Exploratory Data Analysis (EDA)

Statsomat.com

18 April 2021

Basic Information

Automatic statistics for the file:

File
HolzingerSwineford1939.csv

Your selection for the encoding: Auto
Your selection for the decimal character: Auto
Observations (rows with at least one non-missing value): 301
Variables (columns with at least one non-missing value): 16
Variables considered continuous: 11

Variables considered continuous
id
V1
x1
x2
x3
x4
x5
x6
x7
x8
x9

Variables considered categorical: 5

Variables considered categorical
agemo
ageyr
grade
school
sex

Results for Numerical Variables

Descriptive Statistics

Variables are sorted alphabetically. Missings are omitted in stats. CV only for positive variables.

	N Obs	N Missing	N Valid	% Complete	N Unique	Mean	SD	Median	MAD	Min	Max	Skewness	Kurtosis	CV
id	301	0	301	100	301	176.55	105.94	163	140.85	1	351	-0.01	-1.35	0.6
V1	301	0	301	100	301	151	87.04	151	111.2	1	301	0	-1.2	0.58
x1	301	0	301	100	35	4.94	1.17	5	1.24	0.67	8.5	-0.26	0.36	0.24
x2	301	0	301	100	25	6.09	1.18	6	1.11	2.25	9.25	0.47	0.38	0.19
x3	301	0	301	100	35	2.25	1.13	2.12	1.3	0.25	4.5	0.39	-0.89	0.5
x4	301	0	301	100	20	3.06	1.16	3	0.99	0	6.33	0.27	0.12	
x5	301	0	301	100	25	4.34	1.29	4.5	1.48	1	7	-0.35	-0.53	0.3
x6	301	0	301	100	40	2.19	1.1	2	1.06	0.14	6.14	0.87	0.88	0.5
x7	301	0	301	100	97	4.19	1.09	4.09	1.1	1.3	7.43	0.25	-0.27	0.26
x8	301	0	301	100	84	5.53	1.01	5.5	0.96	3.05	10	0.53	1.24	0.18
x9	301	0	301	100	129	5.37	1.01	5.42	0.99	2.78	9.25	0.21	0.34	0.19

