STATISTICAL ANALYSIS RESULTS

Online Course Completion Study

DATA SUMMARY

Metric	Value
Original Dataset Size	2,100 rows
Negative Time Values Removed	5 rows (0.24%)
Final Clean Dataset	2,095 rows
Completion Rate	1006 / 2095 (48.02%)
Average Time Spent	15.19 hours
Average Age	38.61 years

OBJECTIVE 2: COMPARE TIME SPENT BY COMPLETION STATUS

Two-Sample T-Test (Independent Samples)

Group	N	Mean (hours)	Std Dev	Min	Max
Completed (Yes)	1006	15.1557	4.8677	1.8347	29.9158
Not Completed (No)	1089	15.2218	4.9808	0.3556	30.3407
Difference		-0.0661			

Test Statistic	Value
t-statistic	-0.3069
Degrees of Freedom	2093
p-value (two-tailed)	0.7589
Significance Level (α)	0.05
Decision	FAIL TO REJECT H■
Conclusion	No significant difference

OBJECTIVE 3: TEST IF AVERAGE TIME EXCEEDS 15 HOURS

One-Sample T-Test (vs. Benchmark from Previous Study)

Statistic	Value
Sample Size (N)	2095
Sample Mean	15.1900 hours

Sample Std Dev	4.9258 hours
Hypothesized Mean (μ■)	15.0000 hours
Difference (x■ - μ■)	0.1900 hours
Standard Error	0.1076

Test Statistic	Value
t-statistic	1.7659
Degrees of Freedom	2094
p-value (two-tailed)	0.0776
p-value (one-tailed)	0.0388
Significance Level (α)	0.05
Test Direction	One-tailed (greater than)
Decision	REJECT H■
Conclusion	Average EXCEEDS 15 hours

OBJECTIVE 4: COMPARE COURSE TYPE BY COMPLETION STATUS

Chi-Squared Test of Independence

Observed Frequencies:

Course Type	Not Completed	Completed	Total
Business	373	346	719
Creative	355	311	666
Technical	361	349	710
Total	**1089**	**1006**	**2095**

Expected Frequencies:

Course Type	Not Completed	Completed	Total
Business	373.74	345.26	719.00
Creative	346.19	319.81	666.00
Technical	369.06	340.94	710.00

Test Statistic	Value
Chi-Squared (χ^2)	0.8366
Degrees of Freedom	2
p-value	0.6582
Significance Level (α)	0.05
Decision	FAIL TO REJECT H∎
Conclusion	Variables are independent

OBJECTIVE 5: COMPARE DEVICE USED BY TIME SPENT

One-Way ANOVA (Analysis of Variance)

Device	N	Mean (hours)	Std Dev	Min	Max
Desktop	713	15.1746	4.8676	1.1699	29.8290
Mobile	657	15.0343	4.8200	0.3556	30.3407
Tablet	725	15.3463	5.0772	2.2218	30.2509

ANOVA Table:

Source	Sum of Squares	df	Mean Square	F-statistic	p-value
Between Groups	33.8147	2	16.9073	0.6966	0.4984
Within Groups	50773.2544	2092	24.2702		
Total	**50807.0691**	**2094**			

Test Statistic	Value
F-statistic	0.6966
p-value	0.4984
Significance Level (α)	0.05
Decision	FAIL TO REJECT H■
Conclusion	No significant difference across devices

OBJECTIVE 6: TEST IF BELOW AVERAGE AGE HAS HIGHER COMPLETION

Two-Sample Proportion Z-Test

Age Group	N	Completed	Not Completed	Proportion	Percentage
Below Average	1039	501	538	0.4822	48.22%
Above Average	1056	505	551	0.4782	47.82%
Difference				0.0040	0.40%

Test Statistic	Value
Average Age Cutoff	38.61 years
Pooled Proportion ($p\blacksquare$)	0.4802
Standard Error	0.0218
z-statistic	0.1821
p-value (one-tailed)	0.4278
Significance Level (α)	0.05
Test Direction	One-tailed (greater than)
Decision	FAIL TO REJECT H$\blacksquare$
Conclusion	No evidence of higher completion for below-average age

SUMMARY OF ALL STATISTICAL TESTS

Objective	Test Used	Test Statistic	p-value	Decision	Conclusion
Obj 2: Time by Completion	Two-Sample T-Test	t = -0.3069	0.7589	Fail to Reject H■	No significant difference
Obj 3: Time vs 15 hours	One-Sample T-Test	t = 1.7659	0.0388	Reject H■	Significantly exceeds 15 hrs
Obj 4: Course Type by Completion	Chi-Squared Test	χ^2 = 0.8366	0.6582	Fail to Reject H■	Variables are independent
Obj 5: Device by Time Spent	One-Way ANOVA	F = 0.6966	0.4984	Fail to Reject H■	No significant difference
Obj 6: Age Group by Completion	Two-Sample Proportion Z	z = 0.1821	0.4278	Fail to Reject H■	No significant difference

Note: Significance level α = 0.05 used for all tests. Only Objective 3 (One-Sample T-Test) resulted in rejecting the null hypothesis.