```
Your temporary usage period for IBM SPSS Statistics will expire in 3498 days.

* ============================================================.
* One Tailed T Test - SPSS Syntax
* OnlineInternetCafe.com statistical test workflow
* Test folder:
* D:\low kda score priority basis posts\first post\One Tailed T Test
*
* IMPORTANT FILE USED BY THIS SYNTAX:
* spss_ready_data.csv
*
* This file should already be created by the Python workflow.
*
* Main example:
* Variable: G3 final grade
* H0: mu = 11.5
* H1: mu > 11.5
*
* SPSS standard T-TEST table reports Sig. (2-tailed).
* Therefore, this syntax also calculates the correct right-tailed
* p-value directly using the t distribution:
* p_right = 1 - CDF.T(t_statistic, df)
* ============================================================.

SET PRINTBACK=ON.
SET MPRINT=ON.
SET DECIMAL=DOT.
  55  0 M>  SET DECIMAL=DOT.
SET TVARS=NAMES.
  56  0 M>  SET TVARS=NAMES.
SET TNUMBERS=VALUES.
  57  0 M>  SET TNUMBERS=VALUES.
SET OLANG=ENGLISH.
  58  0 M>  SET OLANG=ENGLISH.

  59  0 M>
* ------------------------------------------------------------.
  60  0 M>  * ------------------------------------------------------------.
* 1. Import the SPSS-ready CSV made by Python.
  61  0 M>  * 1. Import the SPSS-ready CSV made by Python.
* ------------------------------------------------------------.
  62  0 M>  * ------------------------------------------------------------.
```

```
  63  0 M>
GET DATA
  64  0 M>  GET DATA
  /TYPE=TXT
  65  0 M>    /TYPE=TXT
  /FILE='D:\low kda score priority basis posts\first post\One Tailed T Test\sp
ss_ready_data.csv'
  66  0 M>    /FILE='D:\low kda score priority basis posts\first post\One Tail
ed T Test\spss_ready_data.csv'
  /ENCODING='UTF8'
  67  0 M>    /ENCODING='UTF8'
  /DELCASE=LINE
  68  0 M>    /DELCASE=LINE
  /DELIMITERS=","
  69  0 M>    /DELIMITERS=","
  /QUALIFIER='"'
  70  0 M>    /QUALIFIER='"'
  /ARRANGEMENT=DELIMITED
  71  0 M>    /ARRANGEMENT=DELIMITED
  /FIRSTCASE=2
  72  0 M>    /FIRSTCASE=2
  /VARIABLES=
  73  0 M>    /VARIABLES=
    school A10
  74  0 M>      school A10
    sex A10
  75  0 M>      sex A10
    age F8.0
  76  0 M>      age F8.0
    address A10
  77  0 M>      address A10
    famsize A10
  78  0 M>      famsize A10
    Pstatus A10
  79  0 M>      Pstatus A10
    Medu F8.0
  80  0 M>      Medu F8.0
    Fedu F8.0
  81  0 M>      Fedu F8.0
    Mjob A20
  82  0 M>      Mjob A20
```

```
  Fjob A20
 83  0 M>      Fjob A20
  reason A20
 84  0 M>      reason A20
  guardian A20
 85  0 M>      guardian A20
  traveltime F8.0
 86  0 M>      traveltime F8.0
  studytime F8.0
 87  0 M>      studytime F8.0
  failures F8.0
 88  0 M>      failures F8.0
  schoolsup A10
 89  0 M>      schoolsup A10
  famsup A10
 90  0 M>      famsup A10
  paid A10
 91  0 M>      paid A10
  activities A10
 92  0 M>      activities A10
  nursery A10
 93  0 M>      nursery A10
  higher A10
 94  0 M>      higher A10
  internet A10
 95  0 M>      internet A10
  romantic A10
 96  0 M>      romantic A10
  famrel F8.0
 97  0 M>      famrel F8.0
  freetime F8.0
 98  0 M>      freetime F8.0
  goout F8.0
 99  0 M>      goout F8.0
  Dalc F8.0
100  0 M>      Dalc F8.0
  Walc F8.0
101  0 M>      Walc F8.0
  health F8.0
102  0 M>      health F8.0
  absences F8.0
103  0 M>      absences F8.0
```

```
    G1 F8.0
 104  0 M>      G1 F8.0
    G2 F8.0
 105  0 M>      G2 F8.0
    G3 F8.0.
 106  0 M>      G3 F8.0.
CACHE.
 107  0 M>  CACHE.
EXECUTE.
 108  0 M>  EXECUTE.

 109  0 M>
DATASET NAME StudentData WINDOW=FRONT.
 110  0 M>  DATASET NAME StudentData WINDOW=FRONT.

 111  0 M>
VARIABLE LABELS
 112  0 M>  VARIABLE LABELS
  school     'Student school'
 113  0 M>    school     'Student school'
  sex        'Student sex'
 114  0 M>    sex        'Student sex'
  age        'Student age'
 115  0 M>    age        'Student age'
  address    'Home address type'
 116  0 M>    address    'Home address type'
  famsize    'Family size'
 117  0 M>    famsize    'Family size'
  Pstatus    'Parent cohabitation status'
 118  0 M>    Pstatus    'Parent cohabitation status'
  Medu       'Mother education level'
 119  0 M>    Medu       'Mother education level'
  Fedu       'Father education level'
 120  0 M>    Fedu       'Father education level'
  Mjob       'Mother job'
 121  0 M>    Mjob       'Mother job'
  Fjob       'Father job'
 122  0 M>    Fjob       'Father job'
  reason     'Reason for choosing school'
 123  0 M>    reason     'Reason for choosing school'
  guardian   'Student guardian'
 124  0 M>    guardian   'Student guardian'
```

```
 traveltime 'Home to school travel time'
125  0 M>    traveltime 'Home to school travel time'
 studytime  'Weekly study time'
126  0 M>    studytime  'Weekly study time'
 failures   'Number of past class failures'
127  0 M>    failures   'Number of past class failures'
 schoolsup  'Extra educational support'
128  0 M>    schoolsup  'Extra educational support'
 famsup     'Family educational support'
129  0 M>    famsup     'Family educational support'
 paid       'Extra paid classes'
130  0 M>    paid       'Extra paid classes'
 activities 'Extra-curricular activities'
131  0 M>    activities 'Extra-curricular activities'
 nursery    'Attended nursery school'
132  0 M>    nursery    'Attended nursery school'
 higher     'Wants higher education'
133  0 M>    higher     'Wants higher education'
 internet   'Internet access at home'
134  0 M>    internet   'Internet access at home'
 romantic   'In a romantic relationship'
135  0 M>    romantic   'In a romantic relationship'
 famrel     'Quality of family relationships'
136  0 M>    famrel     'Quality of family relationships'
 freetime   'Free time after school'
137  0 M>    freetime   'Free time after school'
 goout      'Going out with friends'
138  0 M>    goout      'Going out with friends'
 Dalc       'Workday alcohol consumption'
139  0 M>    Dalc       'Workday alcohol consumption'
 Walc       'Weekend alcohol consumption'
140  0 M>    Walc       'Weekend alcohol consumption'
 health     'Current health status'
141  0 M>    health     'Current health status'
 absences   'Number of school absences'
142  0 M>    absences   'Number of school absences'
 G1         'First period grade'
143  0 M>    G1         'First period grade'
 G2         'Second period grade'
144  0 M>    G2         'Second period grade'
 G3         'Final grade'.
145  0 M>    G3         'Final grade'.
```

```
 146  0 M>
VALUE LABELS
 147  0 M>  VALUE LABELS
  school 'GP' 'Gabriel Pereira' 'MS' 'Mousinho da Silveira'
 148  0 M>    school 'GP' 'Gabriel Pereira' 'MS' 'Mousinho da Silveira'
  sex 'F' 'Female' 'M' 'Male'
 149  0 M>    sex 'F' 'Female' 'M' 'Male'

>Warning # 4492 in column 3.  Text: sex
>The (ADD) VALUE LABELS command included a symbol other than a value where a
>value (either numeric or string) was expected.  For compatibility with
>previous systems, a parenthesized value would have been acceptable.  All valu
e
>labels up to the next slash will be ignored.
  address 'U' 'Urban' 'R' 'Rural'
 150  0 M>    address 'U' 'Urban' 'R' 'Rural'
  famsize 'LE3' 'Less or equal to 3' 'GT3' 'Greater than 3'
 151  0 M>    famsize 'LE3' 'Less or equal to 3' 'GT3' 'Greater than 3'
  Pstatus 'T' 'Parents living together' 'A' 'Parents apart'
 152  0 M>    Pstatus 'T' 'Parents living together' 'A' 'Parents apart'
  schoolsup famsup paid activities nursery higher internet romantic
 153  0 M>    schoolsup famsup paid activities nursery higher internet romanti
c
    'yes' 'Yes'
 154  0 M>      'yes' 'Yes'
    'no' 'No'.
 155  0 M>      'no' 'No'.

 156  0 M>
FORMATS age Medu Fedu traveltime studytime failures famrel freetime goout Dalc
 Walc health absences G1 G2 G3 (F8.0).
 157  0 M>  FORMATS age Medu Fedu traveltime studytime failures famrel freetim
e goout Dalc Walc health absences G1 G2 G3 (F8.0).
EXECUTE.
 158  0 M>  EXECUTE.

 159  0 M>
SAVE OUTFILE='D:\low kda score priority basis posts\first post\One Tailed T Te
st\spss_ready_data.sav'
 160  0 M>  SAVE OUTFILE='D:\low kda score priority basis posts\first post\One
 Tailed T Test\spss_ready_data.sav'
```

```
  /COMPRESSED.
 161  0 M>    /COMPRESSED.

 162  0 M>
* ------------------------------------------------------------.
 163  0 M>  * ------------------------------------------------------------.
* 2. Basic inspection and descriptive statistics.
 164  0 M>  * 2. Basic inspection and descriptive statistics.
* ------------------------------------------------------------.
 165  0 M>  * ------------------------------------------------------------.

 166  0 M>
DATASET ACTIVATE StudentData.
 167  0 M>  DATASET ACTIVATE StudentData.

 168  0 M>
FREQUENCIES VARIABLES=school sex higher internet schoolsup famsup paid activit
ies nursery romantic
 169  0 M>  FREQUENCIES VARIABLES=school sex higher internet schoolsup famsup
paid activities nursery romantic
  /ORDER=ANALYSIS.
 170  0 M>    /ORDER=ANALYSIS.
```

