```
* ============================================================.
 389  0 M>  * ============================================================.
* Interquartile Range Analysis - FIXED SPSS Syntax.
 390  0 M>  * Interquartile Range Analysis - FIXED SPSS Syntax.
* Project folder:
 391  0 M>  * Project folder:
* D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Interquartile Range
 392  0 M>  * D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Interquar
tile Range
*
 393  0 M>  *
* FIXES INCLUDED:
 394  0 M>  * FIXES INCLUDED:
* 1. VALUE LABELS are separated to avoid Warning #4492.
 395  0 M>  * 1. VALUE LABELS are separated to avoid Warning #4492.
* 2. SUBTITLE is under 60 characters to avoid Warning #2004.
 396  0 M>  * 2. SUBTITLE is under 60 characters to avoid Warning #2004.
* 3. EXAMINE commands do NOT use invalid /STATISTICS PERCENTILES.
 397  0 M>  * 3. EXAMINE commands do NOT use invalid /STATISTICS PERCENTILES.
* 4. DATASET DECLARE/ACTIVATE empty-dataset warnings removed.
 398  0 M>  * 4. DATASET DECLARE/ACTIVATE empty-dataset warnings removed.
* 5. PDF and SPV output are exported automatically.
 399  0 M>  * 5. PDF and SPV output are exported automatically.
* 6. PDF export block uses only SPSS-safe syntax.
 400  0 M>  * 6. PDF export block uses only SPSS-safe syntax.
* 6. This syntax uses the Python-generated clean SPSS-ready CSV file.
 401  0 M>  * 6. This syntax uses the Python-generated clean SPSS-ready CSV fi
le.
* ============================================================.
 402  0 M>  * ============================================================.

 403  0 M>
SET PRINTBACK=ON MPRINT=ON DECIMAL=DOT.
 404  0 M>  SET PRINTBACK=ON MPRINT=ON DECIMAL=DOT.
SET UNICODE=ON.
 405  0 M>  SET UNICODE=ON.

 406  0 M>
* ------------------------------------------------------------.
 407  0 M>  * ------------------------------------------------------------.
* 1. Create output folder if possible.
 408  0 M>  * 1. Create output folder if possible.
```

```
* ------------------------------------------------------------.
 409  0 M>  * ------------------------------------------------------------.
HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\A Basic Descriptive Stati
stics Guides\Interquartile Range\Python_Output\pdf" mkdir "D:\DATA ANALYSIS\A
Basic Descriptive Statistics Guides\Interquartile Range\Python_Output\pdf"'].
 410  0 M>  HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\A Basic Descr
iptive Statistics Guides\Interquartile Range\Python_Ou
               tput\pdf" mkdir "D:\DATA ANALYSIS\A Basic Descriptive Statistic
s Guides\Interquartile Range\Python_Output\pdf"'].
```

