Your temporary usage period for IBM SPSS Statistics will expire in 3487 days.

```
* ============================================================.
* Coefficient of Variation - FINAL CORRECTED SPSS Syntax.
* Uses EXISTING cleaned data only: spss_ready_data.csv
*
* Topic folder:
* D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient of Variat
ion
*
* IMPORTANT:
* 1. This syntax does NOT create a new cleaned data file.
* 2. It imports the existing spss_ready_data.csv from the topic folder.
* 3. It does NOT use BEGIN PROGRAM Python, so it avoids the old SPSS Python
*    error: makedirs() got an unexpected keyword argument 'exist_ok'.
* 4. It starts the variable list with school, not case_id.
*    Your uploaded output showed the old syntax started with case_id and
*    shifted the columns. That is why G3 became 1 to 649.
* ============================================================.

SET UNICODE=ON.
SET DECIMAL=DOT.
SET PRINTBACK=ON.
SET TNUMBERS=VALUES.
SET TVARS=LABELS.

* ------------------------------------------------------------.
* 0. Create output folders inside the topic folder.
*    No Python is used here.
* ------------------------------------------------------------.

HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\A Basic Descriptive Stati
stics Guides\Coefficient of Variation\SPSS" mkdir "D:\DATA ANALYSIS\A Basic De
scriptive Statistics Guides\Coefficient of Variation\SPSS"'].
```

Host

```
[DataSet0]
```

```
HOST COMMAND=['cmd /c if not exist "D:\DATA ANALYSIS\A Basic Descriptive Stati
stics Guides\Coefficient of Variation\SPSS\tables" mkdir "D:\DATA ANALYSIS\A B
asic Descriptive Statistics Guides\Coefficient of Variation\SPSS\tables"'].
```

Host

```
* ------------------------------------------------------------.
* 1. Import the EXISTING cleaned CSV.
*
* The variable order below matches the normal student-por / spss_ready_data
* order where the CSV starts with:
* school, sex, age, address, famsize, Pstatus, Medu, Fedu, ...
*
* This is the key correction.
* Do NOT put case_id before school unless your CSV header actually starts
* with case_id.
* ------------------------------------------------------------.

GET DATA
 /TYPE=TXT
 /FILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient of
Variation\spss_ready_data.csv"
 /ENCODING='UTF8'
 /DELCASE=LINE
 /DELIMITERS=","
 /QUALIFIER='"'
 /ARRANGEMENT=DELIMITED
 /FIRSTCASE=2
 /IMPORTCASE=ALL
 /VARIABLES=
 school A20
 sex A20
 age F8.2
 address A20
 famsize A20
 Pstatus A20
 Medu F8.2
 Fedu F8.2
 Mjob A30
 Fjob A30
 reason A30
```

```
 guardian A30
 traveltime F8.2
 studytime F8.2
 failures F8.2
 schoolsup A20
 famsup A20
 paid A20
 activities A20
 nursery A20
 higher A20
 internet A20
 romantic A20
 famrel F8.2
 freetime F8.2
 goout F8.2
 Dalc F8.2
 Walc F8.2
 health F8.2
 absences F8.2
 G1 F8.2
 G2 F8.2
 G3 F8.2.
CACHE.
EXECUTE.

DATASET NAME CVData WINDOW=FRONT.

* Create case_id inside SPSS only for output tracking.
* This does not create or modify any CSV file.
COMPUTE case_id = $CASENUM.
FORMATS case_id (F8.0).
EXECUTE.

VARIABLE LABELS
 school "School"
 sex "Student sex"
 age "Student age"
 Medu "Mother education"
 Fedu "Father education"
 traveltime "Travel time"
 studytime "Weekly study time category"
 failures "Number of past class failures"
```

```
 famrel "Family relationship quality"
 freetime "Free time after school"
 goout "Going out with friends"
 Dalc "Workday alcohol consumption"
 Walc "Weekend alcohol consumption"
 health "Current health status"
 absences "Number of school absences"
 G1 "First period grade"
 G2 "Second period grade"
 G3 "Final grade".

VALUE LABELS studytime
 1 "1: <2 hours"
 2 "2: 2-5 hours"
 3 "3: 5-10 hours"
 4 "4: >10 hours".

VALUE LABELS failures
 0 "0 failures"
 1 "1 failure"
 2 "2 failures"
 3 "3 failures".

EXECUTE.

* ------------------------------------------------------------.
* 2. Import check.
*
* Correct expected values:
* G1 maximum should be about 19.
* G2 maximum should be about 19.
* G3 maximum should be about 19, not 649.
* absences maximum should be about 32.
* ------------------------------------------------------------.

TITLE "Coefficient of Variation: Correct Import Check from Existing spss_ready
_data.csv".

>Warning # 2003.  Command name: TITLE
>The title given exceeds 60 characters in length.  The first 60 characters wil
l
>be used.
```

```
DESCRIPTIVES VARIABLES=age Medu Fedu traveltime studytime failures famrel free
time goout Dalc Walc health absences G1 G2 G3
 /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

[CVData]

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Student age	649	15.00	22.00	16.7442	1.21814
Mother education	649	.00	4.00	2.5146	1.13455
Father education	649	.00	4.00	2.3066	1.09993
Travel time	649	1.00	4.00	1.5686	.74866
Weekly study time category	649	1.00	4.00	1.9307	.82951
Number of past class failures	649	.00	3.00	.2219	.59324
Family relationship quality	649	1.00	5.00	3.9307	.95572
Free time after school	649	1.00	5.00	3.1803	1.05109
Going out with friends	649	1.00	5.00	3.1849	1.17577
Workday alcohol consumption	649	1.00	5.00	1.5023	.92483
Weekend alcohol consumption	649	1.00	5.00	2.2804	1.28438
Current health status	649	1.00	5.00	3.5362	1.44626
Number of school absences	649	.00	32.00	3.6595	4.64076
First period grade	649	.00	19.00	11.3991	2.74527
Second period grade	649	.00	19.00	11.5701	2.91364
Final grade	649	.00	19.00	11.9060	3.23066
Valid N (listwise)	649				