Frequencies

Notes

Output Created		03-JUN-2026 18:48:54
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=school sex higher internet schoolsup famsup paid activities nursery romantic /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

[StudentData] D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav

Statistics

		school	sex	higher	internet	schoolsup	famsup	paid
N	Valid	649	649	649	649	649	649	649
	Missing	0	0	0	0	0	0	0

Statistics

		activities	nursery	romantic
N	Valid	649	649	649
	Missing	0	0	0

Frequency Table

school

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	GP	423	65.2	65.2	65.2
	MS	226	34.8	34.8	100.0
	Total	649	100.0	100.0	

sex

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	F	383	59.0	59.0	59.0
	M	266	41.0	41.0	100.0
	Total	649	100.0	100.0	

higher

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	69	10.6	10.6	10.6
	yes	580	89.4	89.4	100.0
	Total	649	100.0	100.0	

internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	151	23.3	23.3	23.3
	yes	498	76.7	76.7	100.0
	Total	649	100.0	100.0	

schoolsup

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	581	89.5	89.5	89.5
	yes	68	10.5	10.5	100.0
	Total	649	100.0	100.0	

famsup

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	251	38.7	38.7	38.7
	yes	398	61.3	61.3	100.0
	Total	649	100.0	100.0	

paid

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	610	94.0	94.0	94.0
	yes	39	6.0	6.0	100.0
	Total	649	100.0	100.0	

activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	334	51.5	51.5	51.5
	yes	315	48.5	48.5	100.0
	Total	649	100.0	100.0	

nursery

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	128	19.7	19.7	19.7
	yes	521	80.3	80.3	100.0
	Total	649	100.0	100.0	

romantic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	410	63.2	63.2	63.2
	yes	239	36.8	36.8	100.0
	Total	649	100.0	100.0	

```
 171  0 M>
DESCRIPTIVES VARIABLES=G1 G2 G3 age studytime failures absences
 172  0 M>  DESCRIPTIVES VARIABLES=G1 G2 G3 age studytime failures absences
```

```
 /STATISTICS=MEAN STDDEV MIN MAX.
173  0 M>    /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Notes

Output Created		03-JUN-2026 18:48:54
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=G1 G2 G3 age studytime failures absences /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
G1	649	0	19	11.40	2.745
G2	649	0	19	11.57	2.914
G3	649	0	19	11.91	3.231
age	649	15	22	16.74	1.218
studytime	649	1	4	1.93	.830
failures	649	0	3	.22	.593
absences	649	0	32	3.66	4.641
Valid N (listwise)	649				