Host

```
 411  0 M>
* ------------------------------------------------------------.
 412  0 M>  * ------------------------------------------------------------.
* 2. Import clean Python-generated SPSS-ready data.
 413  0 M>  * 2. Import clean Python-generated SPSS-ready data.
* ------------------------------------------------------------.
 414  0 M>  * ------------------------------------------------------------.
GET DATA
 415  0 M>  GET DATA
 /TYPE=TXT
 416  0 M>   /TYPE=TXT
 /FILE='D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Interquartile R
ange\Python_Output\clean_data\interquartile_range_clean_data_for_spss.csv'
 417  0 M>   /FILE='D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Int
erquartile Range\Python_Output\clean_data\interquartil
               e_range_clean_data_for_spss.csv'
 /ENCODING='UTF8'
 418  0 M>   /ENCODING='UTF8'
 /DELCASE=LINE
 419  0 M>   /DELCASE=LINE
 /DELIMITERS=","
 420  0 M>   /DELIMITERS=","
 /QUALIFIER='"'
 421  0 M>   /QUALIFIER='"'
 /ARRANGEMENT=DELIMITED
 422  0 M>   /ARRANGEMENT=DELIMITED
 /FIRSTCASE=2
 423  0 M>   /FIRSTCASE=2
 /VARIABLES=
```

```
424  0 M>   /VARIABLES=
school A8
425  0 M>   school A8
sex A12
426  0 M>   sex A12
age F8.2
427  0 M>   age F8.2
address A8
428  0 M>   address A8
famsize A8
429  0 M>   famsize A8
Pstatus A8
430  0 M>   Pstatus A8
Medu F8.2
431  0 M>   Medu F8.2
Fedu F8.2
432  0 M>   Fedu F8.2
Mjob A20
433  0 M>   Mjob A20
Fjob A20
434  0 M>   Fjob A20
reason A20
435  0 M>   reason A20
guardian A20
436  0 M>   guardian A20
traveltime F8.2
437  0 M>   traveltime F8.2
studytime F8.2
438  0 M>   studytime F8.2
failures F8.2
439  0 M>   failures F8.2
schoolsup A8
440  0 M>   schoolsup A8
famsup A8
441  0 M>   famsup A8
paid A8
442  0 M>   paid A8
activities A8
443  0 M>   activities A8
nursery A8
444  0 M>   nursery A8
higher A8
```

```
 445  0 M>   higher A8
 internet A8
 446  0 M>   internet A8
 romantic A8
 447  0 M>   romantic A8
 famrel F8.2
 448  0 M>   famrel F8.2
 freetime F8.2
 449  0 M>   freetime F8.2
 goout F8.2
 450  0 M>   goout F8.2
 Dalc F8.2
 451  0 M>   Dalc F8.2
 Walc F8.2
 452  0 M>   Walc F8.2
 health F8.2
 453  0 M>   health F8.2
 absences F8.2
 454  0 M>   absences F8.2
 G1 F8.2
 455  0 M>   G1 F8.2
 G2 F8.2
 456  0 M>   G2 F8.2
 G3 F8.2
 457  0 M>   G3 F8.2
 studytime_group A20
 458  0 M>   studytime_group A20
 failure_group A20.
 459  0 M>   failure_group A20.
CACHE.
 460  0 M>  CACHE.
EXECUTE.
 461  0 M>  EXECUTE.

 462  0 M>
DATASET NAME InterquartileRangeMain WINDOW=FRONT.
 463  0 M>  DATASET NAME InterquartileRangeMain WINDOW=FRONT.
```