```
FREQUENCIES VARIABLES=G1 G2 G3 absences
 /STATISTICS=MEAN MEDIAN STDDEV VARIANCE MINIMUM MAXIMUM SKEWNESS SESKEW KURTO
SIS SEKURT
 /PERCENTILES=25 50 75
 /ORDER=ANALYSIS.
```

Frequencies

Statistics

		First period grade	Second period grade	Final grade	Number of school absences
N	Valid	649	649	649	649
	Missing	0	0	0	0
Mean		11.3991	11.5701	11.9060	3.6595
Median		11.0000	11.0000	12.0000	2.0000
Std. Deviation		2.74527	2.91364	3.23066	4.64076
Variance		7.536	8.489	10.437	21.537
Skewness		-.003	-.360	-.913	2.021
Std. Error of Skewness		.096	.096	.096	.096
Kurtosis		.037	1.662	2.712	5.781
Std. Error of Kurtosis		.192	.192	.192	.192
Minimum		.00	.00	.00	.00
Maximum		19.00	19.00	19.00	32.00
Percentiles	25	10.0000	10.0000	10.0000	.0000
	50	11.0000	11.0000	12.0000	2.0000
	75	13.0000	13.0000	14.0000	6.0000

Frequency Table

First period grade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	1	.2	.2	.2
	4.00	2	.3	.3	.5
	5.00	5	.8	.8	1.2
	6.00	9	1.4	1.4	2.6
	7.00	33	5.1	5.1	7.7
	8.00	42	6.5	6.5	14.2
	9.00	65	10.0	10.0	24.2
	10.00	95	14.6	14.6	38.8
	11.00	91	14.0	14.0	52.9
	12.00	82	12.6	12.6	65.5
	13.00	72	11.1	11.1	76.6
	14.00	71	10.9	10.9	87.5
	15.00	35	5.4	5.4	92.9
	16.00	22	3.4	3.4	96.3
	17.00	16	2.5	2.5	98.8
	18.00	7	1.1	1.1	99.8
	19.00	1	.2	.2	100.0
	Total	649	100.0	100.0	

Second period grade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	7	1.1	1.1	1.1
	5.00	3	.5	.5	1.5
	6.00	7	1.1	1.1	2.6
	7.00	16	2.5	2.5	5.1
	8.00	40	6.2	6.2	11.2
	9.00	72	11.1	11.1	22.3
	10.00	83	12.8	12.8	35.1
	11.00	103	15.9	15.9	51.0
	12.00	86	13.3	13.3	64.3
	13.00	80	12.3	12.3	76.6
	14.00	54	8.3	8.3	84.9
	15.00	38	5.9	5.9	90.8
	16.00	25	3.9	3.9	94.6
	17.00	20	3.1	3.1	97.7
	18.00	14	2.2	2.2	99.8
	19.00	1	.2	.2	100.0
	Total	649	100.0	100.0	

Final grade

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	15	2.3	2.3	2.3
	1.00	1	.2	.2	2.5
	5.00	1	.2	.2	2.6
	6.00	3	.5	.5	3.1
	7.00	10	1.5	1.5	4.6
	8.00	35	5.4	5.4	10.0
	9.00	35	5.4	5.4	15.4
	10.00	97	14.9	14.9	30.4
	11.00	104	16.0	16.0	46.4
	12.00	72	11.1	11.1	57.5
	13.00	82	12.6	12.6	70.1
	14.00	63	9.7	9.7	79.8
	15.00	49	7.6	7.6	87.4
	16.00	36	5.5	5.5	92.9
	17.00	29	4.5	4.5	97.4
	18.00	15	2.3	2.3	99.7
	19.00	2	.3	.3	100.0
	Total	649	100.0	100.0	

Number of school absences

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	.00	244	37.6	37.6	37.6
	1.00	12	1.8	1.8	39.4
	2.00	110	16.9	16.9	56.4
	3.00	7	1.1	1.1	57.5
	4.00	93	14.3	14.3	71.8
	5.00	12	1.8	1.8	73.7
	6.00	49	7.6	7.6	81.2
	7.00	3	.5	.5	81.7
	8.00	42	6.5	6.5	88.1
	9.00	7	1.1	1.1	89.2
	10.00	21	3.2	3.2	92.4
	11.00	5	.8	.8	93.2
	12.00	12	1.8	1.8	95.1
	13.00	1	.2	.2	95.2
	14.00	8	1.2	1.2	96.5
	15.00	2	.3	.3	96.8
	16.00	10	1.5	1.5	98.3
	18.00	3	.5	.5	98.8
	21.00	2	.3	.3	99.1
	22.00	2	.3	.3	99.4
	24.00	1	.2	.2	99.5
	26.00	1	.2	.2	99.7
	30.00	1	.2	.2	99.8
	32.00	1	.2	.2	100.0
	Total	649	100.0	100.0	

```
* Add import-check maximums to every row so the PDF clearly proves that G3 is
correct.
AGGREGATE
 /OUTFILE=* MODE=ADDVARIABLES
 /BREAK=
 /check_max_G1=MAX(G1)
 /check_max_G2=MAX(G2)
 /check_max_G3=MAX(G3)
```

```
  /check_max_absences=MAX(absences).