```
 174  0 M>
EXAMINE VARIABLES=G3
 175  0 M>  EXAMINE VARIABLES=G3
  /PLOT BOXPLOT HISTOGRAM NPPLOT
 176  0 M>    /PLOT BOXPLOT HISTOGRAM NPPLOT
  /COMPARE GROUPS
 177  0 M>    /COMPARE GROUPS
  /STATISTICS DESCRIPTIVES
 178  0 M>    /STATISTICS DESCRIPTIVES
  /CINTERVAL 95
 179  0 M>    /CINTERVAL 95
  /MISSING LISTWISE
 180  0 M>    /MISSING LISTWISE
  /NOTOTAL.
 181  0 M>    /NOTOTAL.
```

Explore

Notes

Output Created		03-JUN-2026 18:48:54
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User-defined missing values for dependent variables are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any dependent variable or factor used.
Syntax		EXAMINE VARIABLES=G3 /PLOT BOXPLOT HISTOGRAM NPPLOT /COMPARE GROUPS /STATISTICS DESCRIPTIVES /CINTERVAL 95 /MISSING LISTWISE...
Resources	Processor Time	00:00:04.78
	Elapsed Time	00:00:02.25

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
G3	649	100.0%	0	0.0%	649	100.0%

Descriptives

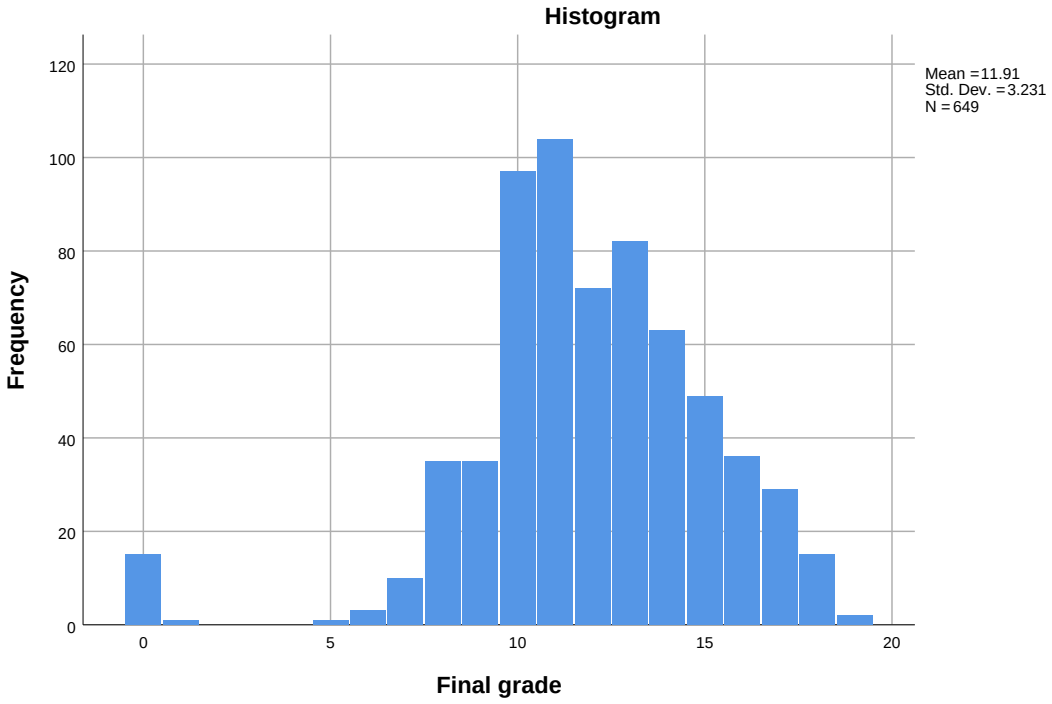
			Statistic	Std. Error
G3	Mean		11.91	.127
	95% Confidence Interval for Mean	Lower Bound	11.66	
		Upper Bound	12.16	
	5% Trimmed Mean		12.06	
	Median		12.00	
	Variance		10.437	
	Std. Deviation		3.231	
	Minimum		0	
	Maximum		19	
	Range		19	
	Interquartile Range		4	
	Skewness		-.913	.096
	Kurtosis		2.712	.192

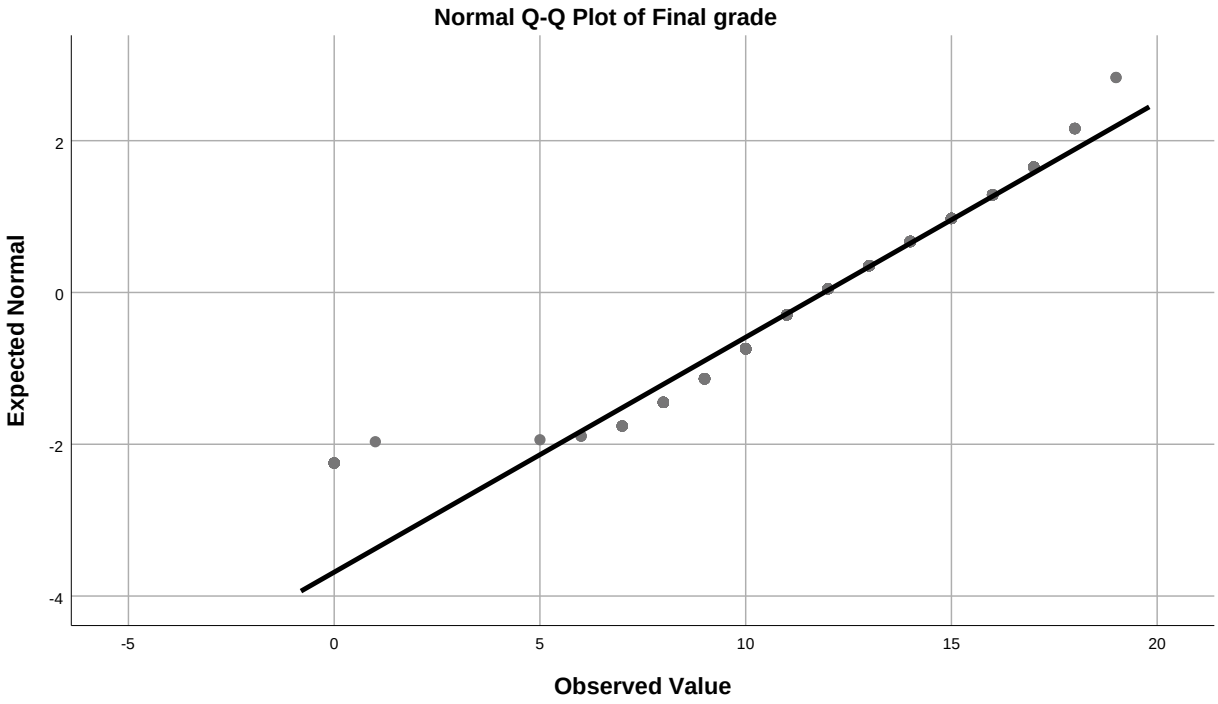
Tests of Normality

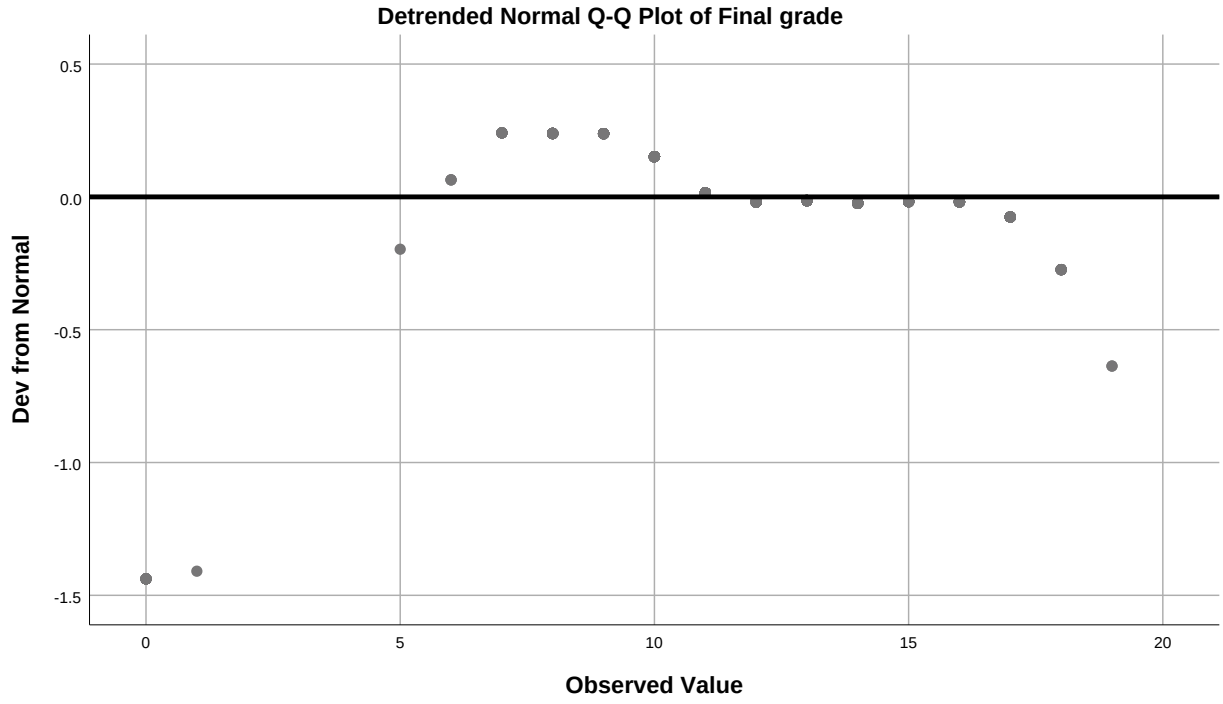
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
G3	.124	649	.000	.926	649	.000

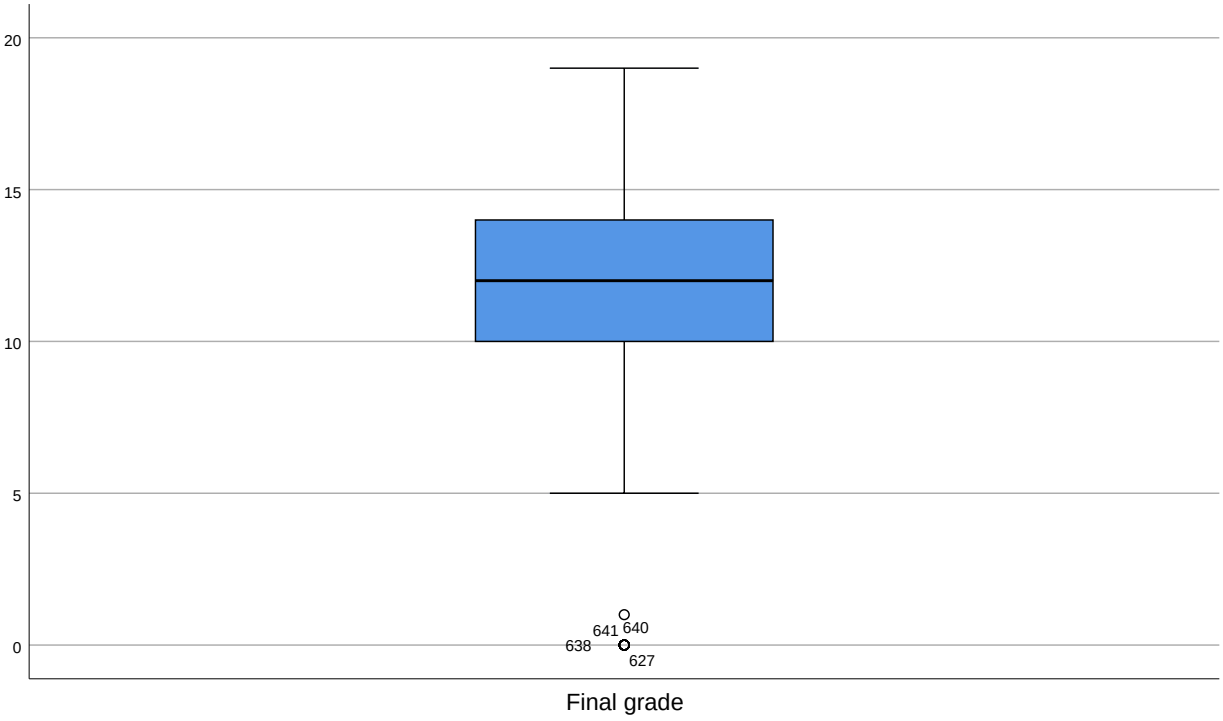
a. Lilliefors Significance Correction

Final grade


Histogram
Mean =11.91
Std. Dev. =3.231
N =649
Frequency
120
100
80
60
40
20
0
0
5
10
15
20
Final grade


Normal Q-Q Plot of Final grade
Expected Normal
2
0
-2
-4
-5
0
5
10
15
20
Observed Value






```
 182  0 M>
* ------------------------------------------------------------.
 183  0 M>  * ------------------------------------------------------------.
* 3. Standard SPSS one-sample t test.
```

```
 184  0 M>  * 3. Standard SPSS one-sample t test.
*
 185  0 M>  *
* SPSS reports Sig. (2-tailed).
 186  0 M>  * SPSS reports Sig. (2-tailed).
* Because our directional hypothesis is H1: mu > 11.5,
 187  0 M>  * Because our directional hypothesis is H1: mu > 11.5,
* use the custom table below for the correct one-tailed p-value.
 188  0 M>  * use the custom table below for the correct one-tailed p-value.
* ------------------------------------------------------------.
 189  0 M>  * ------------------------------------------------------------.

 190  0 M>
T-TEST
 191  0 M>  T-TEST
  /TESTVAL=11.5
 192  0 M>    /TESTVAL=11.5
  /MISSING=ANALYSIS
 193  0 M>    /MISSING=ANALYSIS
  /VARIABLES=G3
 194  0 M>    /VARIABLES=G3
  /CRITERIA=CI(.95).
 195  0 M>    /CRITERIA=CI(.95).
```

T-Test

Notes

Output Created		03-JUN-2026 18:48:57
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax		T-TEST /TESTVAL=11.5 /MISSING=ANALYSIS /VARIABLES=G3 /CRITERIA=CI(.95).
Resources	Processor Time	00:00:00.03
	Elapsed Time	00:00:00.01

One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
G3	649	11.91	3.231	.127

One-Sample Test

	Test Value = 11.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
G3	3.202	648	.001	.406	.16	.66

```
 196  0 M>
* ------------------------------------------------------------.
 197  0 M>  * ------------------------------------------------------------.
* 4. Correct one-tailed calculation table.
 198  0 M>  * 4. Correct one-tailed calculation table.
* ------------------------------------------------------------.
 199  0 M>  * ------------------------------------------------------------.

 200  0 M>
DATASET ACTIVATE StudentData.
 201  0 M>  DATASET ACTIVATE StudentData.