Dataset Name

Warnings

The active dataset will replace the existing dataset named InterquartileRangeMain.

```
 464  0 M>
* ------------------------------------------------------------.
 465  0 M>  * ------------------------------------------------------------.
* 3. Create numeric grouping variables for SPSS procedures.
 466  0 M>  * 3. Create numeric grouping variables for SPSS procedures.
* ------------------------------------------------------------.
 467  0 M>  * ------------------------------------------------------------.
NUMERIC school_num sex_num internet_num higher_num schoolsup_num romantic_num
studytime_num failures_num (F8.0).
 468  0 M>  NUMERIC school_num sex_num internet_num higher_num schoolsup_num r
omantic_num studytime_num failures_num (F8.0).

 469  0 M>
DO IF (school = "GP").
 470  0 M>  DO IF (school = "GP").
 COMPUTE school_num = 1.
 471  1 M>   COMPUTE school_num = 1.
ELSE IF (school = "MS").
 472  1 M>  ELSE IF (school = "MS").
 COMPUTE school_num = 2.
 473  1 M>   COMPUTE school_num = 2.
END IF.
 474  1 M>  END IF.

 475  0 M>
DO IF (sex = "Female" OR sex = "F").
 476  0 M>  DO IF (sex = "Female" OR sex = "F").
 COMPUTE sex_num = 1.
 477  1 M>   COMPUTE sex_num = 1.
ELSE IF (sex = "Male" OR sex = "M").
 478  1 M>  ELSE IF (sex = "Male" OR sex = "M").
 COMPUTE sex_num = 2.
 479  1 M>   COMPUTE sex_num = 2.
END IF.
 480  1 M>  END IF.

 481  0 M>
```

```
DO IF (internet = "No" OR internet = "no").
 482  0 M>  DO IF (internet = "No" OR internet = "no").
 COMPUTE internet_num = 0.
 483  1 M>   COMPUTE internet_num = 0.
ELSE IF (internet = "Yes" OR internet = "yes").
 484  1 M>  ELSE IF (internet = "Yes" OR internet = "yes").
 COMPUTE internet_num = 1.
 485  1 M>   COMPUTE internet_num = 1.
END IF.
 486  1 M>  END IF.

 487  0 M>
DO IF (higher = "No" OR higher = "no").
 488  0 M>  DO IF (higher = "No" OR higher = "no").
 COMPUTE higher_num = 0.
 489  1 M>   COMPUTE higher_num = 0.
ELSE IF (higher = "Yes" OR higher = "yes").
 490  1 M>  ELSE IF (higher = "Yes" OR higher = "yes").
 COMPUTE higher_num = 1.
 491  1 M>   COMPUTE higher_num = 1.
END IF.
 492  1 M>  END IF.

 493  0 M>
DO IF (schoolsup = "No" OR schoolsup = "no").
 494  0 M>  DO IF (schoolsup = "No" OR schoolsup = "no").
 COMPUTE schoolsup_num = 0.
 495  1 M>   COMPUTE schoolsup_num = 0.
ELSE IF (schoolsup = "Yes" OR schoolsup = "yes").
 496  1 M>  ELSE IF (schoolsup = "Yes" OR schoolsup = "yes").
 COMPUTE schoolsup_num = 1.
 497  1 M>   COMPUTE schoolsup_num = 1.
END IF.
 498  1 M>  END IF.

 499  0 M>
DO IF (romantic = "No" OR romantic = "no").
 500  0 M>  DO IF (romantic = "No" OR romantic = "no").
 COMPUTE romantic_num = 0.
 501  1 M>   COMPUTE romantic_num = 0.
ELSE IF (romantic = "Yes" OR romantic = "yes").
 502  1 M>  ELSE IF (romantic = "Yes" OR romantic = "yes").
```

```
 COMPUTE romantic_num = 1.
 503  1 M>   COMPUTE romantic_num = 1.
END IF.
 504  1 M>  END IF.

 505  0 M>
COMPUTE studytime_num = studytime.
 506  0 M>  COMPUTE studytime_num = studytime.
COMPUTE failures_num = failures.
 507  0 M>  COMPUTE failures_num = failures.
EXECUTE.
 508  0 M>  EXECUTE.

 509  0 M>
VARIABLE LABELS
 510  0 M>  VARIABLE LABELS
 school_num "School group"
 511  0 M>   school_num "School group"
 sex_num "Sex"
 512  0 M>   sex_num "Sex"
 internet_num "Internet access"
 513  0 M>   internet_num "Internet access"
 higher_num "Higher education intention"
 514  0 M>   higher_num "Higher education intention"
 schoolsup_num "School support"
 515  0 M>   schoolsup_num "School support"