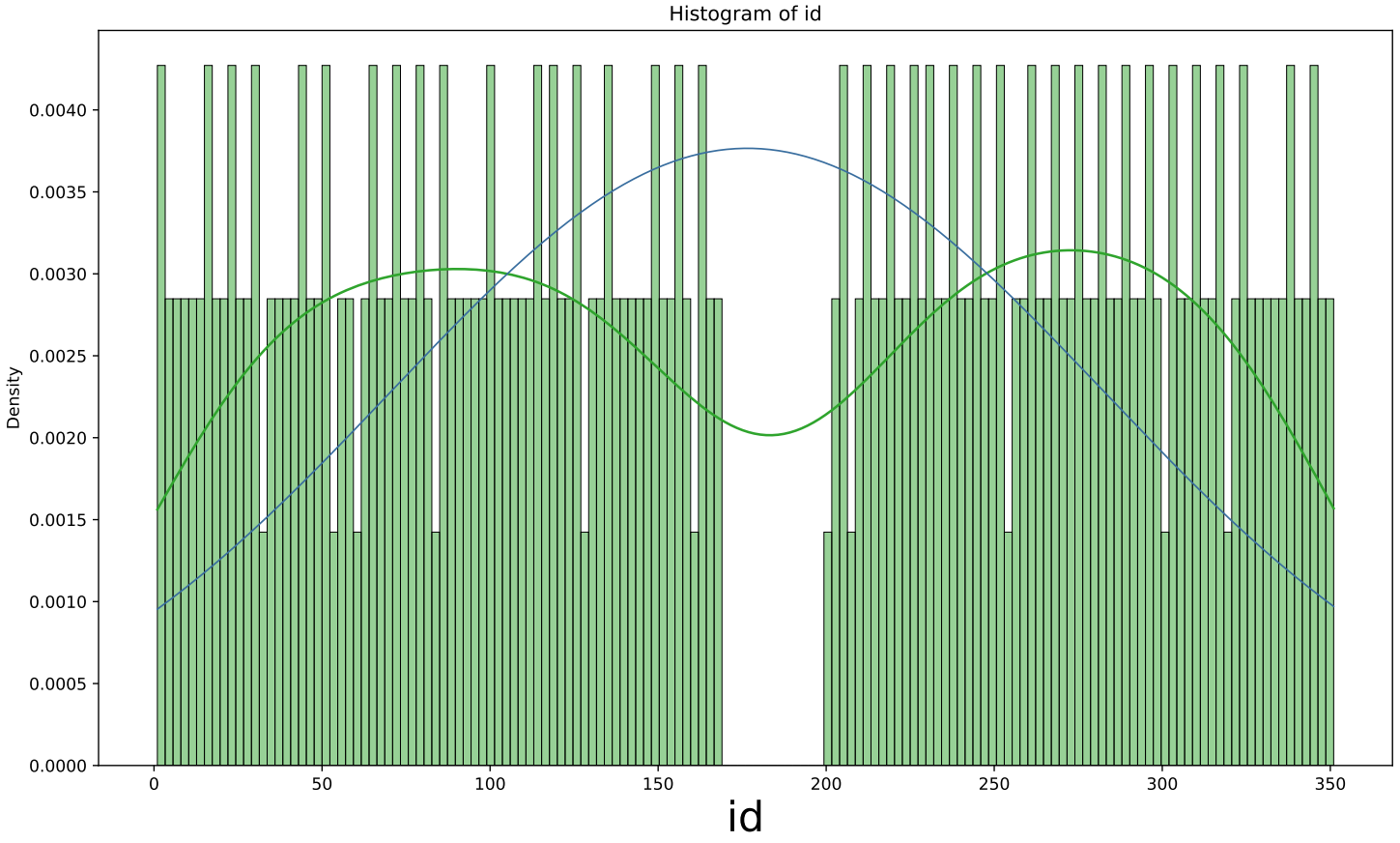
Graphics

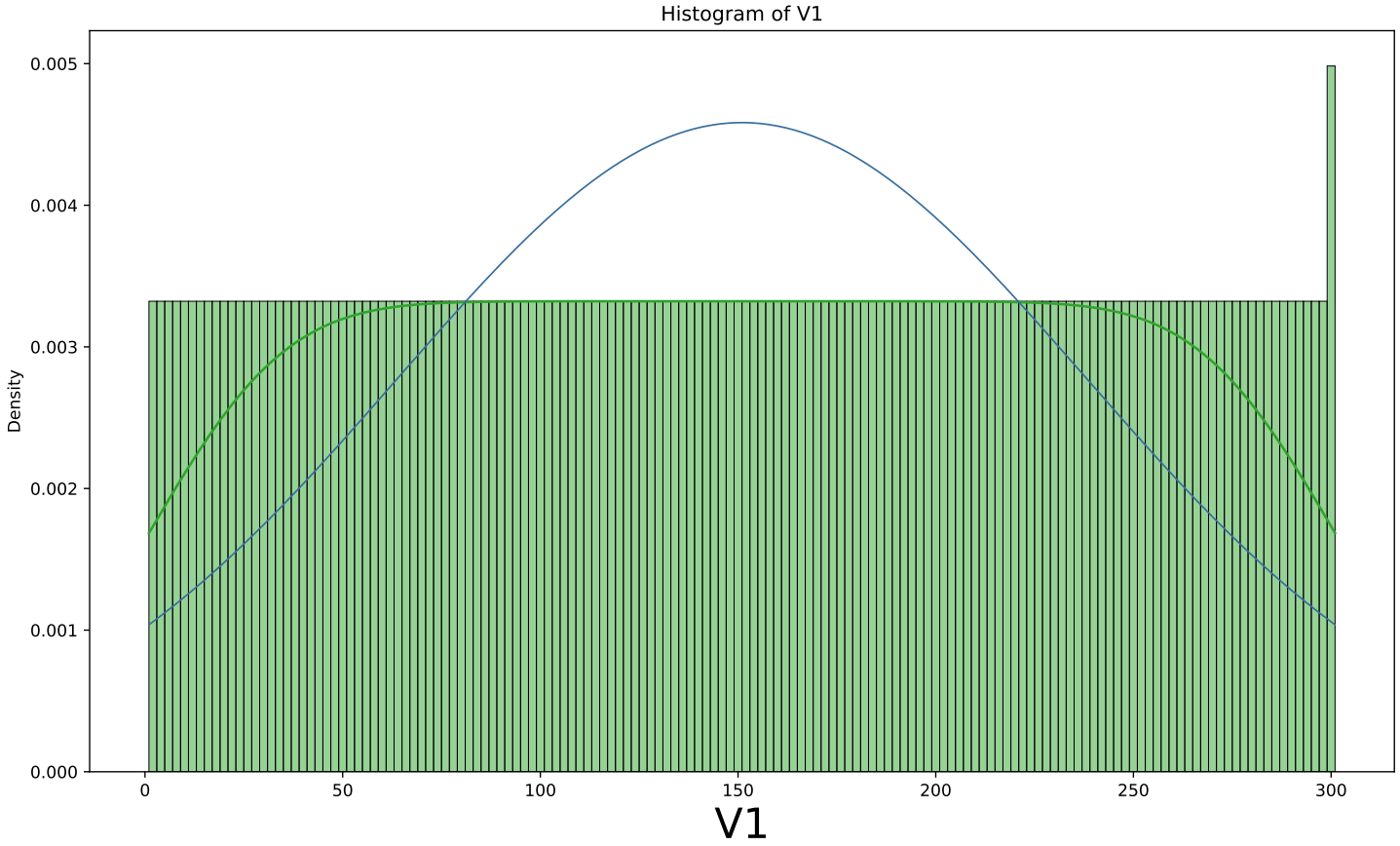
Histograms

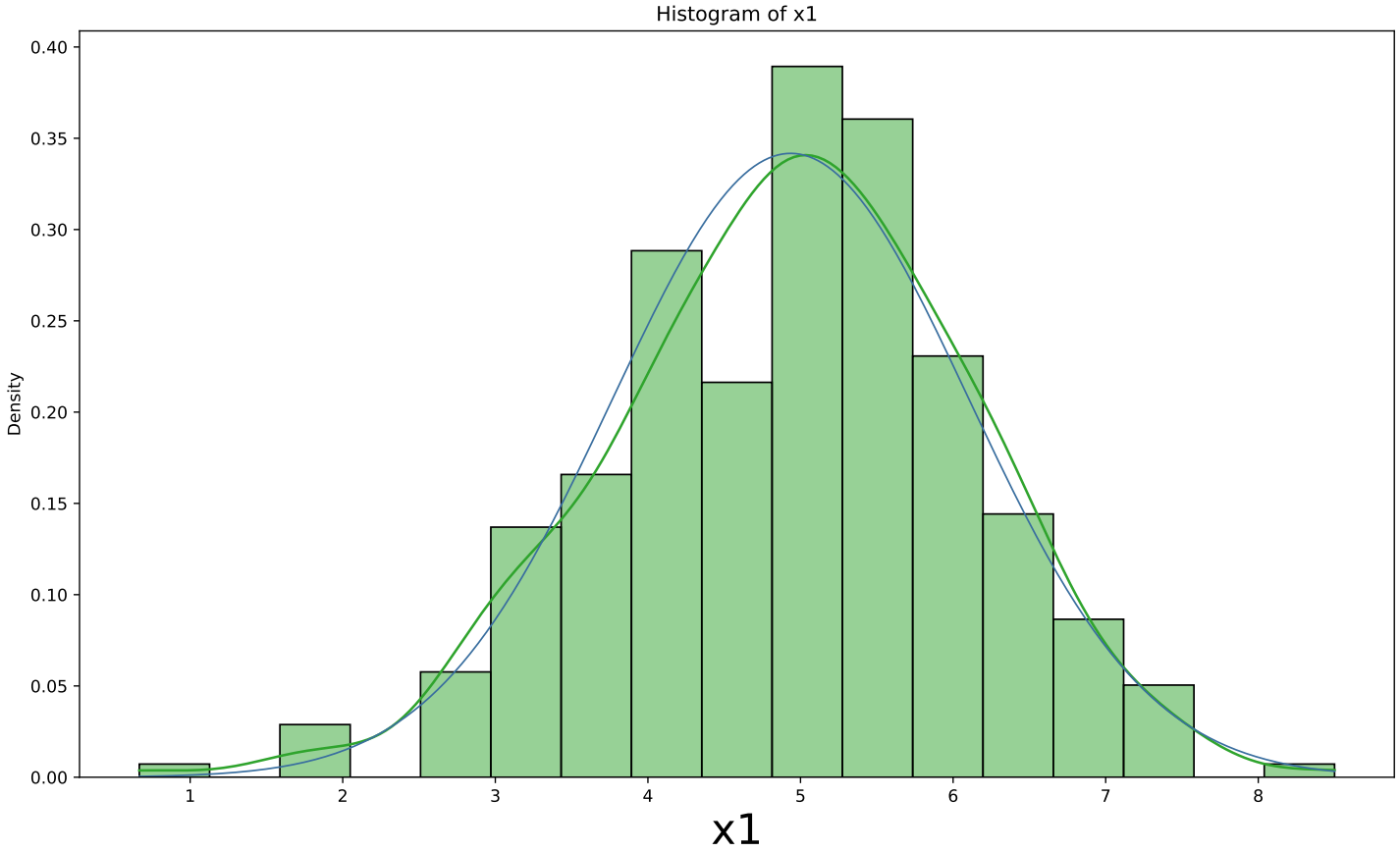
Details: Density Histograms. One large figure per page for each variable, sorted alphabetically. The blue line represents the normal density approximation. The green line represents a special kernel density approximation.

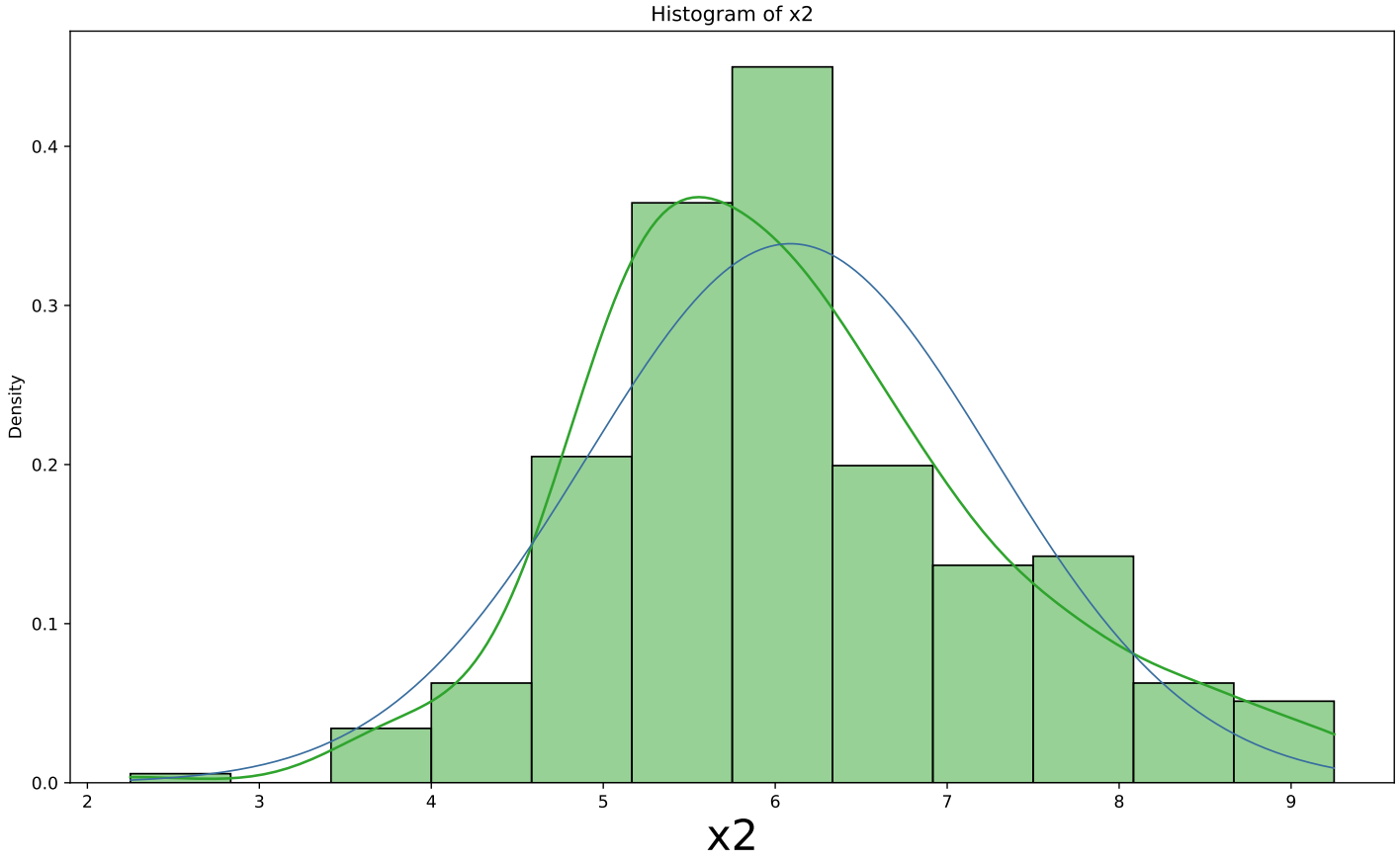
See figures on next page.

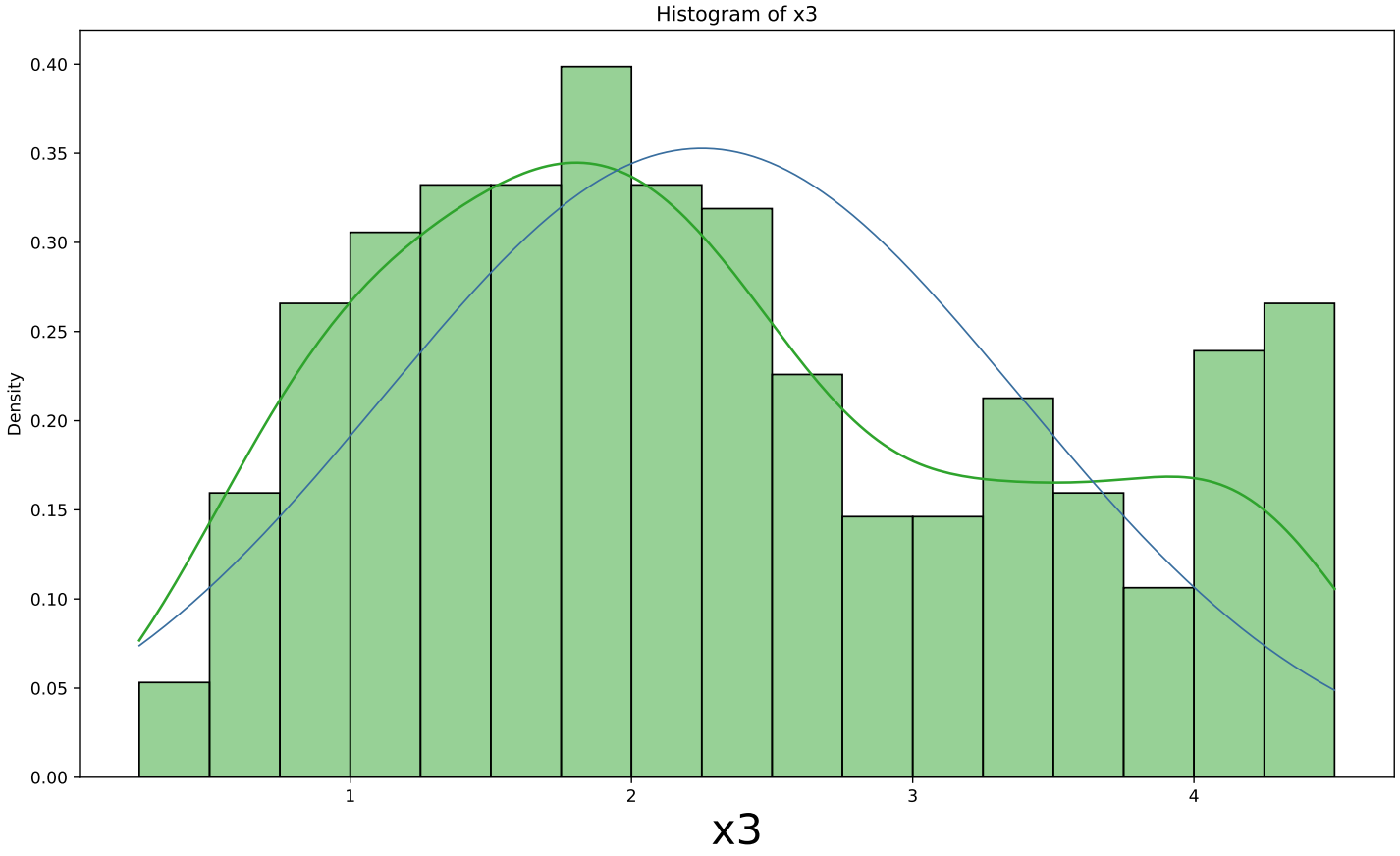
[]