 202  0 M>
AGGREGATE
 203  0 M>  AGGREGATE
  /OUTFILE='D:\low kda score priority basis posts\first post\One Tailed T Test
\one_tailed_t_test_spss_summary_work.sav'
 204  0 M>    /OUTFILE='D:\low kda score priority basis posts\first post\One T
ailed T Test\one_tailed_t_test_spss_summary_work.sav'
  /BREAK=
 205  0 M>    /BREAK=
  /n_valid=N(G3)
 206  0 M>    /n_valid=N(G3)
  /xbar=MEAN(G3)
 207  0 M>    /xbar=MEAN(G3)
  /sample_sd=SD(G3)
 208  0 M>    /sample_sd=SD(G3)
  /minimum_g3=MIN(G3)
 209  0 M>    /minimum_g3=MIN(G3)
  /maximum_g3=MAX(G3).
 210  0 M>    /maximum_g3=MAX(G3).

 211  0 M>
GET FILE='D:\low kda score priority basis posts\first post\One Tailed T Test\o
ne_tailed_t_test_spss_summary_work.sav'.
 212  0 M>  GET FILE='D:\low kda score priority basis posts\first post\One Tai
led T Test\one_tailed_t_test_spss_summary_work.sav'.
DATASET NAME OneTailedSummary WINDOW=FRONT.
 213  0 M>  DATASET NAME OneTailedSummary WINDOW=FRONT.

 214  0 M>
COMPUTE mu0 = 11.5.
```

```
 215  0 M>  COMPUTE mu0 = 11.5.
COMPUTE alpha = 0.05.
 216  0 M>  COMPUTE alpha = 0.05.
COMPUTE df = n_valid - 1.
 217  0 M>  COMPUTE df = n_valid - 1.
COMPUTE standard_error = sample_sd / SQRT(n_valid).
 218  0 M>  COMPUTE standard_error = sample_sd / SQRT(n_valid).
COMPUTE t_statistic = (xbar - mu0) / standard_error.
 219  0 M>  COMPUTE t_statistic = (xbar - mu0) / standard_error.

 220  0 M>
* Right-tailed test for H1: mu > mu0.
 221  0 M>  * Right-tailed test for H1: mu > mu0.
COMPUTE p_right_tailed = 1 - CDF.T(t_statistic, df).
 222  0 M>  COMPUTE p_right_tailed = 1 - CDF.T(t_statistic, df).

 223  0 M>
* Left-tailed p-value is included only for comparison.
 224  0 M>  * Left-tailed p-value is included only for comparison.
COMPUTE p_left_tailed = CDF.T(t_statistic, df).
 225  0 M>  COMPUTE p_left_tailed = CDF.T(t_statistic, df).

 226  0 M>
* Two-tailed p-value is included to match the SPSS standard T-TEST table.
 227  0 M>  * Two-tailed p-value is included to match the SPSS standard T-TEST
 table.
COMPUTE p_two_tailed = 2 * (1 - CDF.T(ABS(t_statistic), df)).
 228  0 M>  COMPUTE p_two_tailed = 2 * (1 - CDF.T(ABS(t_statistic), df)).
IF (p_two_tailed > 1) p_two_tailed = 1.
 229  0 M>  IF (p_two_tailed > 1) p_two_tailed = 1.

 230  0 M>
* Confidence bounds.
 231  0 M>  * Confidence bounds.
COMPUTE tcrit_one_sided_95 = IDF.T(1 - alpha, df).
 232  0 M>  COMPUTE tcrit_one_sided_95 = IDF.T(1 - alpha, df).
COMPUTE one_sided_95_lower_bound = xbar - (tcrit_one_sided_95 * standard_error
).
 233  0 M>  COMPUTE one_sided_95_lower_bound = xbar - (tcrit_one_sided_95 * st
andard_error).

 234  0 M>
```

```
COMPUTE tcrit_two_sided_95 = IDF.T(1 - alpha / 2, df).
 235  0 M>  COMPUTE tcrit_two_sided_95 = IDF.T(1 - alpha / 2, df).
COMPUTE two_sided_95_ci_lower = xbar - (tcrit_two_sided_95 * standard_error).
 236  0 M>  COMPUTE two_sided_95_ci_lower = xbar - (tcrit_two_sided_95 * stand
ard_error).
COMPUTE two_sided_95_ci_upper = xbar + (tcrit_two_sided_95 * standard_error).
 237  0 M>  COMPUTE two_sided_95_ci_upper = xbar + (tcrit_two_sided_95 * stand
ard_error).

 238  0 M>
COMPUTE cohens_d_one_sample = (xbar - mu0) / sample_sd.
 239  0 M>  COMPUTE cohens_d_one_sample = (xbar - mu0) / sample_sd.

 240  0 M>
STRING decision (A30).
 241  0 M>  STRING decision (A30).
STRING interpretation (A180).
 242  0 M>  STRING interpretation (A180).

 243  0 M>
IF (p_right_tailed < alpha) decision = 'Reject H0'.
 244  0 M>  IF (p_right_tailed < alpha) decision = 'Reject H0'.
IF (p_right_tailed >= alpha) decision = 'Fail to reject H0'.
 245  0 M>  IF (p_right_tailed >= alpha) decision = 'Fail to reject H0'.

 246  0 M>
IF (p_right_tailed < alpha) interpretation =
 247  0 M>  IF (p_right_tailed < alpha) interpretation =
  'The mean final grade G3 is significantly greater than the hypothesized mean
 of 11.5.'.
 248  0 M>    'The mean final grade G3 is significantly greater than the hypot
hesized mean of 11.5.'.
IF (p_right_tailed >= alpha) interpretation =
 249  0 M>  IF (p_right_tailed >= alpha) interpretation =
  'There is not enough evidence that the mean final grade G3 is greater than 1
1.5.'.
 250  0 M>    'There is not enough evidence that the mean final grade G3 is gr
eater than 11.5.'.

 251  0 M>
VARIABLE LABELS
 252  0 M>  VARIABLE LABELS
```

```
 n_valid                  'Valid sample size'
253  0 M>    n_valid                  'Valid sample size'
 xbar                     'Observed sample mean'
254  0 M>    xbar                     'Observed sample mean'
 sample_sd                'Sample standard deviation'
255  0 M>    sample_sd                'Sample standard deviation'
 minimum_g3               'Minimum G3'
256  0 M>    minimum_g3               'Minimum G3'
 maximum_g3               'Maximum G3'
257  0 M>    maximum_g3               'Maximum G3'
 mu0                      'Hypothesized mean'
258  0 M>    mu0                      'Hypothesized mean'
 alpha                    'Alpha level'
259  0 M>    alpha                    'Alpha level'
 df                       'Degrees of freedom'
260  0 M>    df                       'Degrees of freedom'
 standard_error           'Standard error'
261  0 M>    standard_error           'Standard error'
 t_statistic              'One-sample t statistic'
262  0 M>    t_statistic              'One-sample t statistic'
 p_right_tailed           'Right-tailed p-value for H1: mu > 11.5'
263  0 M>    p_right_tailed           'Right-tailed p-value for H1: mu > 11.5
'
 p_left_tailed            'Left-tailed p-value for comparison'
264  0 M>    p_left_tailed            'Left-tailed p-value for comparison'
 p_two_tailed             'Two-tailed p-value for comparison'
265  0 M>    p_two_tailed             'Two-tailed p-value for comparison'
 one_sided_95_lower_bound 'One-sided 95% lower confidence bound'
266  0 M>    one_sided_95_lower_bound 'One-sided 95% lower confidence bound'
 two_sided_95_ci_lower    'Two-sided 95% CI lower bound'
267  0 M>    two_sided_95_ci_lower    'Two-sided 95% CI lower bound'
 two_sided_95_ci_upper    'Two-sided 95% CI upper bound'
268  0 M>    two_sided_95_ci_upper    'Two-sided 95% CI upper bound'
 cohens_d_one_sample      'One-sample Cohen d'
269  0 M>    cohens_d_one_sample      'One-sample Cohen d'
 decision                 'Decision at alpha .05'
270  0 M>    decision                 'Decision at alpha .05'
 interpretation           'Plain-language interpretation'.
271  0 M>    interpretation           'Plain-language interpretation'.

272  0 M>
FORMATS
```

```
 273  0 M>  FORMATS
  n_valid df (F8.0)
 274  0 M>    n_valid df (F8.0)
  xbar sample_sd standard_error t_statistic p_right_tailed p_left_tailed p_two
_tailed
 275  0 M>    xbar sample_sd standard_error t_statistic p_right_tailed p_left_
tailed p_two_tailed
  one_sided_95_lower_bound two_sided_95_ci_lower two_sided_95_ci_upper cohens_
d_one_sample
 276  0 M>    one_sided_95_lower_bound two_sided_95_ci_lower two_sided_95_ci_u
pper cohens_d_one_sample
  mu0 alpha tcrit_one_sided_95 tcrit_two_sided_95 (F10.6).
 277  0 M>    mu0 alpha tcrit_one_sided_95 tcrit_two_sided_95 (F10.6).

 278  0 M>
EXECUTE.
 279  0 M>  EXECUTE.

