0	1	89	40	7	4
28	0	1	1	1	4	4	64	4	0	1	64	98	4	4
30	0	1	1	0	4	1	82	4	0	0	82	93	4	6
31	1	1	0	0	5	1	76	6	1	0	76	41	6	6
33	0	1	1	1	3	4	75	7	0	1	75	42	7	8
37	0	1	1	1	3	1	80	5	0	1	80	39	5	6
38	1	1	0	1	5	5	60	6	1	0	60	70	6	6
40	1	1	0	0	4	2	61	8	1	1	61	55	8	6
1	1	0	0	0	5	1	75	7		1		36		4
2	0	0	1	0	1	1	58	6		0		65		5
3	1	0	0	0	3	4	76	5		0		82		5
6	1	0	1	0	3	4	73	6		1		92		4
7	1	0	0	0	4	1	72	6		1		62		4
8	1	0	0	0	4	1	88	6		1		54		7
9	1	0	0	0	4	3	90	6		1		68		5
10	1	0	0	0	3	4	39	5		0		83		6
11	1	0	0	0	5	2	40	4						
14	1	0	1	0	3	1	98	4						
16	0	0	1	0	4	1	93	6						
17	0	0	1	0	3	1	41	6						
18	1	0	1	1	4	2	42	8						
19	1	0	0	0	3	3	39	6						
21	0	0	0	0	4	2	70	6						
22	1	0	1	0	5	4	55	6						
24	1	0	1	0	5	2	36	4						
25	0	0	1	0	4	4	65	5						
29	0	0	0	0	5	3	82	5						
32	1	0	0	0	3	1	92	4						
34	1	0	0	0	5	5	62	4						
35	1	0	0	0	5	4	54	7						
36	1	0	0	0	5	5	68	5						
39	0	0	0	0	4	2	83	6						

OPTIONAL

Sort by Q2 Descending

- 1 Create appropriate headings for copied data for Q1, Q7 and Q8
- 2 Copy appropriate data to match each heading
- 3 In Data Analysis, run Two-T test with unequal variances
- 4 Comment on whether the difference in means is statistically significant
- 5 Note: Mean of binary data with 0 and 1 coding is the proportion of 1s.
Note: Use of reject (fail to reject) language is technical form. Shown but not to be used in your report.

Q1 t-Test: Two-Sample Assuming Unequal Variances

	Q1/Q2=1	Q1/Q2=0
Mean	0.5	0.708333
Variance	0.266667	0.21558
Observations	16	24
Hypothesized Mean Difference	0	
df	30	
t Stat	-1.30	
P(T<=t) one-tail	0.10	
t Critical one-tail	1.70	
P(T<=t) two-tail	0.20	
t Critical two-tail	2.04	

Difference in Q1 proportions (means) between Q2=1 and Q2=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population proportions (means) are equal.

Q7 t-Test: Two-Sample Assuming Unequal Variances

	Q7/Q2=1	Q7/Q2=0
Mean	72.5	66.29167
Variance	118.6667	386.9112
Observations	16	24
Hypothesized Mean Difference	0	
df	37	
t Stat	1.28	
P(T<=t) one-tail	0.10	
t Critical one-tail	1.69	
P(T<=t) two-tail	0.21	
t Critical two-tail	2.03	

Difference in Q7 means between Q2=1 and Q2=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.

Q8 t-Test: Two-Sample Assuming Unequal Variances

	Q8/Q2=1	Q8/Q2=0
Mean	6.5	5.541667
Variance	1.866667	1.128623
Observations	16	24
Hypothesized Mean Difference	0	
df	27	
t Stat	2 3/8	
P(T<=t) one-tail	0.01	
t Critical one-tail	1 5/7	
P(T<=t) two-tail	0.03	
t Critical two-tail	2	

Difference in Q8 means between Q2=1 and Q2=0 IS statistically significant

Reject the null hypothesis: that the two population means are equal

Accept the alternate hypothesis: that the two population means are different.

ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q4 Q3=1	Q4 Q3=C	Q7 Q3=1	Q7 Q3=C	Q8 Q3=1	Q8 Q3=0
2	0	0	1	0	1	1	58	6	0	0	73	75	6	7
4	0	1	1	1	3	2	89	6	0	0	68	76	9	5
5	0	1	1	1	4	4	77	7	1	0	71	72	8	6
6	1	0	1	0	3	4	73	6	0	0	98	88	4	6
12	1	1	1	0	5	5	68	9	1	0	42	90	8	6
13	1	1	1	1	5	1	71	8	0	0	55	39	6	5
14	1	0	1	0	3	1	98	4	0	0	36	40	4	4
16	0	0	1	0	4	1	93	6	1	1	49	80	7	7
17	0	0	1	0	3	1	41	6	0	0	58	39	6	6
18	1	0	1	1	4	2	42	8	1	0	89	74	6	6
22	1	0	1	0	5	4	55	6	1	0	77	76	7	6
24	1	0	1	0	5	2	36	4	0	0	93	92	6	4
25	0	0	1	0	4	4	65	5	0	0	41	62	6	4
26	1	1	1	1	5	2	49	7	0	0	65	54	5	7
27	0	1	1	1	1	2	89	7	1	0	89	68	7	5
28	0	1	1	1	4	4	64	4	1	1	64	60	4	6
30	0	1	1	0	4	1	82	4	0	0	82	61	4	8
33	0	1	1	1	3	4	75	7	1	0	75	65	7	7
37	0	1	1	1	3	1	80	5	1	0	80	70	5	6
1	1	0	0	0	5	1	75	7				82		5
3	1	0	0	0	3	4	76	5		0		83		6
7	1	0	0	0	4	1	72	6						
8	1	0	0	0	4	1	88	6						
9	1	0	0	0	4	3	90	6						
10	1	0	0	0	3	4	39	5						
11	1	0	0	0	5	2	40	4						
15	1	1	0	1	3	1	80	7						
19	1	0	0	0	3	3	39	6						
20	0	1	0	0	4	2	65	7						
21	0	0	0	0	4	2	70	6						
23	1	1	0	0	4	2	74	6						
29	0	0	0	0	5	3	82	5						
31	1	1	0	0	5	1	76	6						
32	1	0	0	0	3	1	92	4						
34	1	0	0	0	5	5	62	4						
35	1	0	0	0	5	4	54	7						
36	1	0	0	0	5	5	68	5						
38	1	1	0	1	5	5	60	6						
39	0	0	0	0	4	2	83	6						
40	1	1	0	0	4	2	61	8						

OPTIONAL

Sort by Q3 Descending

- 1 Create appropriate headings for copied data for Q4, Q7 and Q8
- 2 Copy appropriate data to match each heading
- 3 In Data Analysis, run Two-T test with unequal variances
- 4 Comment on whether the difference in means is statistically significant
- 5 Note: Mean of binary data with 0 and 1 coding is the proportion of 1s.
Note: Use of reject (fail to reject) language is technical form. Shown but not to be used in your report.

t-Test: Two-Sample Assuming Unequal Variances

	Q4/Q3=1	Q4/Q3=0
Mean	0.473684	0.095238
Variance	0.263158	0.090476
Observations	19	21
Hypothesized Mean Difference	0	
df	28	
t Stat	2.81	
P(T<=t) one-tail	0.00	
t Critical one-tail	1.70	
P(T<=t) two-tail	0.01	
t Critical two-tail	2.05	

Difference in Q4 proportions (means) between Q3=1 and Q3=0 IS statistically significant

Reject the null hypothesis: that the two population proportions (means) are equal

Accept the alternate hypothesis: that the two population proportions (means) are different.

t-Test: Two-Sample Assuming Unequal Variances

	Q7/Q3=1	Q7/Q3=0
Mean	68.68421	68.85714
Variance	332.5614	253.1286
Observations	19	21
Hypothesized Mean Difference	0	
df	36	
t Stat	-0.03	
P(T<=t) one-tail	0.49	
t Critical one-tail	1.69	
P(T<=t) two-tail	0.97	
t Critical two-tail	2.03	

Difference in Q7 means between Q3=1 and Q3=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.

t-Test: Two-Sample Assuming Unequal Variances

	Q8/Q3=1	Q8/Q3=0
Mean	6.052632	5.809524
Variance	2.163743	1.161905
Observations	19	21
Hypothesized Mean Difference	0	
df	33	
t Stat	0.59	
P(T<=t) one-tail	0.28	
t Critical one-tail	1.69	
P(T<=t) two-tail	0.56	
t Critical two-tail	2.03	

Difference in Q8 means between Q3=1 and Q3=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.