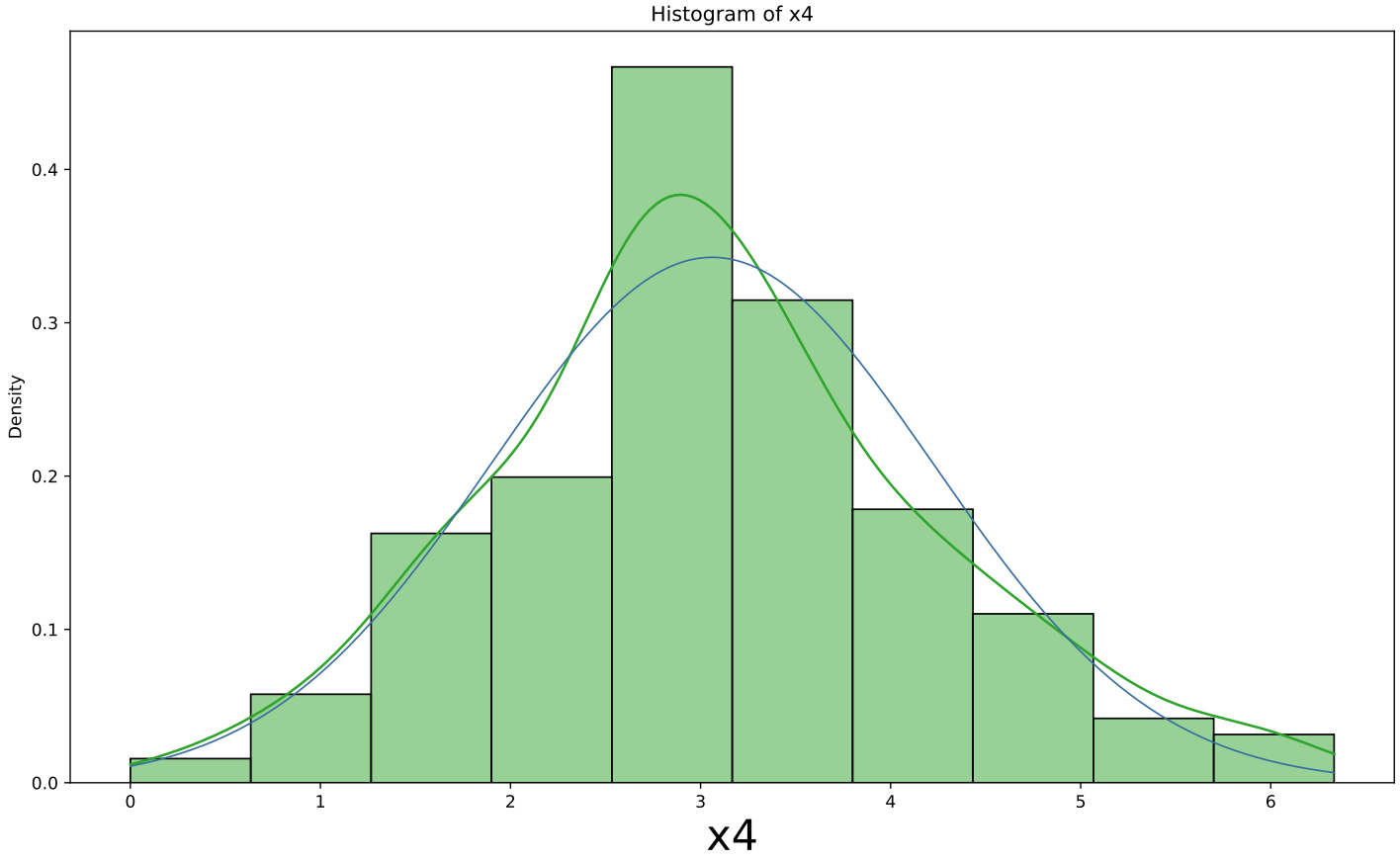

Histogram of id
Density
0.0040
0.0035
0.0030
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0
50
100
150
200
250
300
350
id

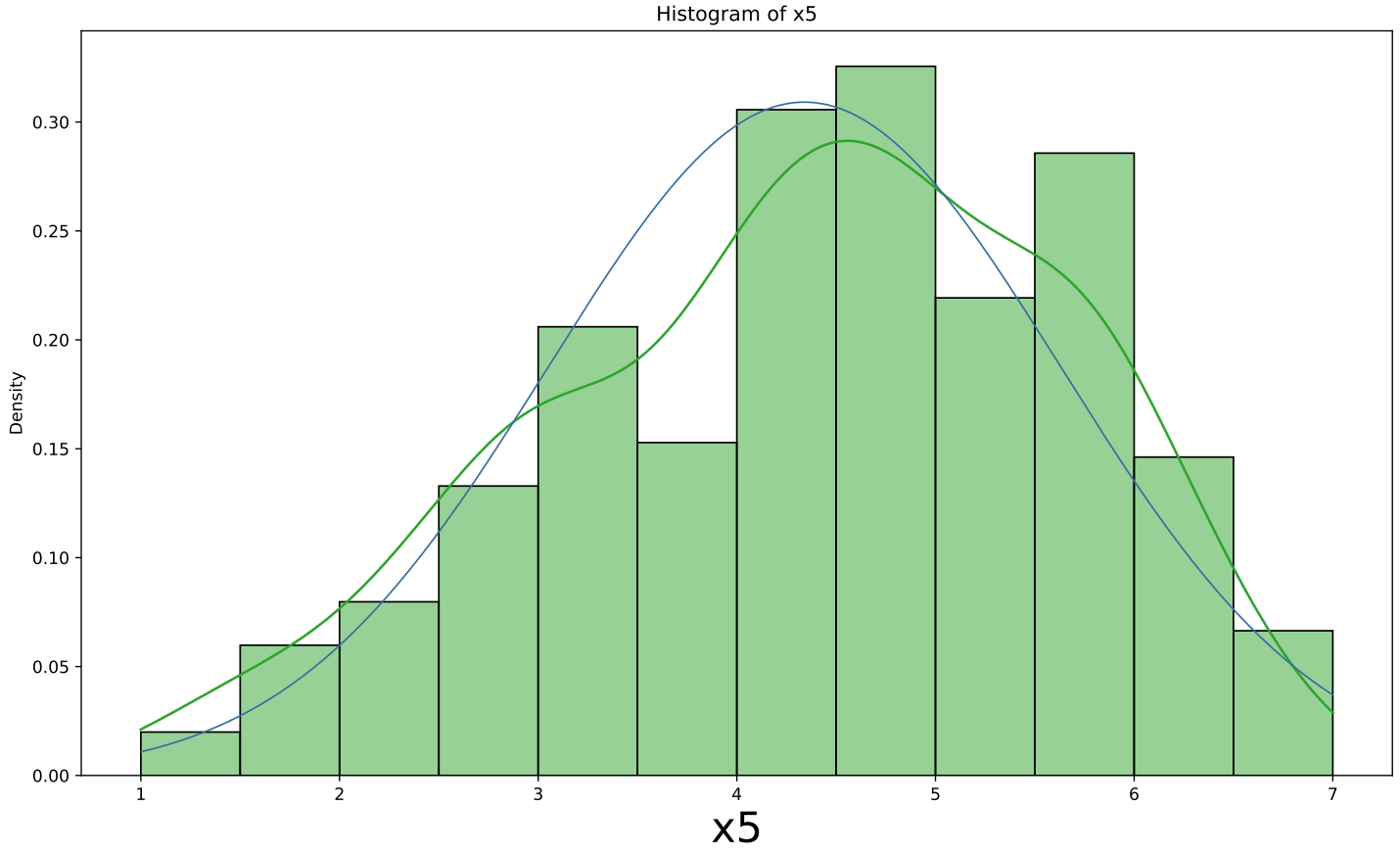

Histogram of V1
Density
0.005
0.004
0.003
0.002
0.001
0.000
0
50
100
150
200
250
300
V1