 romantic_num "Romantic relationship"
 516  0 M>   romantic_num "Romantic relationship"
 studytime_num "Study time group"
 517  0 M>   studytime_num "Study time group"
 failures_num "Past class failures"
 518  0 M>   failures_num "Past class failures"
 G1 "First period grade"
 519  0 M>   G1 "First period grade"
 G2 "Second period grade"
 520  0 M>   G2 "Second period grade"
 G3 "Final grade"
 521  0 M>   G3 "Final grade"
 age "Student age"
 522  0 M>   age "Student age"
 absences "School absences"
 523  0 M>   absences "School absences"
```

```
 studytime "Weekly study time"
 524  0 M>   studytime "Weekly study time"
 failures "Past class failures"
 525  0 M>   failures "Past class failures"
 famrel "Family relationship quality"
 526  0 M>   famrel "Family relationship quality"
 freetime "Free time after school"
 527  0 M>   freetime "Free time after school"
 goout "Going out with friends"
 528  0 M>   goout "Going out with friends"
 Dalc "Workday alcohol consumption"
 529  0 M>   Dalc "Workday alcohol consumption"
 Walc "Weekend alcohol consumption"
 530  0 M>   Walc "Weekend alcohol consumption"
 health "Current health status".
 531  0 M>   health "Current health status".

 532  0 M>
* Separate VALUE LABELS commands avoid SPSS Warning #4492.
 533  0 M>  * Separate VALUE LABELS commands avoid SPSS Warning #4492.
VALUE LABELS school_num 1 "GP" 2 "MS".
 534  0 M>  VALUE LABELS school_num 1 "GP" 2 "MS".
VALUE LABELS sex_num 1 "Female" 2 "Male".
 535  0 M>  VALUE LABELS sex_num 1 "Female" 2 "Male".
VALUE LABELS internet_num 0 "No" 1 "Yes".
 536  0 M>  VALUE LABELS internet_num 0 "No" 1 "Yes".
VALUE LABELS higher_num 0 "No" 1 "Yes".
 537  0 M>  VALUE LABELS higher_num 0 "No" 1 "Yes".
VALUE LABELS schoolsup_num 0 "No" 1 "Yes".
 538  0 M>  VALUE LABELS schoolsup_num 0 "No" 1 "Yes".
VALUE LABELS romantic_num 0 "No" 1 "Yes".
 539  0 M>  VALUE LABELS romantic_num 0 "No" 1 "Yes".
VALUE LABELS studytime_num 1 "Less than 2 hours" 2 "2 to 5 hours" 3 "5 to 10 h
ours" 4 "More than 10 hours".
 540  0 M>  VALUE LABELS studytime_num 1 "Less than 2 hours" 2 "2 to 5 hours"
3 "5 to 10 hours" 4 "More than 10 hours".
VALUE LABELS failures_num 0 "0 failures" 1 "1 failure" 2 "2 failures" 3 "3 or
more failures".
 541  0 M>  VALUE LABELS failures_num 0 "0 failures" 1 "1 failure" 2 "2 failur
es" 3 "3 or more failures".

 542  0 M>
```

```
FORMATS school_num sex_num internet_num higher_num schoolsup_num romantic_num
studytime_num failures_num (F1.0).
 543  0 M>  FORMATS school_num sex_num internet_num higher_num schoolsup_num r
omantic_num studytime_num failures_num (F1.0).
EXECUTE.
 544  0 M>  EXECUTE.

 545  0 M>
TITLE "Interquartile Range Analysis".
 546  0 M>  TITLE "Interquartile Range Analysis".
```

```
SUBTITLE "Quartiles, IQR, fences and boxplots".
 547  0 M>  SUBTITLE "Quartiles, IQR, fences and boxplots".
```

```
 548   0 M>
* ------------------------------------------------------------.
 549   0 M>  * ------------------------------------------------------------.
* 4. Dataset overview and frequency tables.
 550   0 M>  * 4. Dataset overview and frequency tables.
* ------------------------------------------------------------.
 551   0 M>  * ------------------------------------------------------------.
FREQUENCIES VARIABLES=school_num sex_num internet_num higher_num schoolsup_num
 romantic_num studytime_num failures_num
 552   0 M>  FREQUENCIES VARIABLES=school_num sex_num internet_num higher_num s
choolsup_num romantic_num studytime_num failures_num
 /ORDER=ANALYSIS.
 553   0 M>   /ORDER=ANALYSIS.
```