ID	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q3 Q4=1	Q3 Q4=0	Q7 Q4=1	Q7 Q4=0	Q8 Q4=1	Q8 Q4=0
4	0	1	1	1	3	2	89	6	1	0	89	75	6	7
5	0	1	1	1	4	4	77	7	1	1	77	58	7	6
13	1	1	1	1	5	1	71	8	1	0	71	76	8	5
15	1	1	0	1	3	1	80	7	0	1	80	73	7	6
18	1	0	1	1	4	2	42	8	1	0	42	72	8	6
26	1	1	1	1	5	2	49	7	1	0	49	88	7	6
27	0	1	1	1	1	2	89	7	1	0	89	90	7	6
28	0	1	1	1	4	4	64	4	1	0	64	39	4	5
33	0	1	1	1	3	4	75	7	1	0	75	40	7	4
37	0	1	1	1	3	1	80	5	1	1	80	68	5	9
38	1	1	0	1	5	5	60	6	0	1	60	98	6	4
1	1	0	0	0	5	1	75	7		1		93		6
2	0	0	1	0	1	1	58	6		1		41		6
3	1	0	0	0	3	4	76	5		0		39		6
6	1	0	1	0	3	4	73	6		0		65		7
7	1	0	0	0	4	1	72	6		0		70		6
8	1	0	0	0	4	1	88	6		1		55		6
9	1	0	0	0	4	3	90	6		0		74		6
10	1	0	0	0	3	4	39	5		1		36		4
11	1	0	0	0	5	2	40	4		1		65		5
12	1	1	1	0	5	5	68	9		0		82		5
14	1	0	1	0	3	1	98	4		1		82		4
16	0	0	1	0	4	1	93	6		0		76		6
17	0	0	1	0	3	1	41	6		0		92		4
19	1	0	0	0	3	3	39	6		0		62		4
20	0	1	0	0	4	2	65	7		0		54		7
21	0	0	0	0	4	2	70	6		0		68		5
22	1	0	1	0	5	4	55	6		0		83		6
23	1	1	0	0	4	2	74	6		0		61		8
24	1	0	1	0	5	2	36	4						
25	0	0	1	0	4	4	65	5						
29	0	0	0	0	5	3	82	5						
30	0	1	1	0	4	1	82	4						
31	1	1	0	0	5	1	76	6						
32	1	0	0	0	3	1	92	4						
34	1	0	0	0	5	5	62	4						
35	1	0	0	0	5	4	54	7						
36	1	0	0	0	5	5	68	5						
39	0	0	0	0	4	2	83	6						
40	1	1	0	0	4	2	61	8						

OPTIONAL

Sort by Q4 Descending

- 1 Create appropriate headings for copied data for Q3, Q7 and Q8
- 2 Copy appropriate data to match each heading
- 3 In Data Analysis, run Two-T test with unequal variances
- 4 Comment on whether the difference in means is statistically significant
- 5 Note: Mean of binary data with 0 and 1 coding is the proportion of 1s.
Note: Use of reject (fail to reject) lagnuage is technical form. Shown but not to be used in your report.

t-Test: Two-Sample Assuming Unequal Variances

	Q3/Q4=1	Q3/Q4=0
Mean	0.818182	0.363636
Variance	0.163636	0.254545
Observations	11	11
Hypothesized Mean Difference	0	
df	19	
t Stat	2.33	
P(T<=t) one-tail	0.02	
t Critical one-tail	1.73	
P(T<=t) two-tail	0.03	
t Critical two-tail	2.09	

Difference in Q3 proportions (means) between Q4=1 and Q4=0 IS statistically significant

Reject the null hypothesis: that the two population proportions (means) are equal

Accept the alternate hypothesis: that the two population proportions (means) are different.

t-Test: Two-Sample Assuming Unequal Variances

	Q7/Q4=1	Q7/Q4=0
Mean	70.54545	68.10345
Variance	235.4727	308.8103
Observations	11	29
Hypothesized Mean Difference	0	
df	21	
t Stat	0.43	
P(T<=t) one-tail	0.34	
t Critical one-tail	1.72	
P(T<=t) two-tail	0.67	
t Critical two-tail	2.08	

Difference in Q7 means between Q4=1 and Q4=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.

t-Test: Two-Sample Assuming Unequal Variances

	Q8/Q4=1	Q8/Q4=0
Mean	6.545455	5.689655
Variance	1.472727	1.507389
Observations	11	29
Hypothesized Mean Difference	0	
df	18	
t Stat	1.99	
P(T<=t) one-tail	0.03	
t Critical one-tail	1.73	
P(T<=t) two-tail	0.06	
t Critical two-tail	2.10	

Difference in Q8 means between Q4=1 and Q4=0 IS NOT statistically significant

Fail to reject the null hypothesis: that the population means are equal.