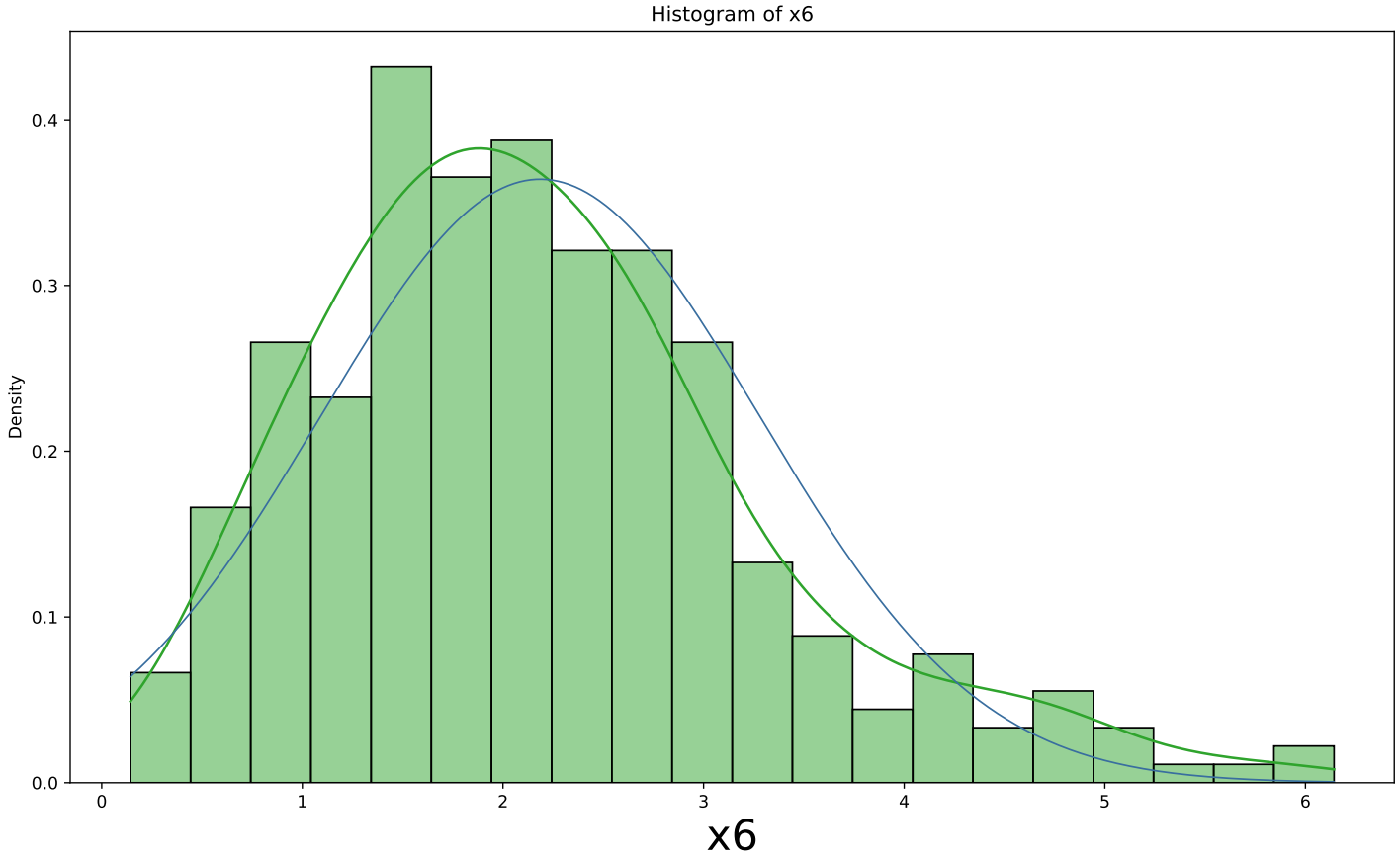

Histogram of x1
Density
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
1
2
3
4
5
6
7
8
x1

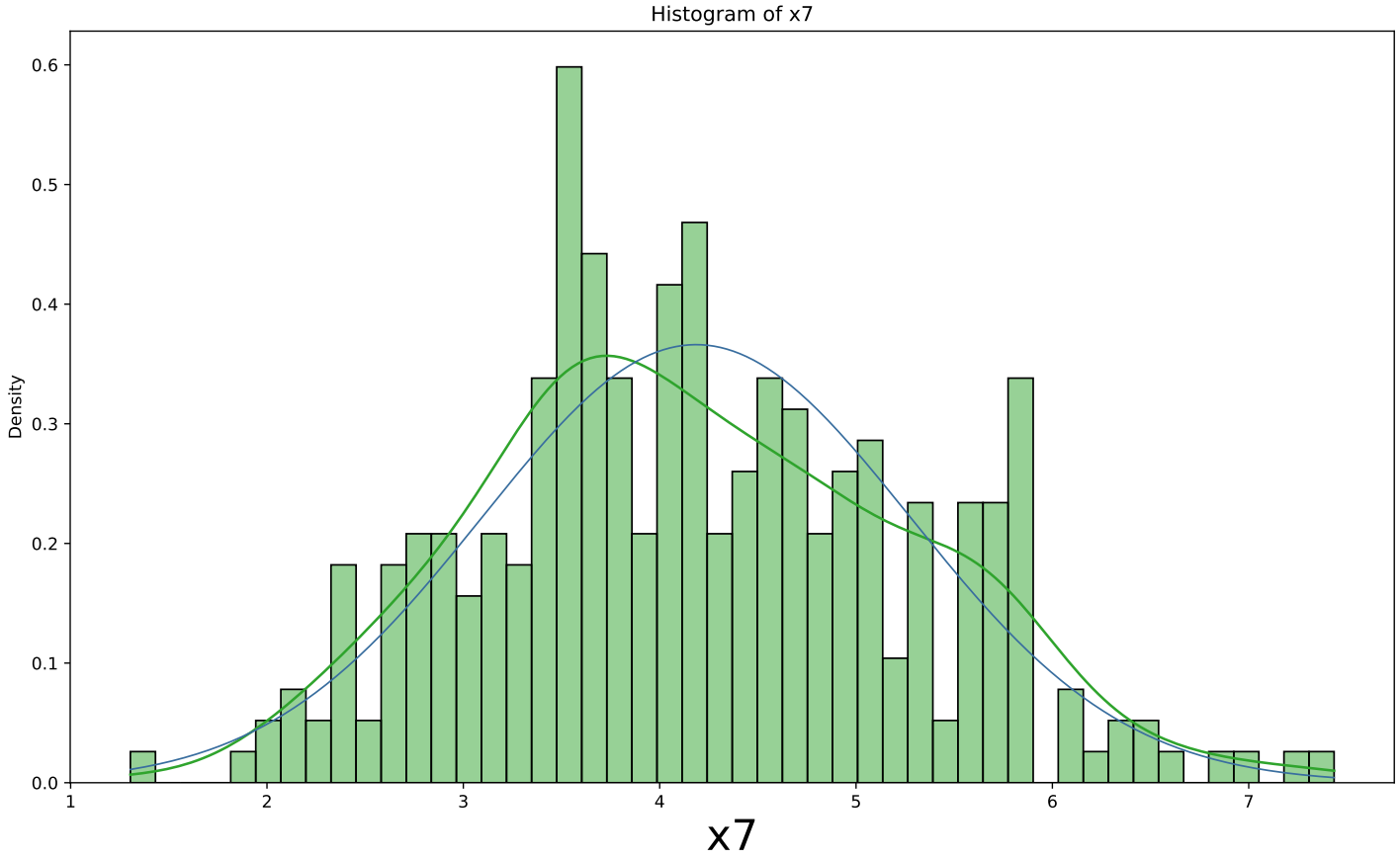

Histogram of x2
Density
0.0
0.1
0.2
0.3
0.4
2
3
4
5
6
7
8
9
x2

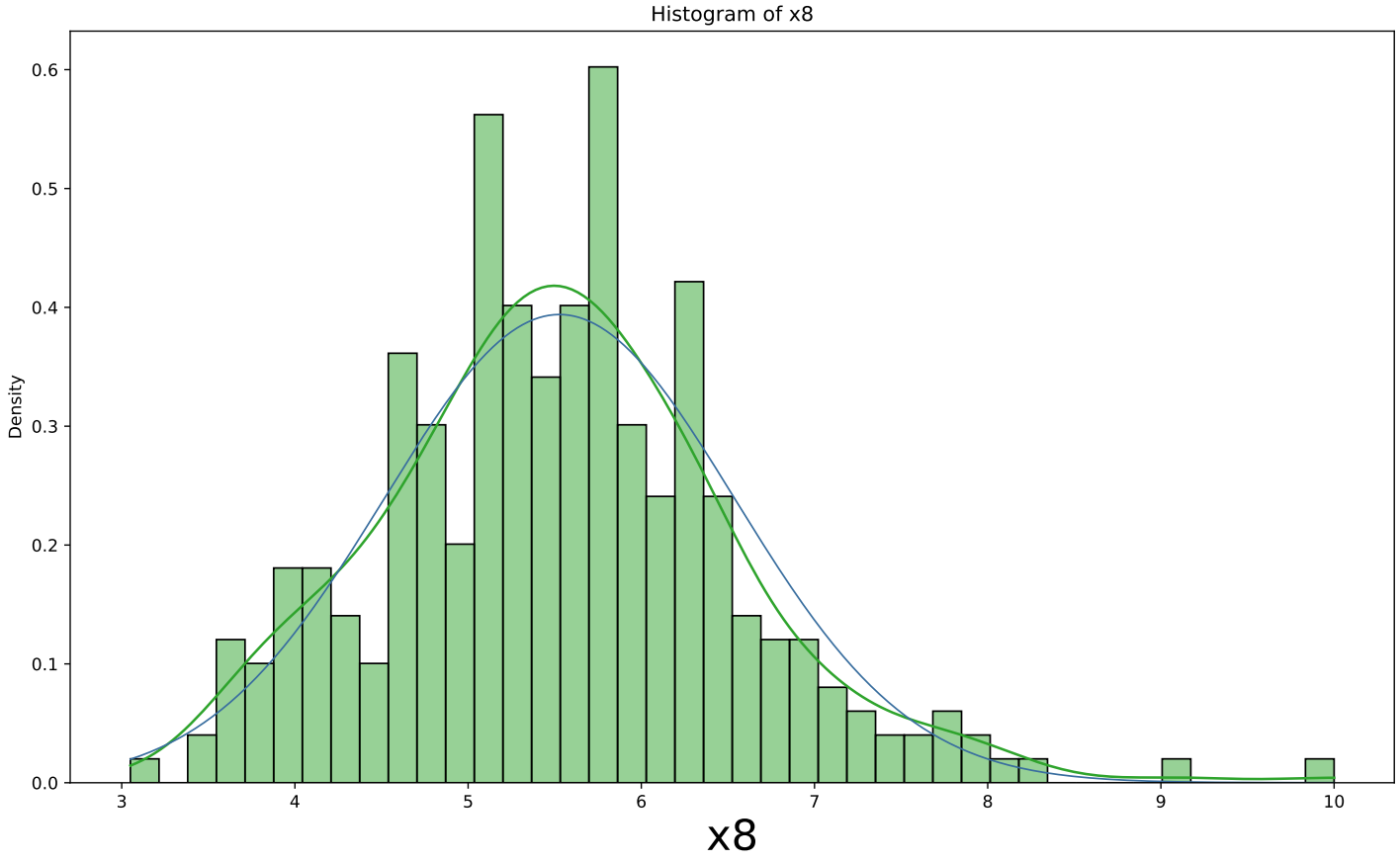

Histogram of x3
Density
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0.40
1
2
3
4
x3