Frequencies

```
[InterquartileRangeMain]
```

Statistics

		school_num	sex_num	internet_num	higher_num	schoolsup_num
N	Valid	649	649	649	649	649
	Missing	0	0	0	0	0

Statistics

		romantic_num	studytime_num	failures_num
N	Valid	649	649	649
	Missing	0	0	0

Frequency Table

school_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	423	65.2	65.2	65.2
	2	226	34.8	34.8	100.0
	Total	649	100.0	100.0	

Interquartile Range Analysis
Quartiles, IQR, fences and boxplots

sex_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	383	59.0	59.0	59.0
	2	266	41.0	41.0	100.0
	Total	649	100.0	100.0	

internet_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	151	23.3	23.3	23.3
	1	498	76.7	76.7	100.0
	Total	649	100.0	100.0	

higher_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	69	10.6	10.6	10.6
	1	580	89.4	89.4	100.0
	Total	649	100.0	100.0	

schoolsup_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	581	89.5	89.5	89.5
	1	68	10.5	10.5	100.0
	Total	649	100.0	100.0	

romantic_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	410	63.2	63.2	63.2
	1	239	36.8	36.8	100.0
	Total	649	100.0	100.0	

Interquartile Range Analysis
Quartiles, IQR, fences and boxplots

studytime_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	212	32.7	32.7	32.7
	2	305	47.0	47.0	79.7
	3	97	14.9	14.9	94.6
	4	35	5.4	5.4	100.0
	Total	649	100.0	100.0	

failures_num

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	549	84.6	84.6	84.6
	1	70	10.8	10.8	95.4
	2	16	2.5	2.5	97.8
	3	14	2.2	2.2	100.0
	Total	649	100.0	100.0	

```
 554  0 M>
DESCRIPTIVES VARIABLES=G1 G2 G3 age absences studytime failures famrel freetim
e goout Dalc Walc health
 555  0 M>  DESCRIPTIVES VARIABLES=G1 G2 G3 age absences studytime failures fa
mrel freetime goout Dalc Walc health
 /STATISTICS=MEAN STDDEV MIN MAX.
 556  0 M>   /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Interquartile Range Analysis
Quartiles, IQR, fences and boxplots

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
G1	649	.00	19.00	11.3991	2.74527
G2	649	.00	19.00	11.5701	2.91364
G3	649	.00	19.00	11.9060	3.23066
age	649	15.00	22.00	16.7442	1.21814
absences	649	.00	32.00	3.6595	4.64076
studytime	649	1.00	4.00	1.9307	.82951
failures	649	.00	3.00	.2219	.59324
famrel	649	1.00	5.00	3.9307	.95572
freetime	649	1.00	5.00	3.1803	1.05109
goout	649	1.00	5.00	3.1849	1.17577
Dalc	649	1.00	5.00	1.5023	.92483
Walc	649	1.00	5.00	2.2804	1.28438
health	649	1.00	5.00	3.5362	1.44626
Valid N (listwise)	649				

```
 557  0 M>
* ------------------------------------------------------------.
 558  0 M>  * ------------------------------------------------------------.
* 5. Core quartile output for numeric variables.
 559  0 M>  * 5. Core quartile output for numeric variables.
* FREQUENCIES gives Q1, median and Q3 safely in SPSS.
 560  0 M>  * FREQUENCIES gives Q1, median and Q3 safely in SPSS.
* ------------------------------------------------------------.
 561  0 M>  * ------------------------------------------------------------.
TITLE "IQR: Quartiles and Five Number Summary".
 562  0 M>  TITLE "IQR: Quartiles and Five Number Summary".
```