TITLE "Import Safety Check: G3 Must Not Be 649".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=check_max_G1 check_max_G2 check_max_G3 check_max_absences
 /TITLE "Safety check: expected G1/G2/G3 max around 19 and absences max around
 32".
```

Report

Safety check: expected G1/G2/G3 max around 19 and absences max around 32

Number of school absences	First period grade	Second period grade	Final grade
32.00	19.00	19.00	19.00
32.00	19.00	19.00	19.00
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* 3. Main coefficient of variation table.
*
* CV ratio = SD / ABS(mean)
* CV percent = CV ratio * 100
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DATASET DECLARE CVSummary.

AGGREGATE
 /OUTFILE='CVSummary'
 /BREAK=
 /n_G1=N(G1)
 /mean_G1=MEAN(G1)
 /sd_G1=SD(G1)
 /n_G2=N(G2)
 /mean_G2=MEAN(G2)
 /sd_G2=SD(G2)
```

```
 /n_G3=N(G3)
 /mean_G3=MEAN(G3)
 /sd_G3=SD(G3)
 /n_absences=N(absences)
 /mean_absences=MEAN(absences)
 /sd_absences=SD(absences)
 /n_studytime=N(studytime)
 /mean_studytime=MEAN(studytime)
 /sd_studytime=SD(studytime)
 /n_failures=N(failures)
 /mean_failures=MEAN(failures)
 /sd_failures=SD(failures)
 /n_health=N(health)
 /mean_health=MEAN(health)
 /sd_health=SD(health).

DATASET ACTIVATE CVSummary.

COMPUTE cv_G1 = (sd_G1 / ABS(mean_G1)) * 100.
COMPUTE cv_G2 = (sd_G2 / ABS(mean_G2)) * 100.
COMPUTE cv_G3 = (sd_G3 / ABS(mean_G3)) * 100.
COMPUTE cv_absences = (sd_absences / ABS(mean_absences)) * 100.
COMPUTE cv_studytime = (sd_studytime / ABS(mean_studytime)) * 100.
COMPUTE cv_failures = (sd_failures / ABS(mean_failures)) * 100.
COMPUTE cv_health = (sd_health / ABS(mean_health)) * 100.
EXECUTE.

VARSTOCASES
 /MAKE n FROM n_G1 n_G2 n_G3 n_absences n_studytime n_failures n_health
 /MAKE mean_value FROM mean_G1 mean_G2 mean_G3 mean_absences mean_studytime me
an_failures mean_health
 /MAKE sd_value FROM sd_G1 sd_G2 sd_G3 sd_absences sd_studytime sd_failures sd
_health
 /MAKE cv_percent FROM cv_G1 cv_G2 cv_G3 cv_absences cv_studytime cv_failures
cv_health
 /INDEX=variable_index(7)
 /NULL=KEEP.
```

Variables to Cases

[CVSummary]

Generated Variables

Name	Label
variable_index	<none>
n	<none>
mean_value	<none>
sd_value	<none>
cv_percent	<none>

Processing Statistics

Variables In	28
Variables Out	5

```
STRING variable_name (A30).
IF (variable_index = 1) variable_name = "G1".
IF (variable_index = 2) variable_name = "G2".
IF (variable_index = 3) variable_name = "G3".
IF (variable_index = 4) variable_name = "absences".
IF (variable_index = 5) variable_name = "studytime".
IF (variable_index = 6) variable_name = "failures".
IF (variable_index = 7) variable_name = "health".
EXECUTE.

FORMATS n (F8.0) mean_value sd_value cv_percent (F12.4).

VARIABLE LABELS
 variable_name "Variable"
 n "Valid N"
 mean_value "Mean"
 sd_value "Standard deviation"
 cv_percent "Coefficient of variation (%)".

TITLE "Coefficient of Variation Summary".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=variable_name n mean_value sd_value cv_percent
 /TITLE "Coefficient of Variation Summary: CV (%) = SD / ABS(Mean) Ã— 100".
```

Report

Coefficient of Variation Summary: CV (%) = SD / ABS(Mean) Ã— 100

Variable	Valid N	Mean	Standard deviation	Coefficient of variation (%)
G1	649	11.399	2.7453	24.0832
G2	649	11.570	2.9136	25.1825
G3	649	11.906	3.2307	27.1347
absences	649	3.659	4.6408	126.8148
studytime	649	1.930	.8295	42.9650
failures	649	.221	.5932	267.3678
health	649	3.536	1.4463	40.8986