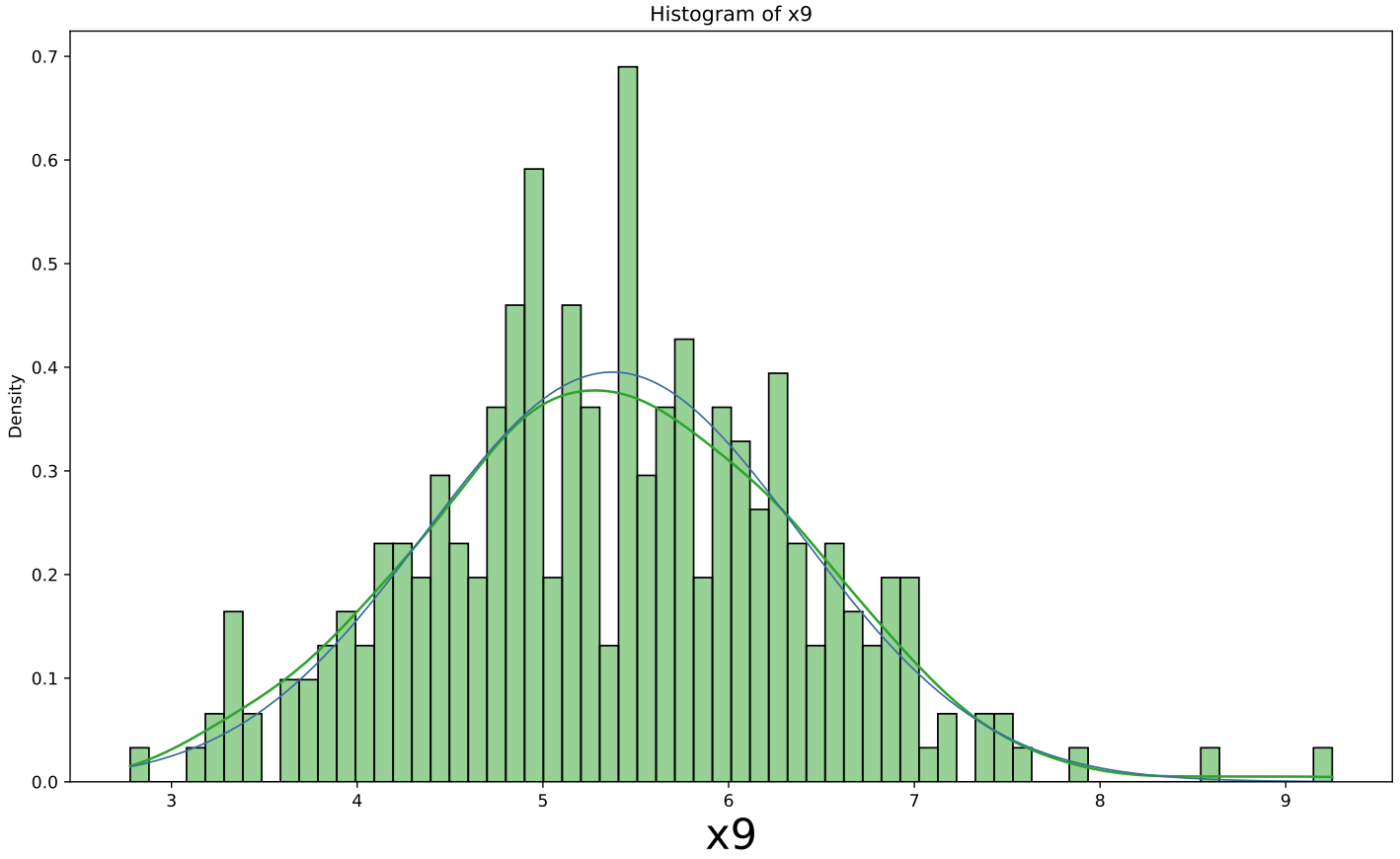

Histogram of x4
Density
0.0
0.1
0.2
0.3
0.4
0
1
2
3
4
5
6
x4


Histogram of x5
Density
0.00
0.05
0.10
0.15
0.20
0.25
0.30
1
2
3
4
5
6
7
x5


Histogram of x6
Density
0.0
0.1
0.2
0.3
0.4
0
1
2
3
4
5
6
x6

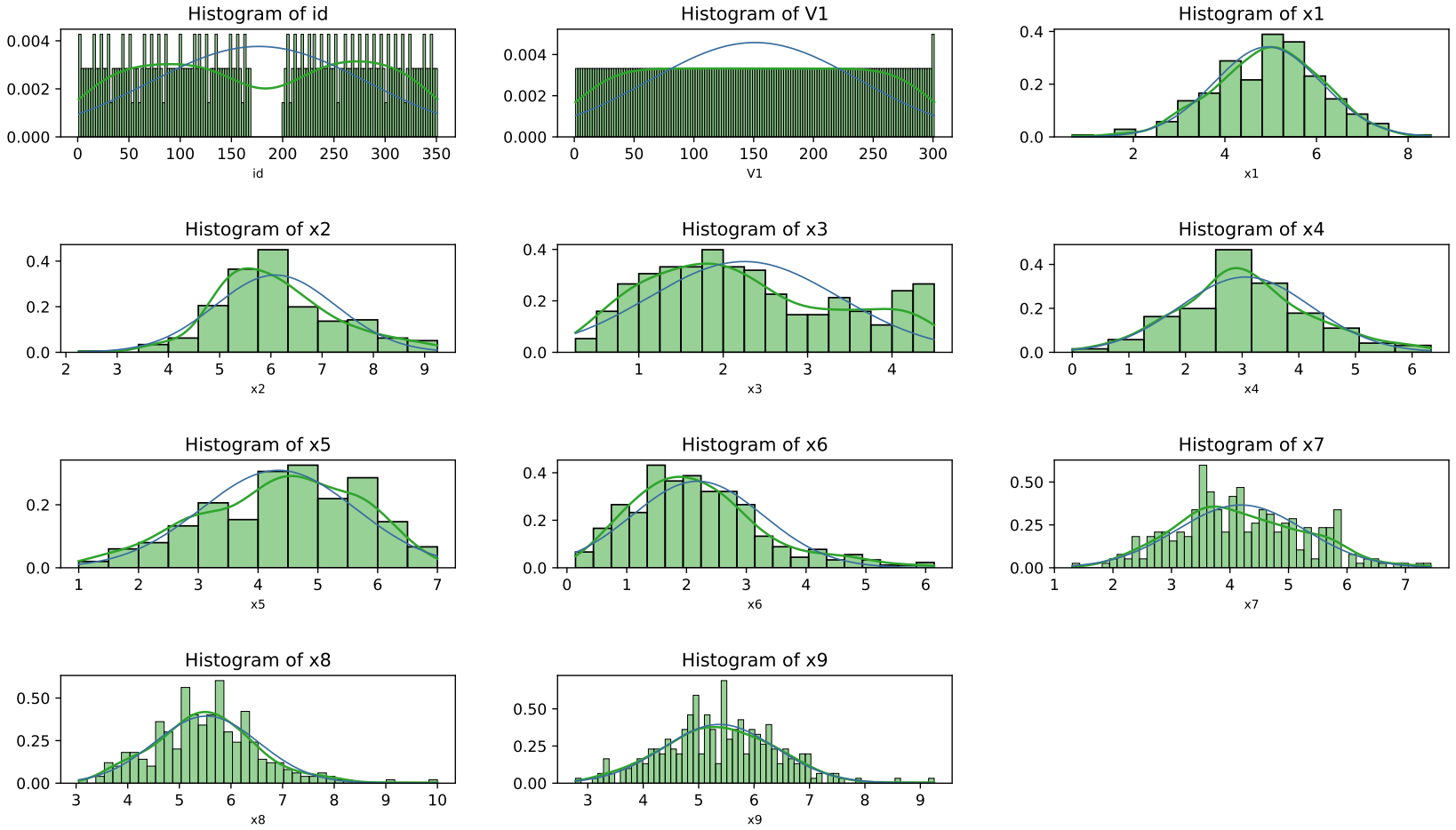

Histogram of x7
Density
0.0
0.1
0.2
0.3
0.4
0.5
0.6
1
2
3
4
5
6
7
x7


Histogram of x8
Density
0.0
0.1
0.2
0.3
0.4
0.5
0.6
3
4
5
6
7
8
9
10
x8


Histogram of x9
Density
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
3
4
5
6
7
8
9
x9