```
 563  0 M>
FREQUENCIES VARIABLES=G1 G2 G3 age absences studytime failures famrel freetime
 goout Dalc Walc health
 564  0 M>  FREQUENCIES VARIABLES=G1 G2 G3 age absences studytime failures fam
rel freetime goout Dalc Walc health
 /FORMAT=NOTABLE
 565  0 M>   /FORMAT=NOTABLE
 /PERCENTILES=25 50 75
 566  0 M>   /PERCENTILES=25 50 75
 /STATISTICS=MINIMUM MAXIMUM MEAN MEDIAN STDDEV RANGE
 567  0 M>   /STATISTICS=MINIMUM MAXIMUM MEAN MEDIAN STDDEV RANGE
 /ORDER=ANALYSIS.
 568  0 M>   /ORDER=ANALYSIS.
```

Frequencies

Statistics

		G1	G2	G3	age	absences	studytime
N	Valid	649	649	649	649	649	649
	Missing	0	0	0	0	0	0
Mean		11.3991	11.5701	11.9060	16.7442	3.6595	1.9307
Median		11.0000	11.0000	12.0000	17.0000	2.0000	2.0000
Std. Deviation		2.74527	2.91364	3.23066	1.21814	4.64076	.82951
Range		19.00	19.00	19.00	7.00	32.00	3.00
Minimum		.00	.00	.00	15.00	.00	1.00
Maximum		19.00	19.00	19.00	22.00	32.00	4.00
Percentiles	25	10.0000	10.0000	10.0000	16.0000	.0000	1.0000
	50	11.0000	11.0000	12.0000	17.0000	2.0000	2.0000
	75	13.0000	13.0000	14.0000	18.0000	6.0000	2.0000

Statistics

		failures	famrel	freetime	goout	Dalc	Walc	health
N	Valid	649	649	649	649	649	649	649
	Missing	0	0	0	0	0	0	0
Mean		.2219	3.9307	3.1803	3.1849	1.5023	2.2804	3.5362
Median		.0000	4.0000	3.0000	3.0000	1.0000	2.0000	4.0000
Std. Deviation		.59324	.95572	1.05109	1.17577	.92483	1.28438	1.44626
Range		3.00	4.00	4.00	4.00	4.00	4.00	4.00
Minimum		.00	1.00	1.00	1.00	1.00	1.00	1.00
Maximum		3.00	5.00	5.00	5.00	5.00	5.00	5.00
Percentiles	25	.0000	4.0000	3.0000	2.0000	1.0000	1.0000	2.0000
	50	.0000	4.0000	3.0000	3.0000	1.0000	2.0000	4.0000
	75	.0000	5.0000	4.0000	4.0000	2.0000	3.0000	5.0000

```
 569  0 M>
* ------------------------------------------------------------.
 570  0 M>  * ------------------------------------------------------------.
* 6. Explore output for boxplots and extreme cases.
 571  0 M>  * 6. Explore output for boxplots and extreme cases.
* Do not add PERCENTILES after /STATISTICS in EXAMINE.
 572  0 M>  * Do not add PERCENTILES after /STATISTICS in EXAMINE.
* ------------------------------------------------------------.
 573  0 M>  * ------------------------------------------------------------.
TITLE "IQR: Explore Boxplots and Extremes".
 574  0 M>  TITLE "IQR: Explore Boxplots and Extremes".
```

```
 575  0 M>
EXAMINE VARIABLES=G1 G2 G3 age absences studytime failures famrel freetime goo
ut Dalc Walc health
 576  0 M>  EXAMINE VARIABLES=G1 G2 G3 age absences studytime failures famrel
freetime goout Dalc Walc health
 /PLOT=BOXPLOT HISTOGRAM
 577  0 M>   /PLOT=BOXPLOT HISTOGRAM
 /COMPARE=GROUPS
 578  0 M>   /COMPARE=GROUPS
 /STATISTICS=DESCRIPTIVES EXTREME
 579  0 M>   /STATISTICS=DESCRIPTIVES EXTREME
 /CINTERVAL=95
 580  0 M>   /CINTERVAL=95
 /MISSING=LISTWISE
 581  0 M>   /MISSING=LISTWISE
 /NOTOTAL.
 582  0 M>   /NOTOTAL.
```