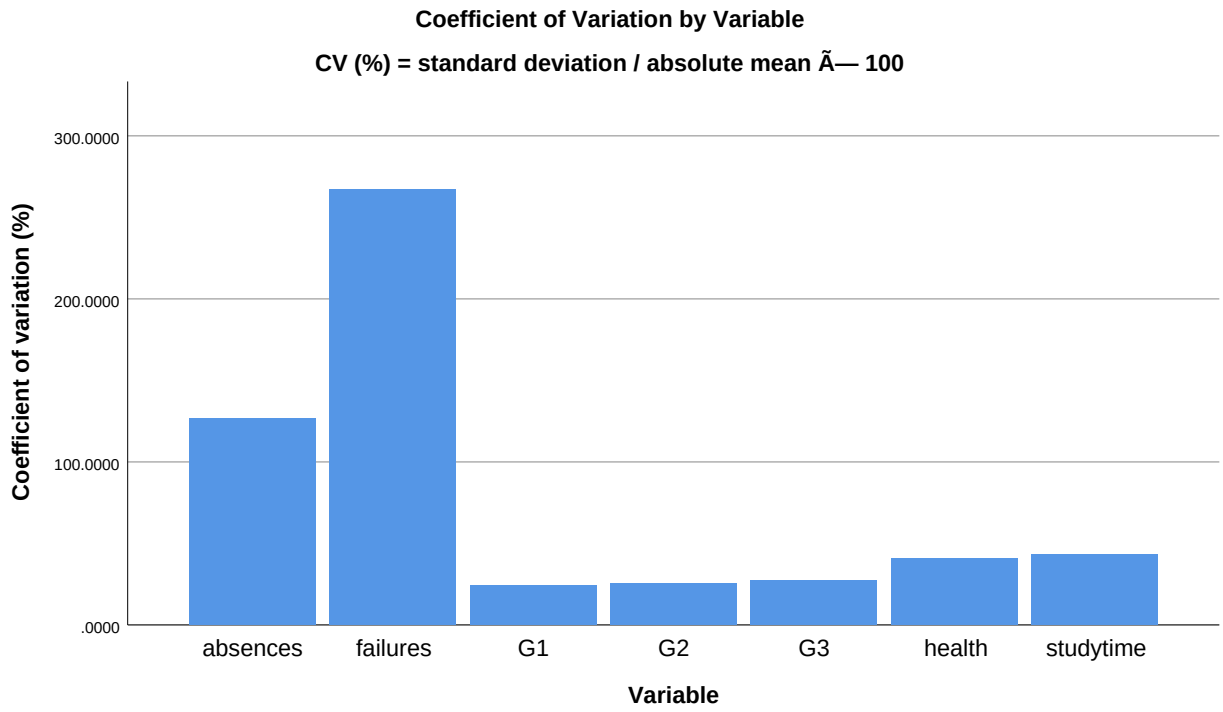
```
SAVE TRANSLATE
 /OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient
of Variation\SPSS\tables\coefficient_of_variation_spss_summary.csv"
 /TYPE=CSV
 /ENCODING='UTF8'
 /MAP
 /REPLACE
 /FIELDNAMES
 /CELLS=VALUES.
```

```
Data written to D:\DATA ANALYSIS\...\Coefficient of Variation\SPSS\tables\coef
ficient_of_variation_spss_summary.csv.
6 variables and 7 cases written.
Variable: variable_index     Type: Number   Width:   4   Dec: 0
Variable: n                  Type: Number   Width:   8   Dec: 0
Variable: mean_value         Type: Number   Width:  12   Dec: 4
Variable: sd_value           Type: Number   Width:  12   Dec: 4
Variable: cv_percent         Type: Number   Width:  12   Dec: 4
Variable: variable_name      Type: String   Width:  30
```

```
GGRAPH
 /GRAPHDATASET NAME="cvgraph" VARIABLES=variable_name cv_percent
 /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
 SOURCE: s=userSource(id("cvgraph"))
 DATA: variable_name=col(source(s), name("variable_name"), unit.category())
 DATA: cv_percent=col(source(s), name("cv_percent"))
 GUIDE: axis(dim(1), label("Variable"))
 GUIDE: axis(dim(2), label("Coefficient of variation (%)"))
 GUIDE: text.title(label("Coefficient of Variation by Variable"))
 GUIDE: text.subtitle(label("CV (%) = standard deviation / absolute mean Ã— 1
00"))
 ELEMENT: interval(position(variable_name*cv_percent))
END GPL.
```

GGraph

Coefficient of Variation Summary




```
* ------------------------------------------------------------.
* 4. Group CV tables and charts for G3.
* ------------------------------------------------------------.

DATASET ACTIVATE CVData.

DATASET DECLARE CVG3School.
AGGREGATE
 /OUTFILE='CVG3School'
 /BREAK=school
 /n=N(G3)
 /mean_G3=MEAN(G3)
 /sd_G3=SD(G3).
DATASET ACTIVATE CVG3School.
COMPUTE cv_percent=(sd_G3 / ABS(mean_G3)) * 100.
FORMATS n (F8.0) mean_G3 sd_G3 cv_percent (F12.4).
EXECUTE.

TITLE "Coefficient of Variation of G3 by School".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=school n mean_G3 sd_G3 cv_percent
 /TITLE "Coefficient of Variation of G3 by School".
```

Report

[CVG3School]