Histograms Summary

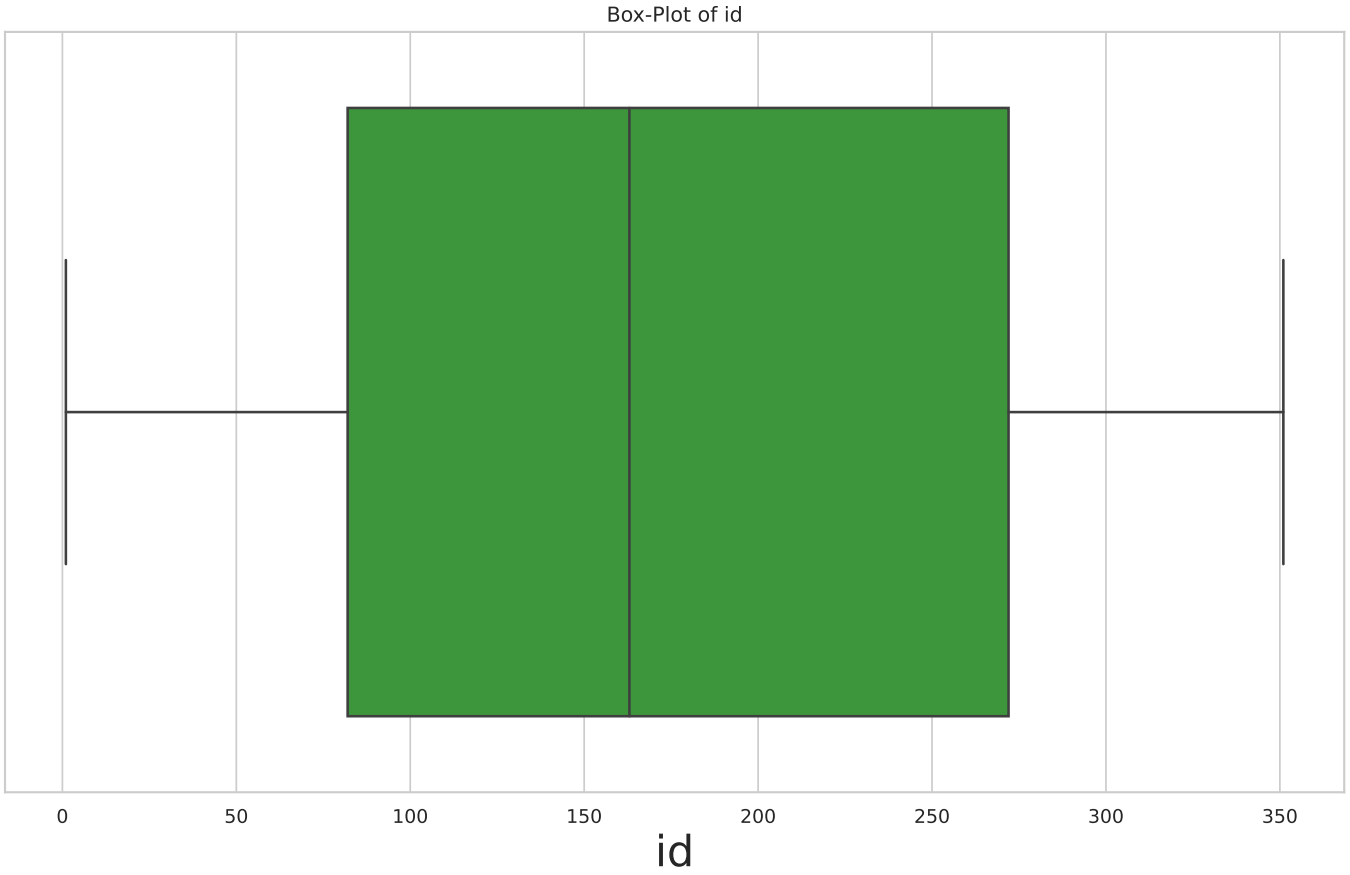
Multiple Relative Frequency Histogram in one figure. Variables are sorted alphabetically. The blue line represents the normal density approximation. The green line represents a special kernel density approximation.