 280  0 M>
TITLE 'Correct One-Tailed One-Sample T Test Calculation for G3'.
 281  0 M>  TITLE 'Correct One-Tailed One-Sample T Test Calculation for G3'.
```

```
LIST VARIABLES=
 282  0 M>  LIST VARIABLES=
  n_valid
 283  0 M>    n_valid
  df
 284  0 M>    df
  xbar
 285  0 M>    xbar
  mu0
 286  0 M>    mu0
  sample_sd
 287  0 M>    sample_sd
  standard_error
 288  0 M>    standard_error
  t_statistic
 289  0 M>    t_statistic
  p_right_tailed
 290  0 M>    p_right_tailed
  p_two_tailed
 291  0 M>    p_two_tailed
  one_sided_95_lower_bound
 292  0 M>    one_sided_95_lower_bound
  two_sided_95_ci_lower
 293  0 M>    two_sided_95_ci_lower
  two_sided_95_ci_upper
 294  0 M>    two_sided_95_ci_upper
  cohens_d_one_sample
 295  0 M>    cohens_d_one_sample
  decision
 296  0 M>    decision
  interpretation
 297  0 M>    interpretation
  /CASES=FROM 1 TO 1.
 298  0 M>    /CASES=FROM 1 TO 1.
```

List

Notes

Output Created		03-JUN-2026 18:48:57
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\one_tailed_t_test_spss_summary_work.sav
	Active Dataset	OneTailedSummary
	File Label	Aggregated File
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	1
Syntax		LIST VARIABLES= n_valid df xbar mu0 sample_sd standard_error t_statistic p_right_tailed p_two_tailed one_sided_95_lower_bound two_sided_95_ci_lower two_sided_95_ci_upper cohens_d_one_sample decision interpretation /CASES=FROM 1 TO 1.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

```
[OneTailedSummary] D:\low kda score priority basis posts\first post\One Tailed
 T Test\one_tailed_t_test_spss_summary_work.sav

The variables are listed in the following order:

LINE   1: n_valid df xbar mu0 sample_sd standard_error t_statistic p_right_tai
led p_two_tailed one_sided_95_lower_bound
```

```
           two_sided_95_ci_lower

LINE   2: two_sided_95_ci_upper cohens_d_one_sample decision

LINE   3: interpretation
```

```
     n_valid:      649      648  11.906009  11.500000   3.230656    .126814
3.201603    .000717    .001433  11.697120  11.656993
two_sided_95:  12.155026    .125674 Reject H0
interpretati: The mean final grade G3 is significantly greater than the hypoth
esized mean of 11.5.


Number of cases read:  1    Number of cases listed:  1

 299  0 M>
SAVE OUTFILE='D:\low kda score priority basis posts\first post\One Tailed T Te
st\one_tailed_t_test_spss_summary.sav'
 300  0 M>  SAVE OUTFILE='D:\low kda score priority basis posts\first post\One
 Tailed T Test\one_tailed_t_test_spss_summary.sav'
  /COMPRESSED.
 301  0 M>    /COMPRESSED.

 302  0 M>
* ------------------------------------------------------------.
 303  0 M>  * ------------------------------------------------------------.
* 5. SPSS charts for output PDF.
 304  0 M>  * 5. SPSS charts for output PDF.
* ------------------------------------------------------------.
 305  0 M>  * ------------------------------------------------------------.

 306  0 M>
DATASET ACTIVATE StudentData.
 307  0 M>  DATASET ACTIVATE StudentData.

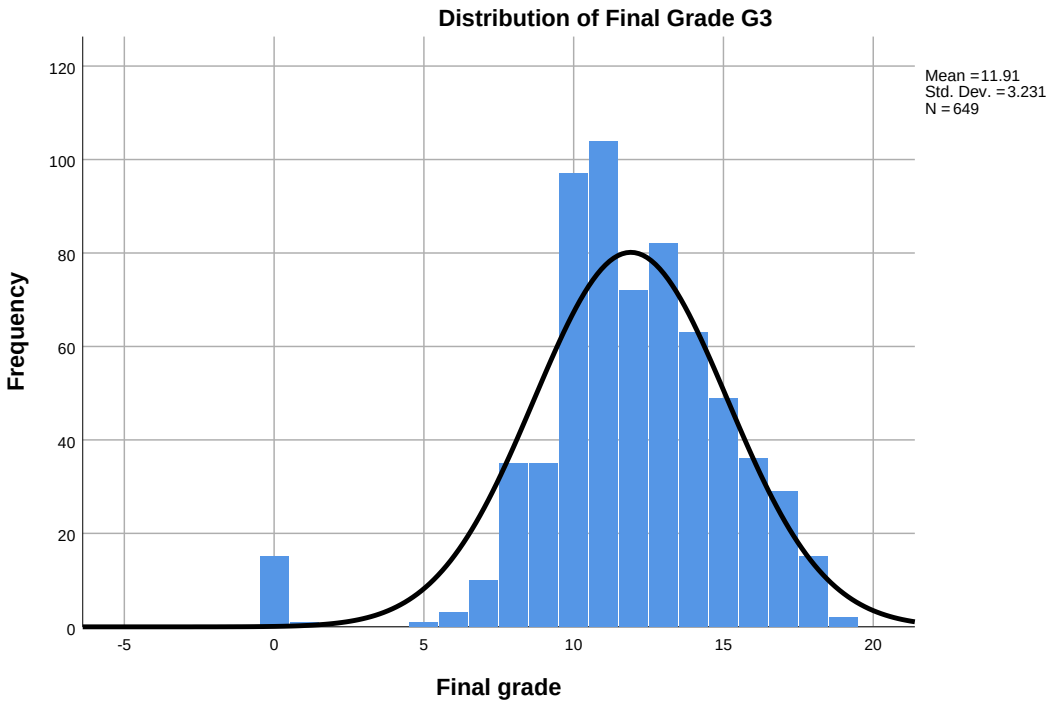
 308  0 M>
GRAPH
 309  0 M>  GRAPH
  /HISTOGRAM(NORMAL)=G3
 310  0 M>    /HISTOGRAM(NORMAL)=G3
  /TITLE='Distribution of Final Grade G3'.
 311  0 M>    /TITLE='Distribution of Final Grade G3'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:57
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /HISTOGRAM(NORMAL) =G3 /TITLE='Distribution of Final Grade G3'.
Resources	Processor Time	00:00:00.25
	Elapsed Time	00:00:00.21

```
[StudentData] D:\low kda score priority basis posts\first post\One Tailed T Te
st\spss_ready_data.sav
```

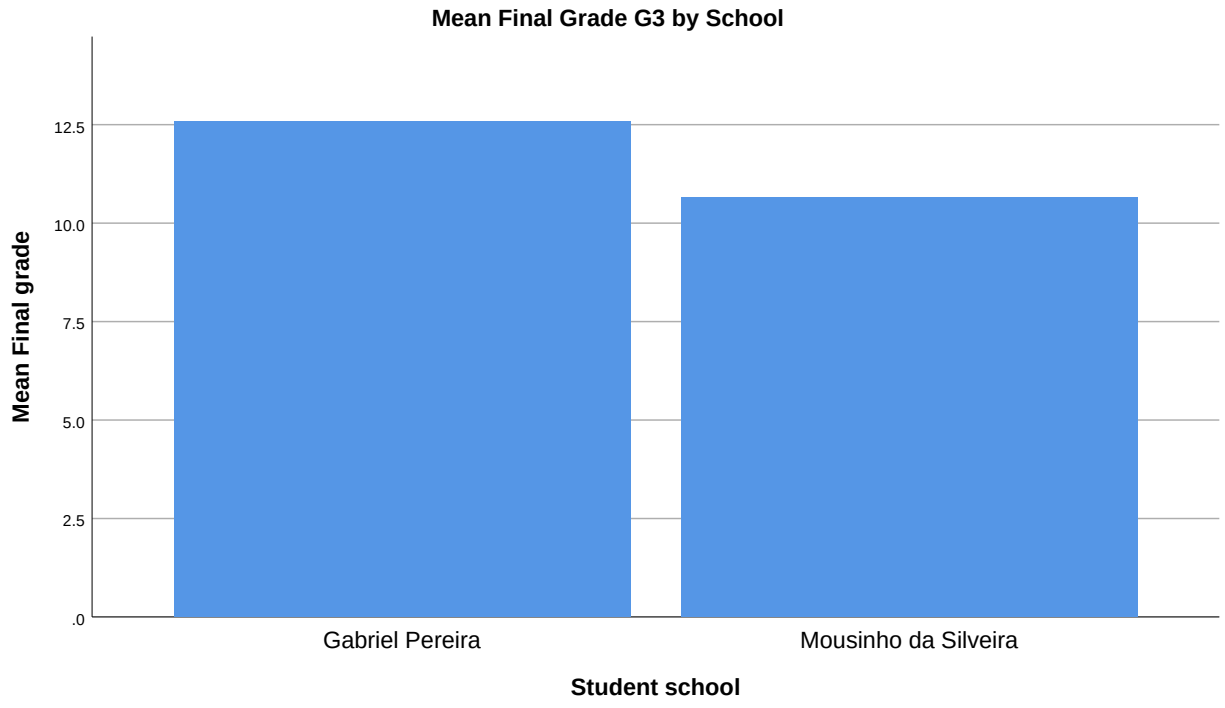



```
 312  0 M>
GRAPH
 313  0 M>  GRAPH
  /BAR(SIMPLE)=MEAN(G3) BY school
 314  0 M>    /BAR(SIMPLE)=MEAN(G3) BY school
  /TITLE='Mean Final Grade G3 by School'.
 315  0 M>    /TITLE='Mean Final Grade G3 by School'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:57
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /BAR(SIMPLE)=MEAN (G3) BY school /TITLE='Mean Final Grade G3 by School'.
Resources	Processor Time	00:00:00.23
	Elapsed Time	00:00:00.22

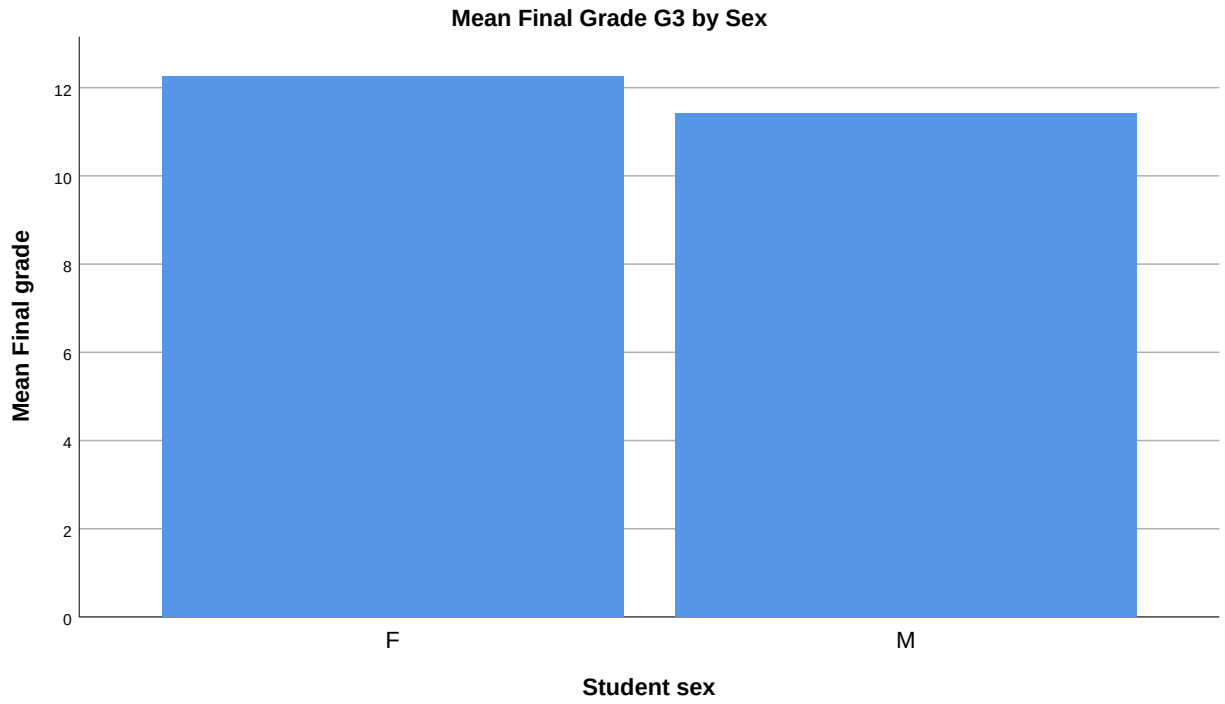