Coefficient of Variation of G3 by School

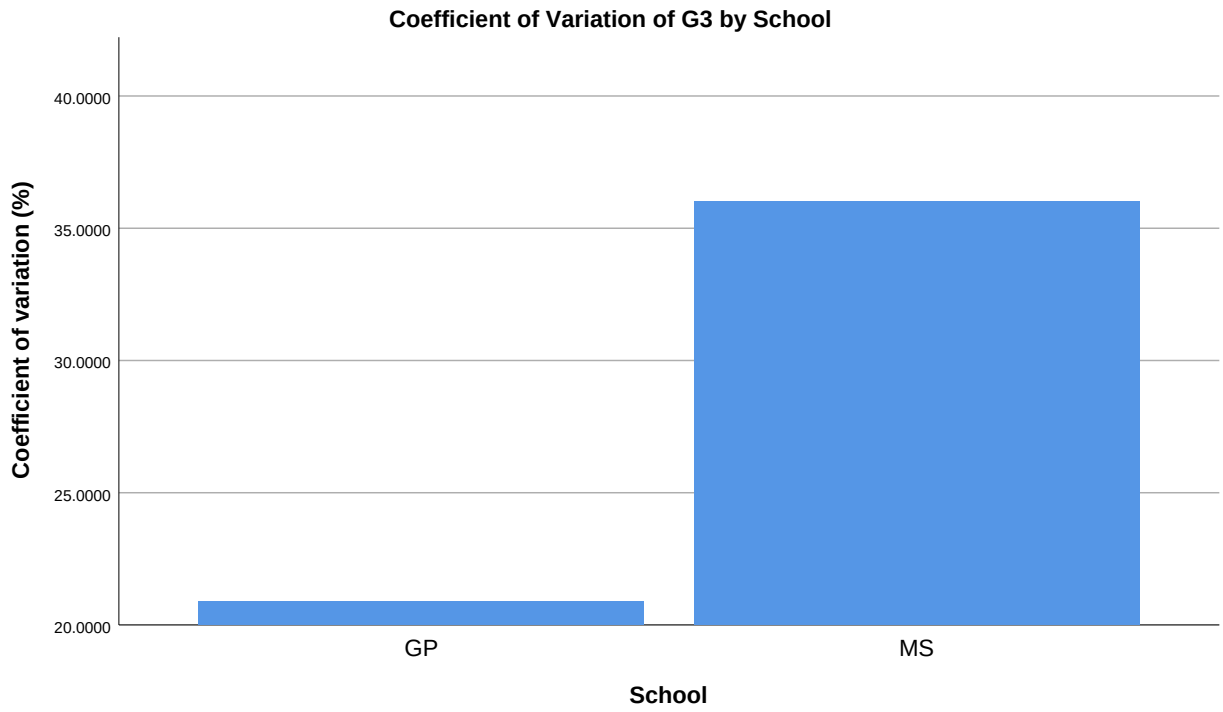
School	n	mean_G3	sd_G3	cv_percent
GP	423	12.5768	2.6256	20.8768
MS	226	10.6504	3.8340	35.9984

```
SAVE TRANSLATE
 /OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient
of Variation\SPSS\tables\coefficient_of_variation_g3_by_school_spss.csv"
 /TYPE=CSV
 /ENCODING='UTF8'
 /REPLACE
 /FIELDNAMES
 /CELLS=VALUES.

GGRAPH
 /GRAPHDATASET NAME="cvschool" VARIABLES=school cv_percent
 /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
 SOURCE: s=userSource(id("cvschool"))
 DATA: school=col(source(s), name("school"), unit.category())
 DATA: cv_percent=col(source(s), name("cv_percent"))
 GUIDE: axis(dim(1), label("School"))
 GUIDE: axis(dim(2), label("Coefficient of variation (%)"))
 GUIDE: text.title(label("Coefficient of Variation of G3 by School"))
 ELEMENT: interval(position(school*cv_percent))
END GPL.
```

GGraph

Coefficient of Variation of G3 by School




```
DATASET ACTIVATE CVData.

DATASET DECLARE CVG3Sex.
AGGREGATE
 /OUTFILE='CVG3Sex'
 /BREAK=sex
 /n=N(G3)
 /mean_G3=MEAN(G3)
 /sd_G3=SD(G3).
DATASET ACTIVATE CVG3Sex.
COMPUTE cv_percent=(sd_G3 / ABS(mean_G3)) * 100.
FORMATS n (F8.0) mean_G3 sd_G3 cv_percent (F12.4).
EXECUTE.

TITLE "Coefficient of Variation of G3 by Sex".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=sex n mean_G3 sd_G3 cv_percent
 /TITLE "Coefficient of Variation of G3 by Sex".
```

Report

[CVG3Sex]

Coefficient of Variation of G3 by Sex

Coefficient of Variation of G3 by Sex

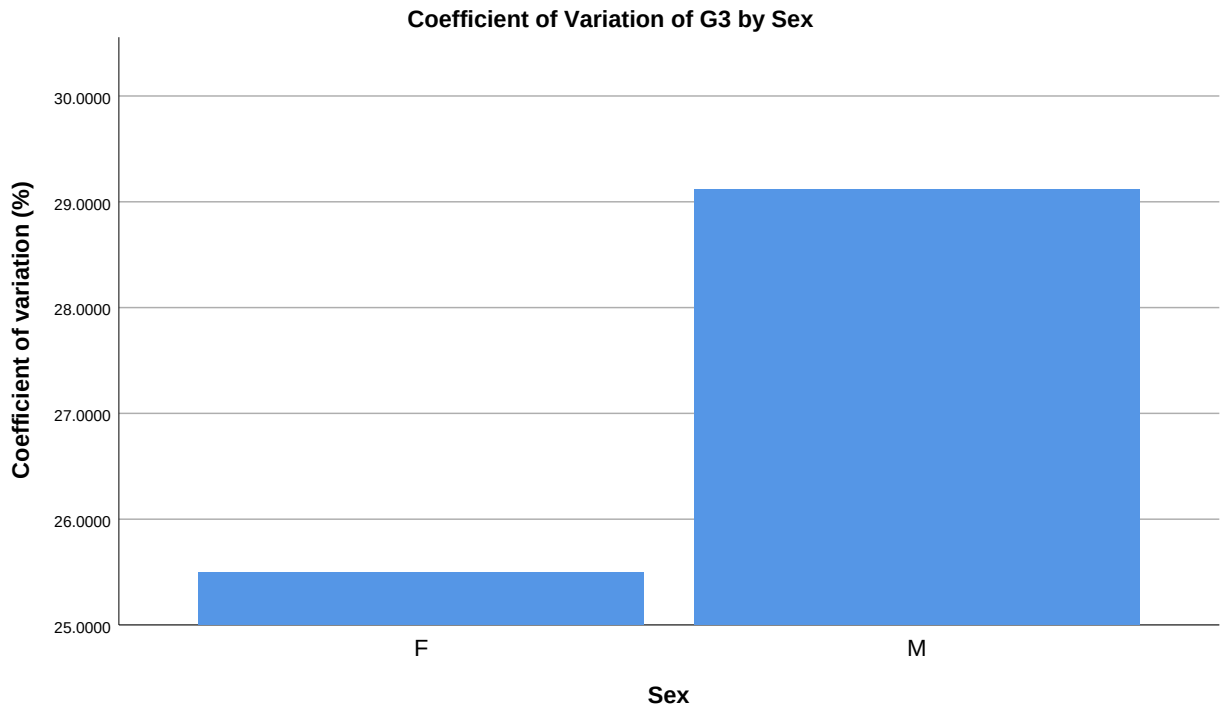
Student sex	n	mean_G3	sd_G3	cv_percent
F	383	12.2533	3.1241	25.4965
M	266	11.4060	3.3207	29.1135

```
SAVE TRANSLATE
 /OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient
of Variation\SPSS\tables\coefficient_of_variation_g3_by_sex_spss.csv"
 /TYPE=CSV
 /ENCODING='UTF8'
 /REPLACE
 /FIELDNAMES
 /CELLS=VALUES.

GGRAPH
 /GRAPHDATASET NAME="cvsex" VARIABLES=sex cv_percent
 /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
 SOURCE: s=userSource(id("cvsex"))
 DATA: sex=col(source(s), name("sex"), unit.category())
 DATA: cv_percent=col(source(s), name("cv_percent"))
 GUIDE: axis(dim(1), label("Sex"))
 GUIDE: axis(dim(2), label("Coefficient of variation (%)"))
 GUIDE: text.title(label("Coefficient of Variation of G3 by Sex"))
 ELEMENT: interval(position(sex*cv_percent))
END GPL.
```