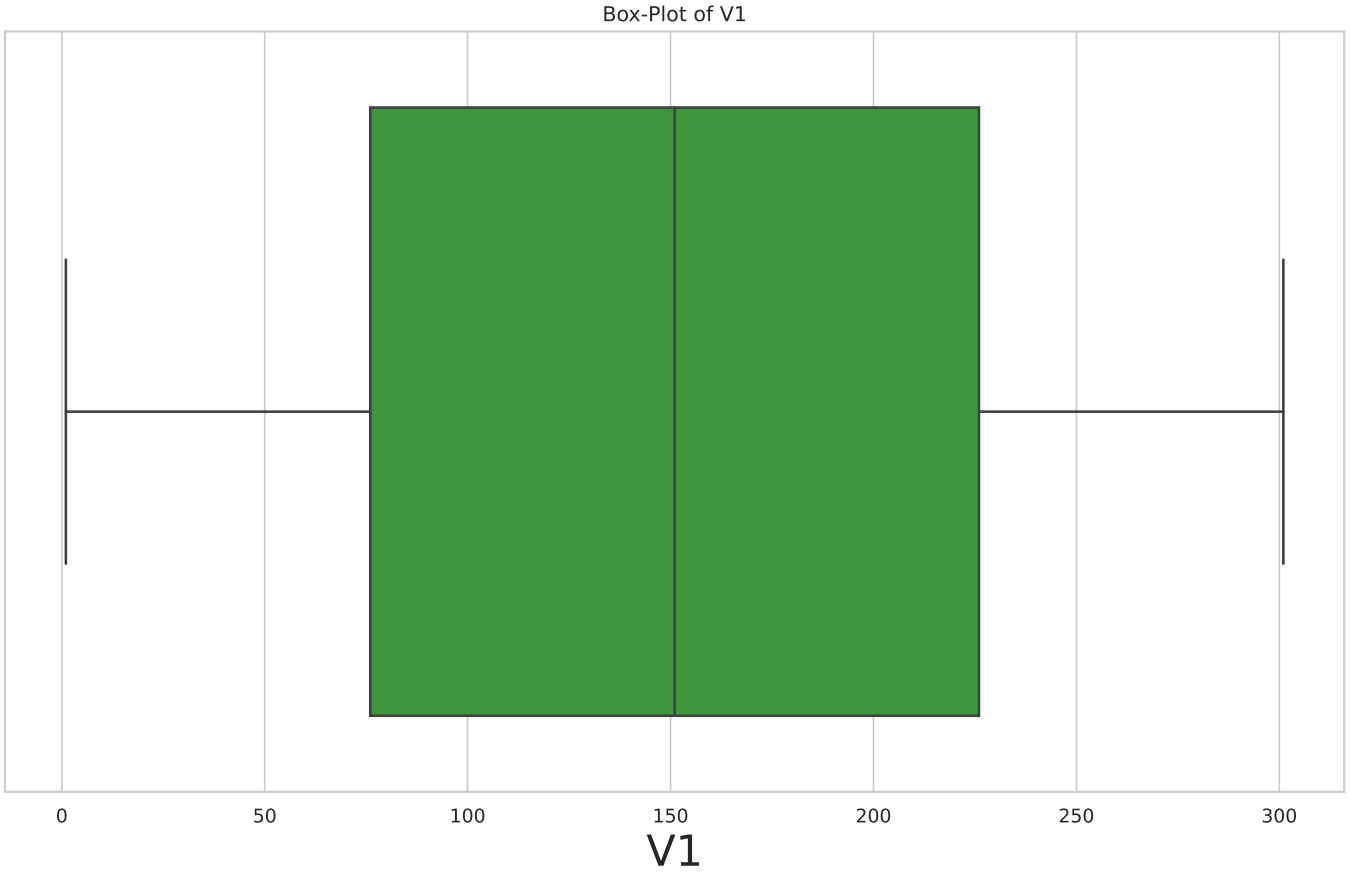


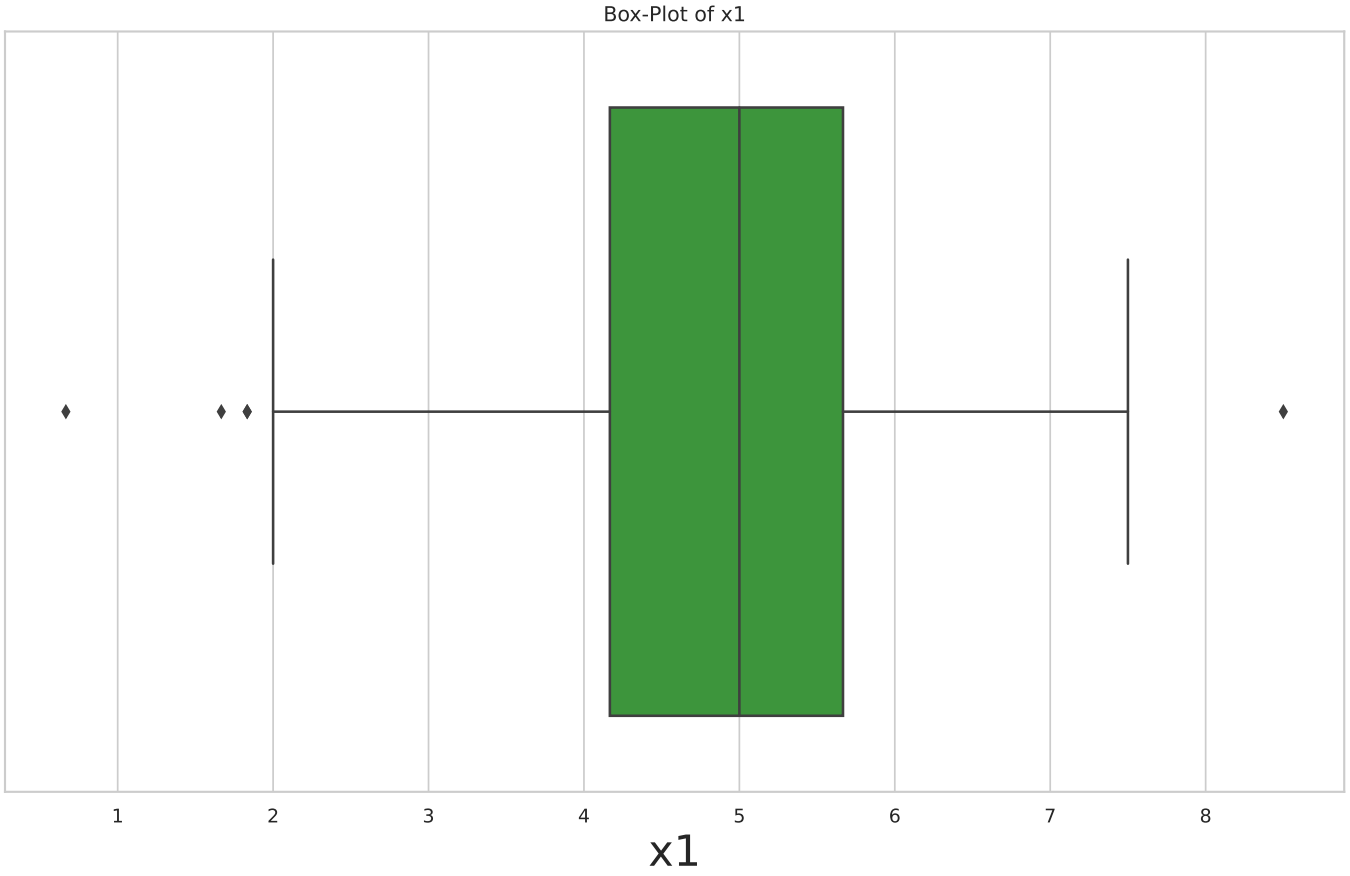
Box-Plots

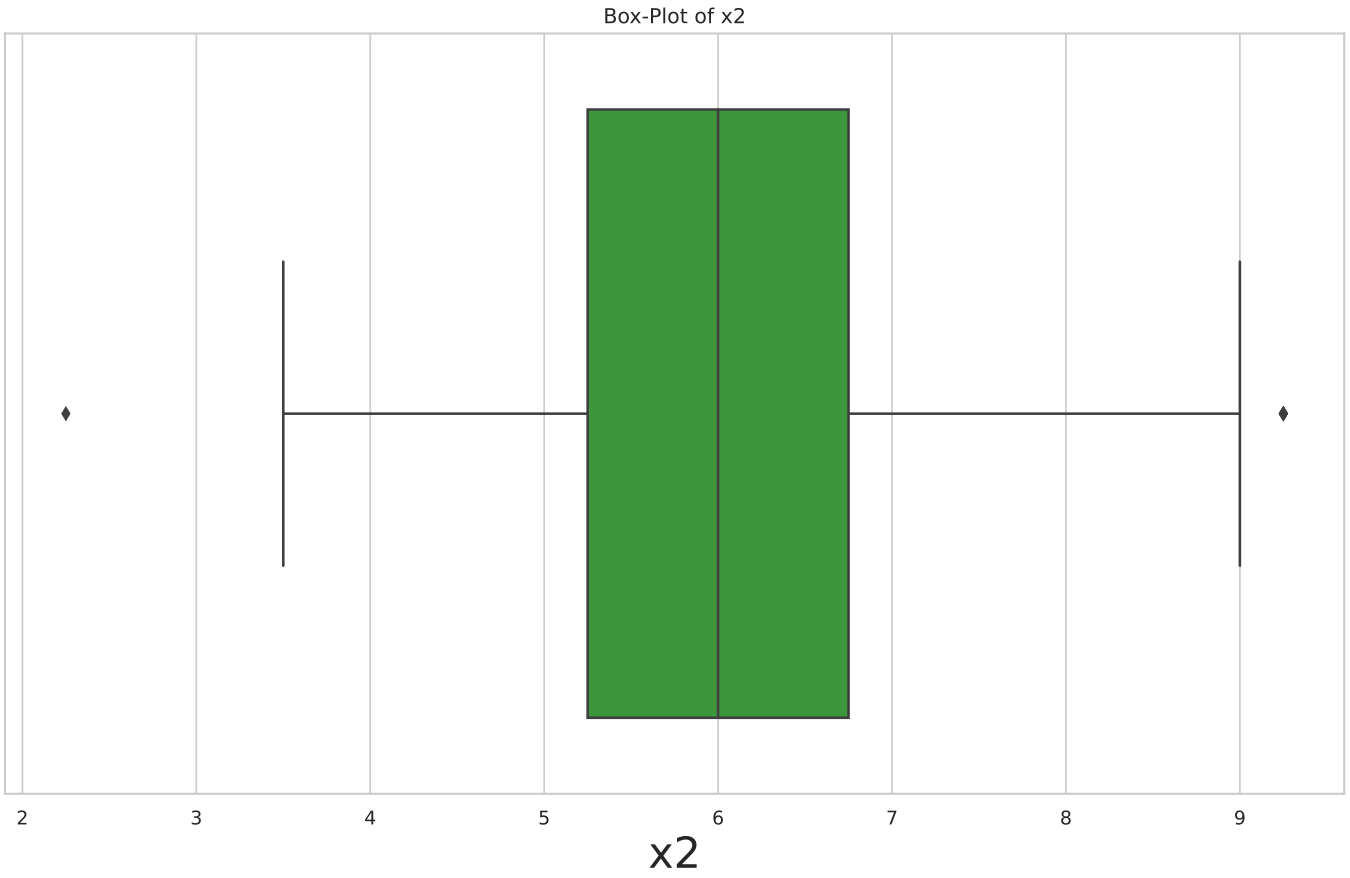
One Box-Plot per page for each variable. Variables are sorted alphabetically.

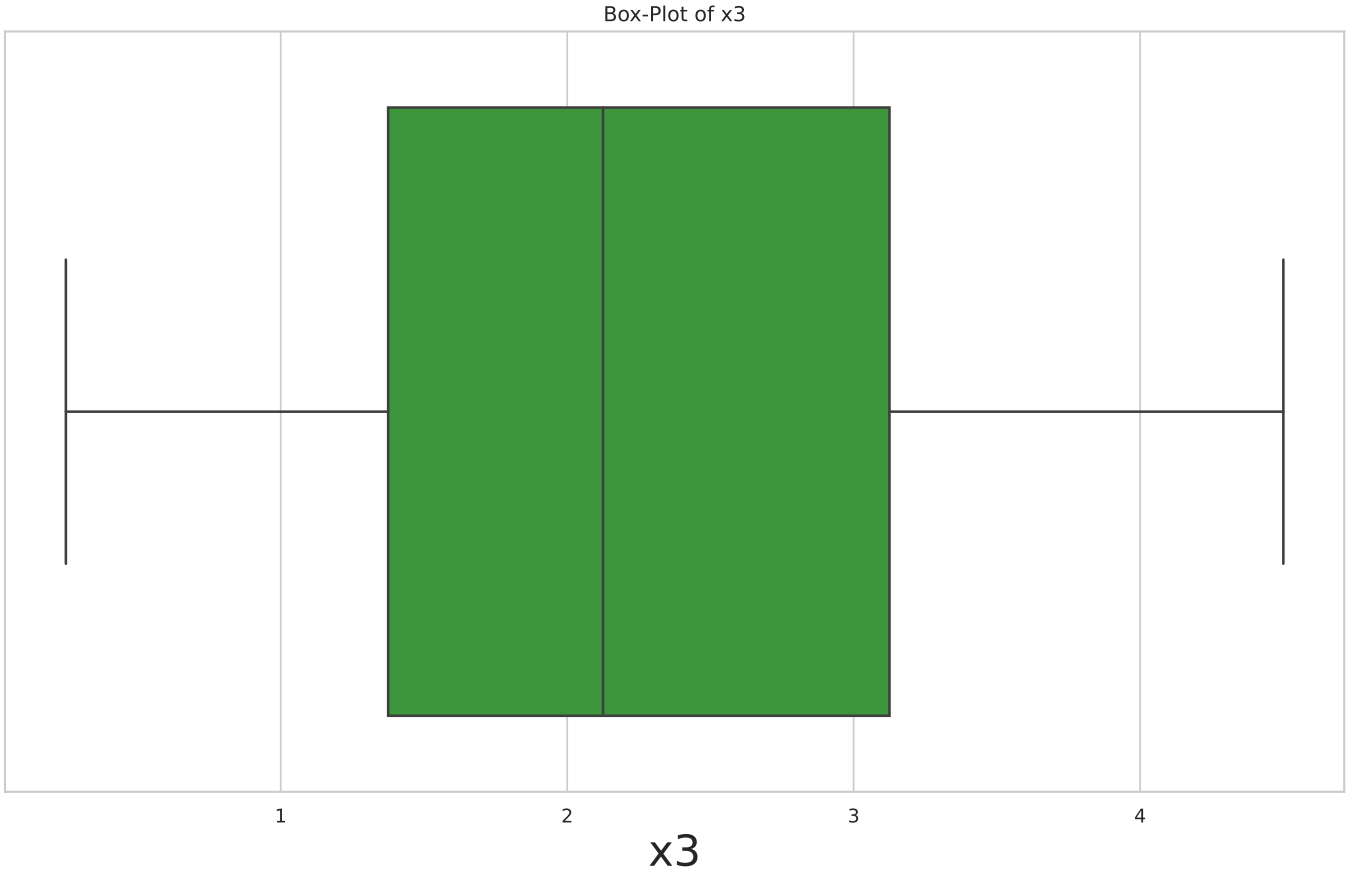
[]