```
 316  0 M>
GRAPH
 317  0 M>  GRAPH
  /BAR(SIMPLE)=MEAN(G3) BY sex
 318  0 M>    /BAR(SIMPLE)=MEAN(G3) BY sex
  /TITLE='Mean Final Grade G3 by Sex'.
 319  0 M>    /TITLE='Mean Final Grade G3 by Sex'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:58
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /BAR(SIMPLE)=MEAN (G3) BY sex /TITLE='Mean Final Grade G3 by Sex'.
Resources	Processor Time	00:00:00.19
	Elapsed Time	00:00:00.18



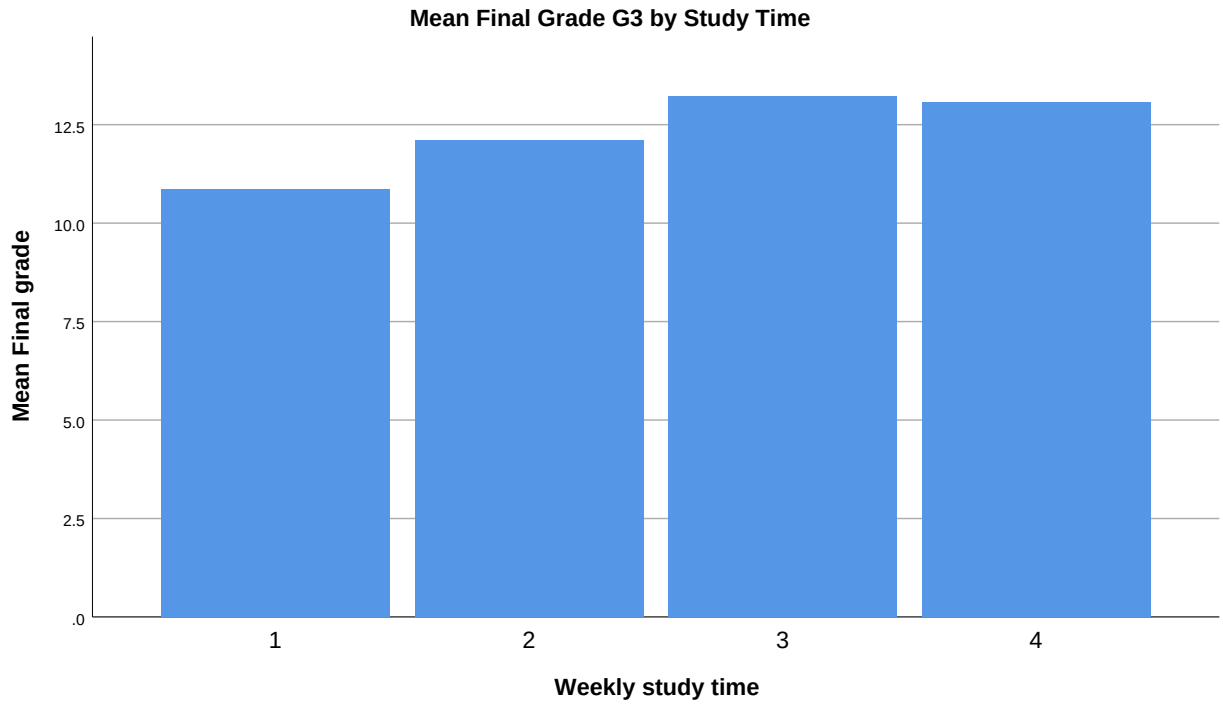

```
 320  0 M>
GRAPH
 321  0 M>  GRAPH
  /BAR(SIMPLE)=MEAN(G3) BY studytime
 322  0 M>    /BAR(SIMPLE)=MEAN(G3) BY studytime
  /TITLE='Mean Final Grade G3 by Study Time'.
 323  0 M>    /TITLE='Mean Final Grade G3 by Study Time'.
```

Graph

Correct One-Tailed One-Sample T Test Calculation for G3

Notes

Output Created		03-JUN-2026 18:48:58
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /BAR(SIMPLE)=MEAN (G3) BY studytime /TITLE='Mean Final Grade G3 by Study Time'.
Resources	Processor Time	00:00:00.23
	Elapsed Time	00:00:00.21

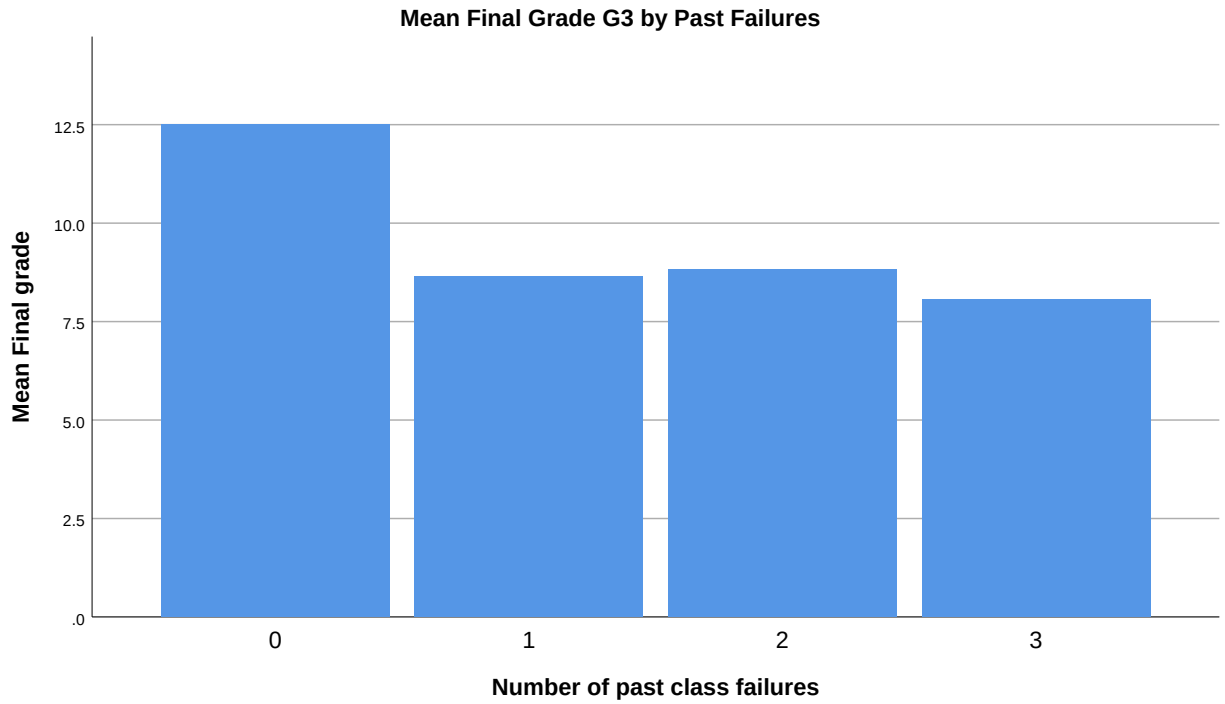


```
 324  0 M>
GRAPH
 325  0 M>  GRAPH
  /BAR(SIMPLE)=MEAN(G3) BY failures
 326  0 M>    /BAR(SIMPLE)=MEAN(G3) BY failures
  /TITLE='Mean Final Grade G3 by Past Failures'.
 327  0 M>    /TITLE='Mean Final Grade G3 by Past Failures'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:58
Comments		
Input	Data	D:\low kda score priority basis posts\first post\One Tailed T Test\spss_ready_data.sav
	Active Dataset	StudentData
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	649
Syntax		GRAPH /BAR(SIMPLE)=MEAN (G3) BY failures /TITLE='Mean Final Grade G3 by Past Failures'.
Resources	Processor Time	00:00:00.23
	Elapsed Time	00:00:00.22