GGraph

Coefficient of Variation of G3 by Sex




```
DATASET ACTIVATE CVData.

DATASET DECLARE CVG3Study.
AGGREGATE
 /OUTFILE='CVG3Study'
 /BREAK=studytime
 /n=N(G3)
 /mean_G3=MEAN(G3)
 /sd_G3=SD(G3).
DATASET ACTIVATE CVG3Study.
COMPUTE cv_percent=(sd_G3 / ABS(mean_G3)) * 100.
FORMATS n (F8.0) mean_G3 sd_G3 cv_percent (F12.4).
VALUE LABELS studytime
 1 "1: <2 hours"
 2 "2: 2-5 hours"
 3 "3: 5-10 hours"
 4 "4: >10 hours".
EXECUTE.

TITLE "Coefficient of Variation of G3 by Study Time".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=studytime n mean_G3 sd_G3 cv_percent
 /TITLE "Coefficient of Variation of G3 by Study Time".
```

Report

[CVG3Study]

Coefficient of Variation of G3 by Study Time

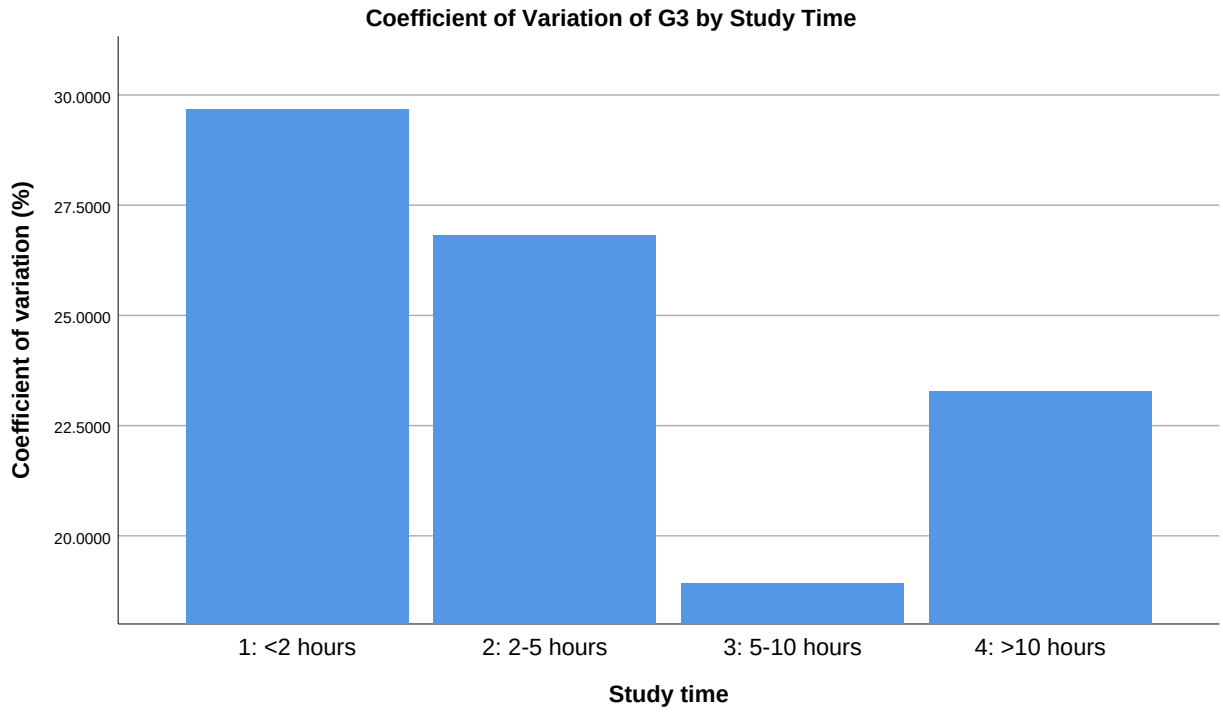
Weekly study time category	n	mean_G3	sd_G3	cv_percent
1.00	212	10.8443	3.2186	29.6802
2.00	305	12.0918	3.2431	26.8209
3.00	97	13.2268	2.5021	18.9169
4.00	35	13.0571	3.0384	23.2701

```
SAVE TRANSLATE
 /OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient
of Variation\SPSS\tables\coefficient_of_variation_g3_by_studytime_spss.csv"
 /TYPE=CSV
 /ENCODING='UTF8'
 /REPLACE
 /FIELDNAMES
 /CELLS=VALUES.

GGRAPH
 /GRAPHDATASET NAME="cvstudy" VARIABLES=studytime cv_percent
 /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
 SOURCE: s=userSource(id("cvstudy"))
 DATA: studytime=col(source(s), name("studytime"), unit.category())
 DATA: cv_percent=col(source(s), name("cv_percent"))
 GUIDE: axis(dim(1), label("Study time"))
 GUIDE: axis(dim(2), label("Coefficient of variation (%)"))
```

```
 GUIDE: text.title(label("Coefficient of Variation of G3 by Study Time"))
 ELEMENT: interval(position(studytime*cv_percent))
END GPL.
```

GGraph




```
DATASET ACTIVATE CVData.

DATASET DECLARE CVG3Failures.
AGGREGATE
 /OUTFILE='CVG3Failures'
 /BREAK=failures
 /n=N(G3)
 /mean_G3=MEAN(G3)
 /sd_G3=SD(G3).
DATASET ACTIVATE CVG3Failures.
COMPUTE cv_percent=(sd_G3 / ABS(mean_G3)) * 100.
FORMATS n (F8.0) mean_G3 sd_G3 cv_percent (F12.4).
VALUE LABELS failures
 0 "0 failures"
 1 "1 failure"
```

```
 2 "2 failures"
 3 "3 failures".
EXECUTE.

TITLE "Coefficient of Variation of G3 by Past Failures".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=failures n mean_G3 sd_G3 cv_percent
 /TITLE "Coefficient of Variation of G3 by Past Failures".
```

Report

```
[CVG3Failures]
```

Coefficient of Variation of G3 by Past Failures

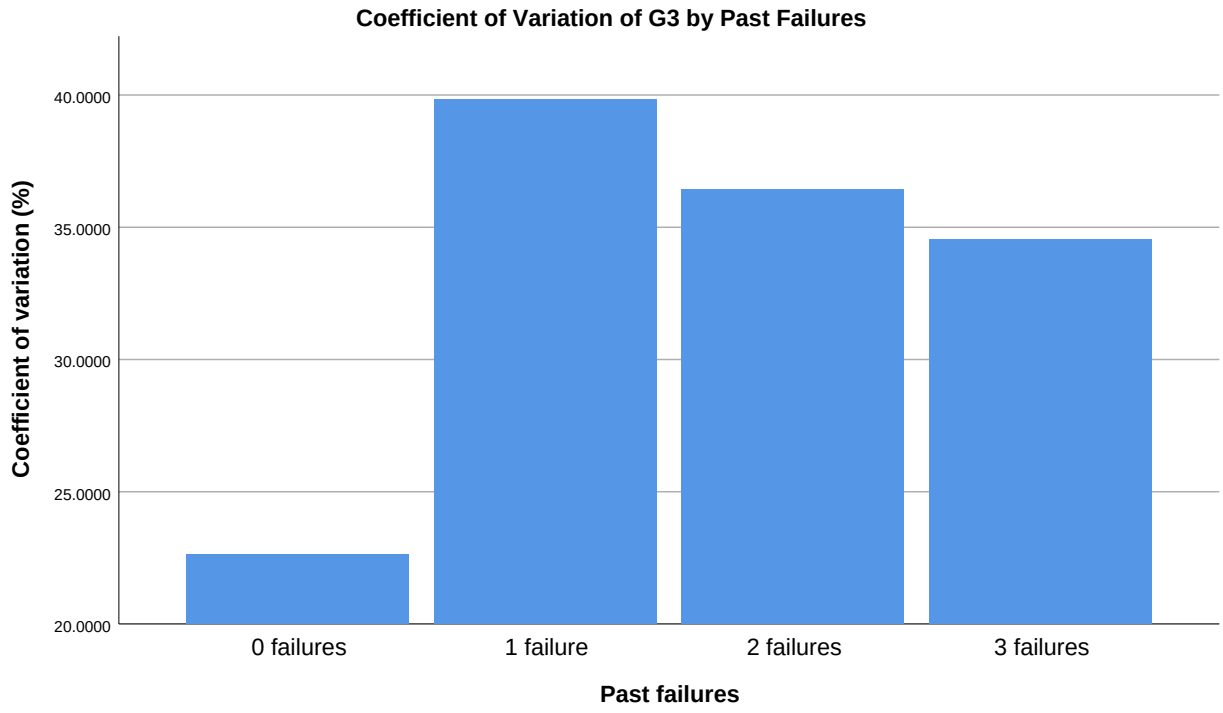
Number of past class failures	n	mean_G3	sd_G3	cv_percent
.00	549	12.5100	2.8288	22.6124
1.00	70	8.6429	3.4433	39.8395
2.00	16	8.8125	3.2087	36.4109
3.00	14	8.0714	2.7863	34.5211

```
SAVE TRANSLATE
 /OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient
of Variation\SPSS\tables\coefficient_of_variation_g3_by_failures_spss.csv"
 /TYPE=CSV
 /ENCODING='UTF8'
 /REPLACE
 /FIELDNAMES
 /CELLS=VALUES.

GGRAPH
 /GRAPHDATASET NAME="cvfailures" VARIABLES=failures cv_percent
 /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
 SOURCE: s=userSource(id("cvfailures"))
 DATA: failures=col(source(s), name("failures"), unit.category())
 DATA: cv_percent=col(source(s), name("cv_percent"))
 GUIDE: axis(dim(1), label("Past failures"))
 GUIDE: axis(dim(2), label("Coefficient of variation (%)"))
```

```
 GUIDE: text.title(label("Coefficient of Variation of G3 by Past Failures"))
 ELEMENT: interval(position(failures*cv_percent))
END GPL.
```