```
 328  0 M>
* Dynamic summary chart: observed mean vs hypothesized mean.
 329  0 M>  * Dynamic summary chart: observed mean vs hypothesized mean.
DATASET ACTIVATE OneTailedSummary.
 330  0 M>  DATASET ACTIVATE OneTailedSummary.
DATASET COPY MeanComparison.
 331  0 M>  DATASET COPY MeanComparison.
DATASET ACTIVATE MeanComparison.
 332  0 M>  DATASET ACTIVATE MeanComparison.
MATCH FILES FILE=* /KEEP=mu0 xbar.
 333  0 M>  MATCH FILES FILE=* /KEEP=mu0 xbar.
VARSTOCASES
 334  0 M>  VARSTOCASES
  /MAKE mean_value FROM mu0 xbar
 335  0 M>    /MAKE mean_value FROM mu0 xbar
  /INDEX=mean_type.
 336  0 M>    /INDEX=mean_type.
```

Variables to Cases

Notes

Output Created		03-JUN-2026 18:48:58
Comments		
Input	Active Dataset	MeanComparison
	File Label	Aggregated File
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		VARSTOCASES /MAKE mean_value FROM mu0 xbar /INDEX=mean_type.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

[MeanComparison]

Generated Variables

Name	Label
mean_type	<none>
mean_value	Hypothesized mean

Processing Statistics

Variables In	2
Variables Out	2

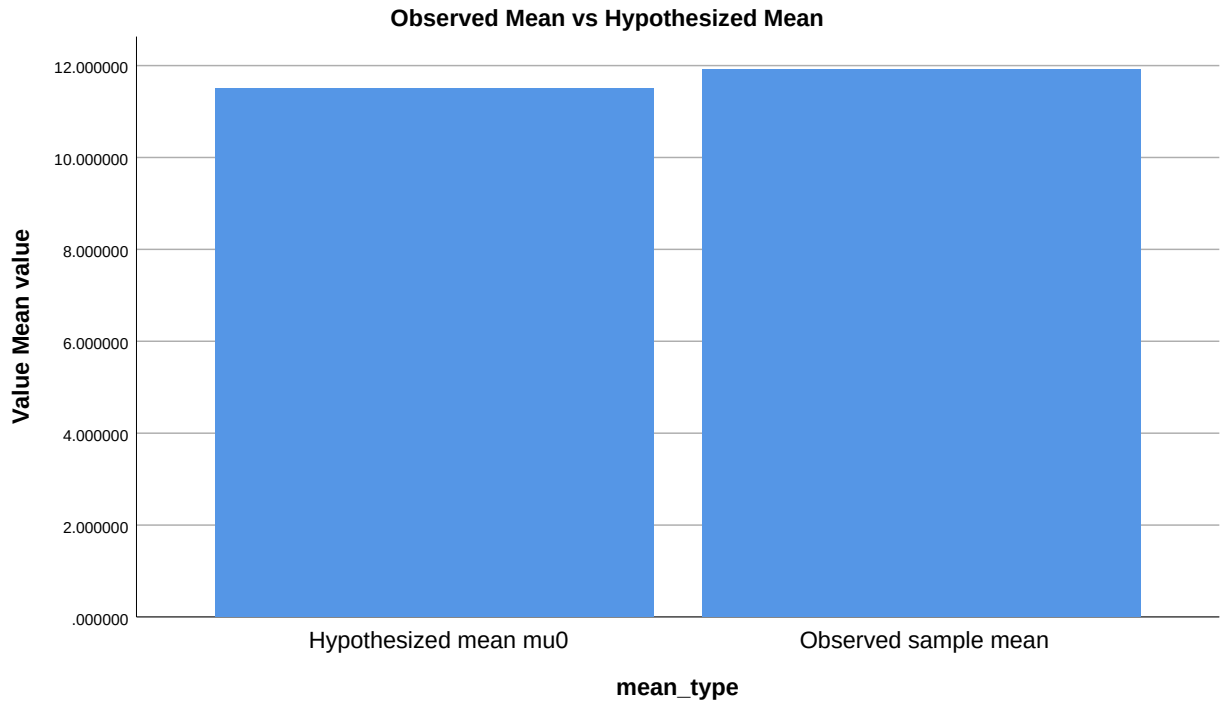
```
VALUE LABELS mean_type
 337  0 M>  VALUE LABELS mean_type
  1 'Hypothesized mean mu0'
 338  0 M>    1 'Hypothesized mean mu0'
  2 'Observed sample mean'.
 339  0 M>    2 'Observed sample mean'.
VARIABLE LABELS mean_value 'Mean value'.
 340  0 M>  VARIABLE LABELS mean_value 'Mean value'.
GRAPH
 341  0 M>  GRAPH
```

```
 /BAR(SIMPLE)=VALUE(mean_value) BY mean_type
342  0 M>    /BAR(SIMPLE)=VALUE(mean_value) BY mean_type
 /TITLE='Observed Mean vs Hypothesized Mean'.
343  0 M>    /TITLE='Observed Mean vs Hypothesized Mean'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:58
Comments		
Input	Active Dataset	MeanComparison
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	2
Syntax		GRAPH /BAR(SIMPLE)=VALUE (mean_value) BY mean_type /TITLE='Observed Mean vs Hypothesized Mean'.
Resources	Processor Time	00:00:00.27
	Elapsed Time	00:00:00.26




```
 344  0 M>
* Dynamic p-value comparison chart.
 345  0 M>  * Dynamic p-value comparison chart.
DATASET ACTIVATE OneTailedSummary.
 346  0 M>  DATASET ACTIVATE OneTailedSummary.
DATASET COPY PValueComparison.
 347  0 M>  DATASET COPY PValueComparison.
DATASET ACTIVATE PValueComparison.
 348  0 M>  DATASET ACTIVATE PValueComparison.
MATCH FILES FILE=* /KEEP=alpha p_right_tailed p_two_tailed.
 349  0 M>  MATCH FILES FILE=* /KEEP=alpha p_right_tailed p_two_tailed.
VARSTOCASES
 350  0 M>  VARSTOCASES
  /MAKE p_value FROM alpha p_right_tailed p_two_tailed
 351  0 M>    /MAKE p_value FROM alpha p_right_tailed p_two_tailed
  /INDEX=p_type.
 352  0 M>    /INDEX=p_type.
```

Variables to Cases

Notes

Output Created		03-JUN-2026 18:48:59
Comments		
Input	Active Dataset	PValueComparison
	File Label	Aggregated File
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		VARSTOCASES /MAKE p_value FROM alpha p_right_tailed p_two_tailed /INDEX=p_type.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.02

[PValueComparison]