GGraph




```
* ------------------------------------------------------------.
* 5. Absences CV by school.
* ------------------------------------------------------------.

DATASET ACTIVATE CVData.

DATASET DECLARE CVAbsSchool.
AGGREGATE
 /OUTFILE='CVAbsSchool'
 /BREAK=school
 /n=N(absences)
 /mean_absences=MEAN(absences)
 /sd_absences=SD(absences).
DATASET ACTIVATE CVAbsSchool.
COMPUTE cv_percent=(sd_absences / ABS(mean_absences)) * 100.
```

```
FORMATS n (F8.0) mean_absences sd_absences cv_percent (F12.4).
EXECUTE.

TITLE "Coefficient of Variation of Absences by School".
```

```
REPORT FORMAT=LIST AUTOMATIC ALIGN(CENTER)
 /VARIABLES=school n mean_absences sd_absences cv_percent
 /TITLE "Coefficient of Variation of Absences by School".
```

Report

[CVAbsSchool]

Coefficient of Variation of Absences by School

Coefficient of Variation of Absences by School

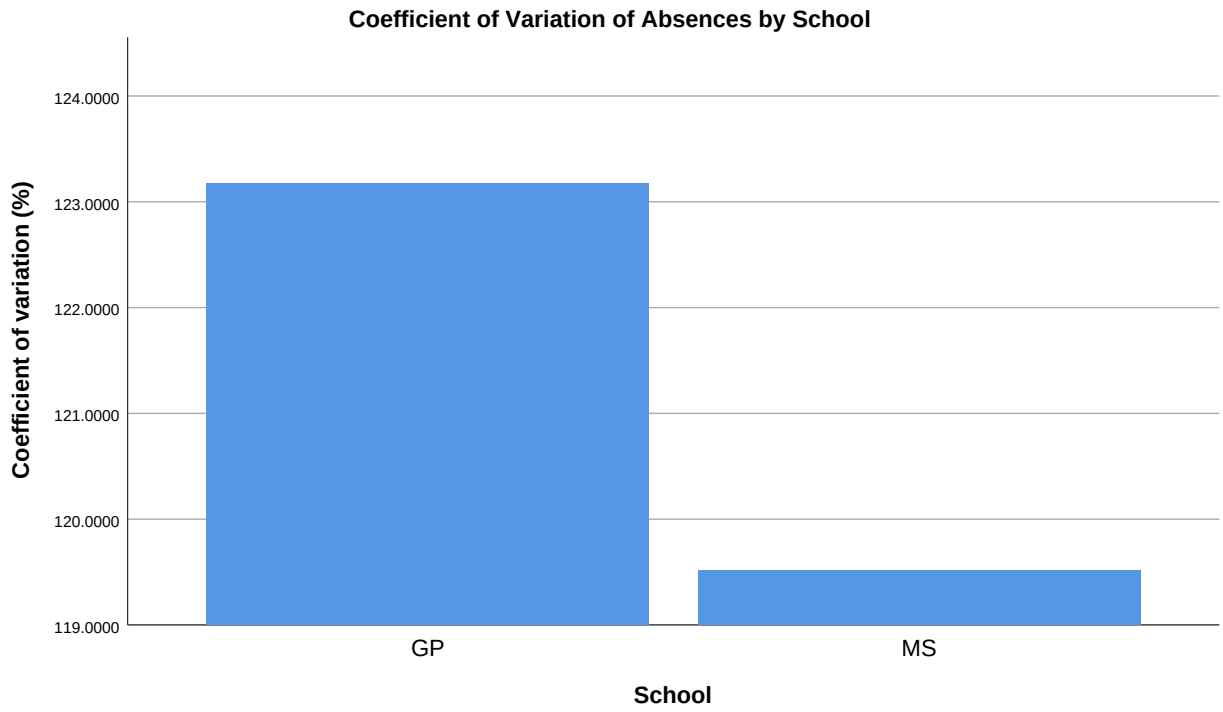
School	n	mean_absences	sd_absences	cv_percent
GP	423	4.2151	5.1919	123.1733
MS	226	2.6195	3.1307	119.5162

```
SAVE TRANSLATE
 /OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficient
of Variation\SPSS\tables\coefficient_of_variation_absences_by_school_spss.csv"
 /TYPE=CSV
 /ENCODING='UTF8'
 /REPLACE
 /FIELDNAMES
 /CELLS=VALUES.

GGRAPH
 /GRAPHDATASET NAME="cvabsences" VARIABLES=school cv_percent
 /GRAPHSPEC SOURCE=INLINE.
BEGIN GPL
 SOURCE: s=userSource(id("cvabsences"))
 DATA: school=col(source(s), name("school"), unit.category())
 DATA: cv_percent=col(source(s), name("cv_percent"))
 GUIDE: axis(dim(1), label("School"))
 GUIDE: axis(dim(2), label("Coefficient of variation (%)"))
 GUIDE: text.title(label("Coefficient of Variation of Absences by School"))
 ELEMENT: interval(position(school*cv_percent))
END GPL.
```

GGraph

Coefficient of Variation of Absences by School




```
* ------------------------------------------------------------.
* 6. Save corrected SPSS output data and export final PDF.
* ------------------------------------------------------------.

DATASET ACTIVATE CVData.

SAVE OUTFILE="D:\DATA ANALYSIS\A Basic Descriptive Statistics Guides\Coefficie
nt of Variation\SPSS\coefficient_of_variation_spss_output_data_CORRECTED_FINAL
.sav"
 /COMPRESSED.

OUTPUT EXPORT
 /CONTENTS EXPORT=VISIBLE
```