Generated Variables

Name	Label
p_type	<none>
p_value	Alpha level

Processing Statistics

Variables In	3
Variables Out	2

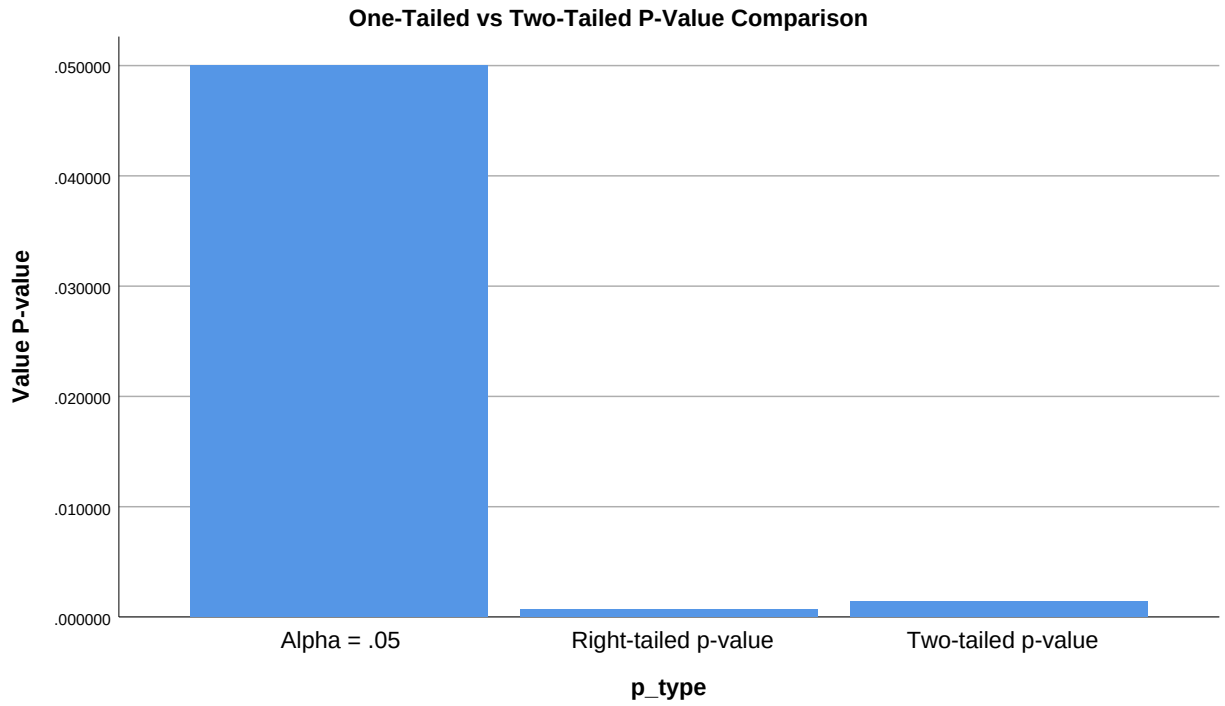
```
VALUE LABELS p_type
 353  0 M>  VALUE LABELS p_type
  1 'Alpha = .05'
 354  0 M>    1 'Alpha = .05'
  2 'Right-tailed p-value'
 355  0 M>    2 'Right-tailed p-value'
  3 'Two-tailed p-value'.
 356  0 M>    3 'Two-tailed p-value'.
VARIABLE LABELS p_value 'P-value'.
```

```
 357  0 M>  VARIABLE LABELS p_value 'P-value'.
GRAPH
 358  0 M>  GRAPH
  /BAR(SIMPLE)=VALUE(p_value) BY p_type
 359  0 M>    /BAR(SIMPLE)=VALUE(p_value) BY p_type
  /TITLE='One-Tailed vs Two-Tailed P-Value Comparison'.
 360  0 M>    /TITLE='One-Tailed vs Two-Tailed P-Value Comparison'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:59
Comments		
Input	Active Dataset	PValueComparison
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	3
Syntax		GRAPH /BAR(SIMPLE)=VALUE (p_value) BY p_type /TITLE='One-Tailed vs Two-Tailed P-Value Comparison'.
Resources	Processor Time	00:00:00.25
	Elapsed Time	00:00:00.22




```
 361  0 M>
* Dynamic condition-check chart.
 362  0 M>  * Dynamic condition-check chart.
DATASET ACTIVATE OneTailedSummary.
 363  0 M>  DATASET ACTIVATE OneTailedSummary.
DATASET COPY ConditionCheck.
 364  0 M>  DATASET COPY ConditionCheck.
DATASET ACTIVATE ConditionCheck.
 365  0 M>  DATASET ACTIVATE ConditionCheck.
COMPUTE minimum_large_sample_rule = 30.
 366  0 M>  COMPUTE minimum_large_sample_rule = 30.
EXECUTE.
 367  0 M>  EXECUTE.
MATCH FILES FILE=* /KEEP=df minimum_large_sample_rule n_valid.
 368  0 M>  MATCH FILES FILE=* /KEEP=df minimum_large_sample_rule n_valid.
VARSTOCASES
 369  0 M>  VARSTOCASES
  /MAKE condition_value FROM df minimum_large_sample_rule n_valid
 370  0 M>    /MAKE condition_value FROM df minimum_large_sample_rule n_valid
  /INDEX=condition_type.
```

```
371  0 M>    /INDEX=condition_type.
```

Variables to Cases

Notes

Output Created		03-JUN-2026 18:48:59
Comments		
Input	Active Dataset	ConditionCheck
	File Label	Aggregated File
	Filter	<none>
	Weight	<none>
	Split File	<none>
Syntax		VARSTOCASES /MAKE condition_value FROM df minimum_large_sample_rule n_valid /INDEX=condition_type.
Resources	Processor Time	00:00:00.02
	Elapsed Time	00:00:00.01

```
[ConditionCheck]
```

Generated Variables

Name	Label
condition_type	<none>
condition_value	Degrees of freedom

Processing Statistics

Variables In	3
Variables Out	2

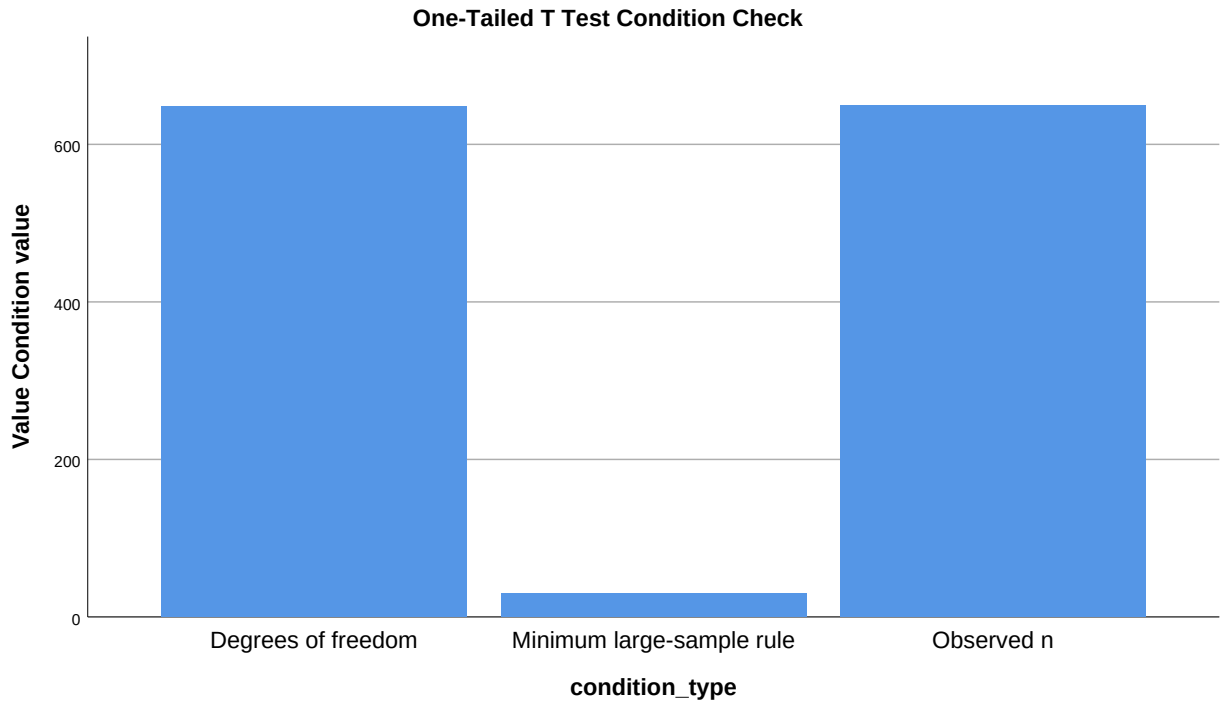
```
VALUE LABELS condition_type
 372  0 M>  VALUE LABELS condition_type
  1 'Degrees of freedom'
 373  0 M>    1 'Degrees of freedom'
```

```
  2 'Minimum large-sample rule'
 374  0 M>    2 'Minimum large-sample rule'
  3 'Observed n'.
 375  0 M>    3 'Observed n'.
VARIABLE LABELS condition_value 'Condition value'.
 376  0 M>  VARIABLE LABELS condition_value 'Condition value'.
GRAPH
 377  0 M>  GRAPH
  /BAR(SIMPLE)=VALUE(condition_value) BY condition_type
 378  0 M>    /BAR(SIMPLE)=VALUE(condition_value) BY condition_type
  /TITLE='One-Tailed T Test Condition Check'.
 379  0 M>    /TITLE='One-Tailed T Test Condition Check'.
```

Graph

Notes

Output Created		03-JUN-2026 18:48:59
Comments		
Input	Active Dataset	ConditionCheck
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	3
Syntax		GRAPH /BAR(SIMPLE)=VALUE (condition_value) BY condition_type /TITLE='One-Tailed T Test Condition Check'.
Resources	Processor Time	00:00:00.20
	Elapsed Time	00:00:00.18




```
 380  0 M>
* ------------------------------------------------------------.
 381  0 M>  * ------------------------------------------------------------.
* 6. Export the complete SPSS output.
 382  0 M>  * 6. Export the complete SPSS output.
* ------------------------------------------------------------.
 383  0 M>  * ------------------------------------------------------------.

 384  0 M>
OUTPUT SAVE
 385  0 M>  OUTPUT SAVE
  OUTFILE='D:\low kda score priority basis posts\first post\One Tailed T Test\
One-Tailed-T-Test-SPSS-output.spv'.
 386  0 M>    OUTFILE='D:\low kda score priority basis posts\first post\One Ta
iled T Test\One-Tailed-T-Test-SPSS-output.spv'.

 387  0 M>
OUTPUT EXPORT
 388  0 M>  OUTPUT EXPORT
  /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING
```

```
 389  0 M>    /CONTENTS EXPORT=ALL LAYERS=PRINTSETTING MODELVIEWS=PRINTSETTING
  /PDF DOCUMENTFILE='D:\low kda score priority basis posts\first post\One Tail
ed T Test\One-Tailed-T-Test-SPSS-output.pdf'
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