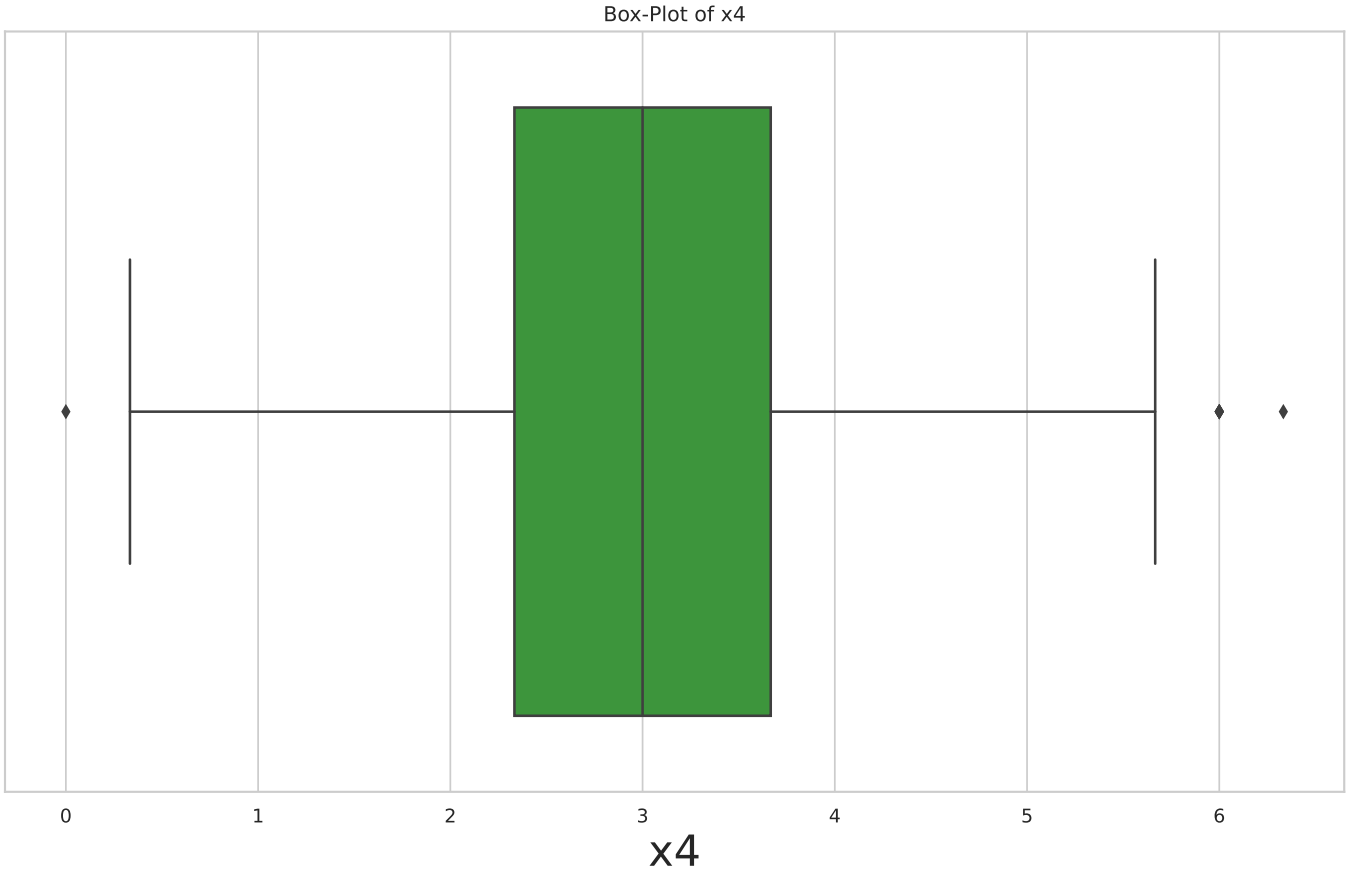


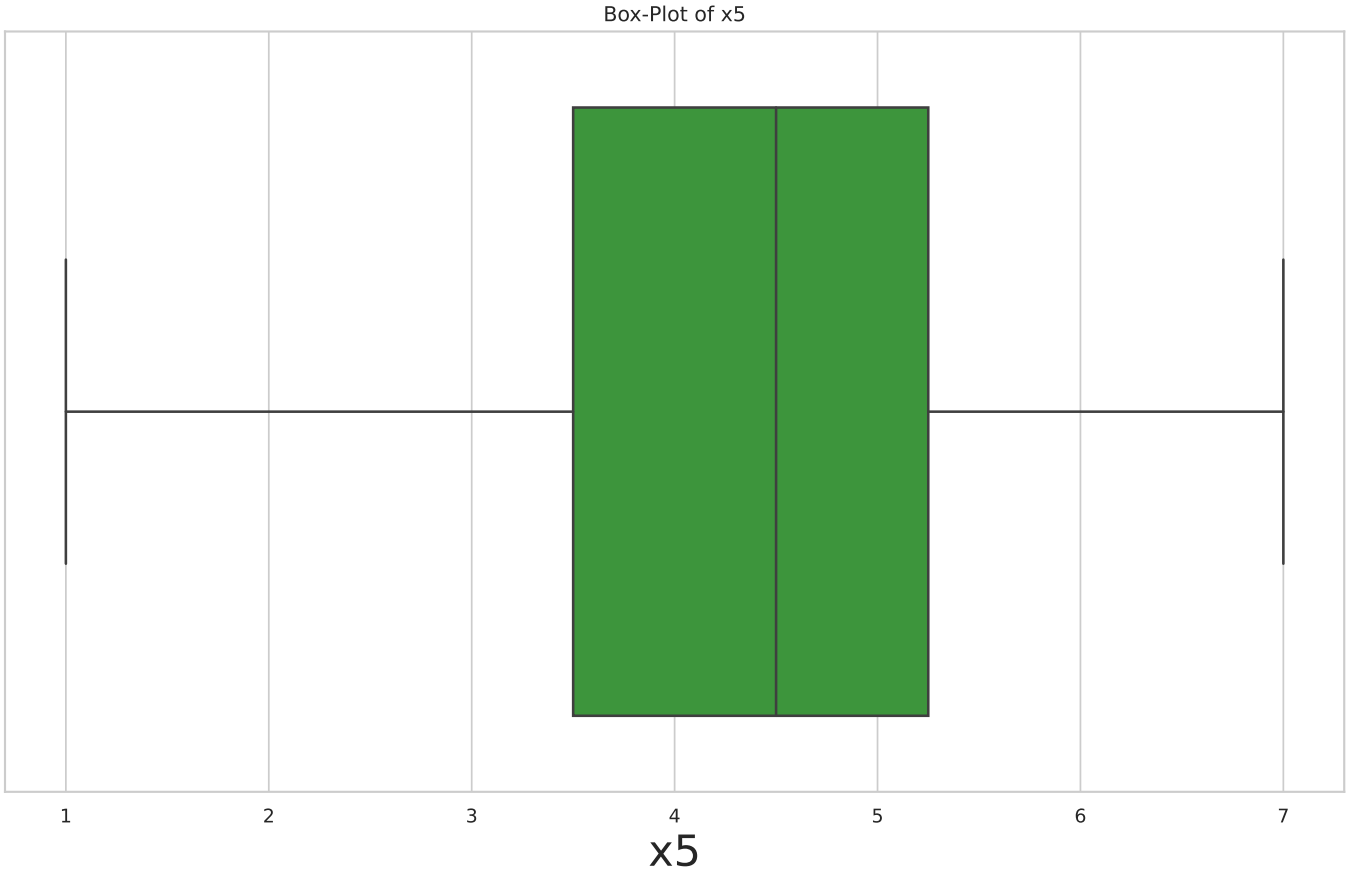

Box-Plot of V1
0
50
100
150
200
250
300
V1

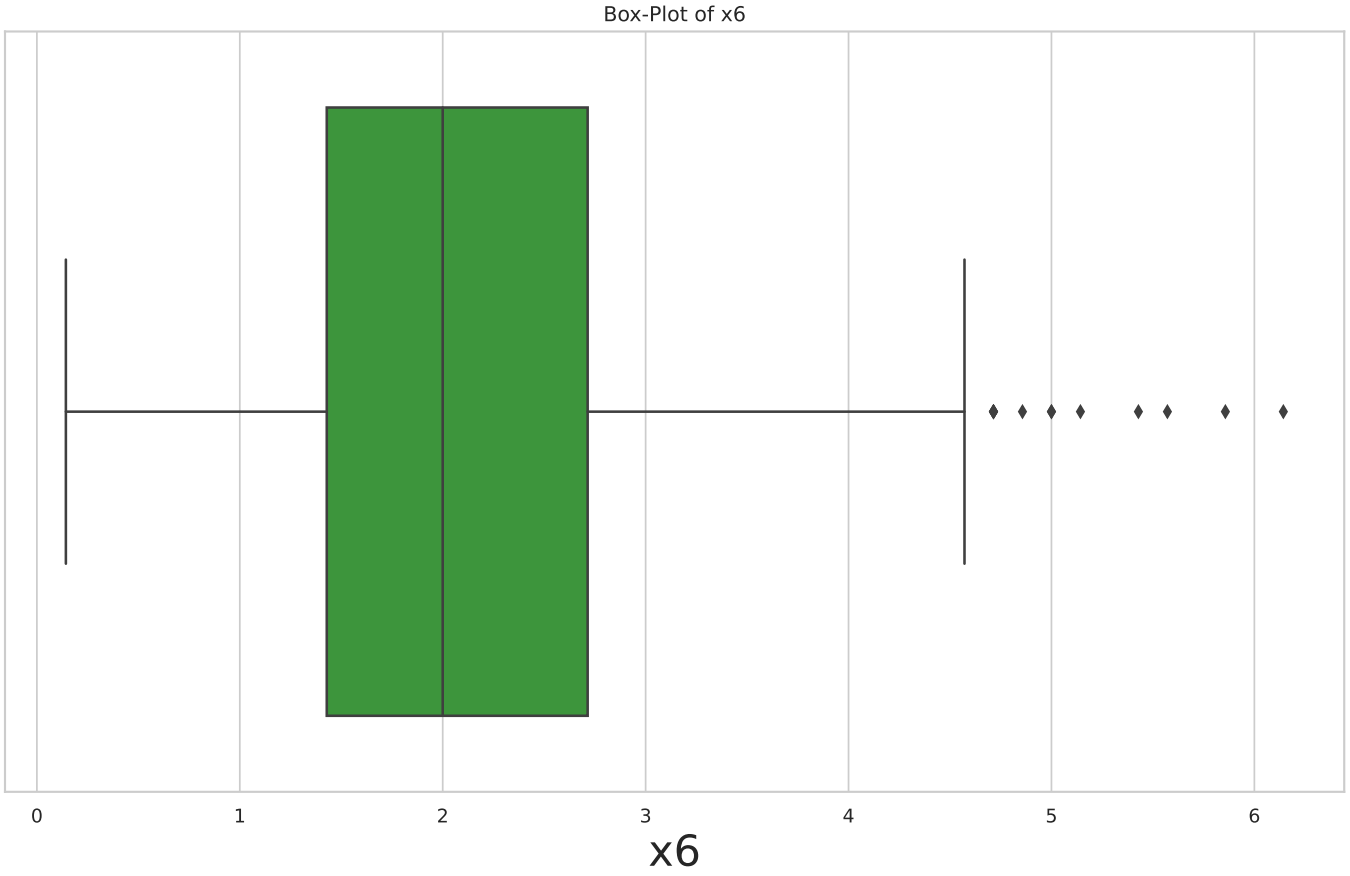

Box-Plot of x1
1
2
3
4
5
6
7
8
x1

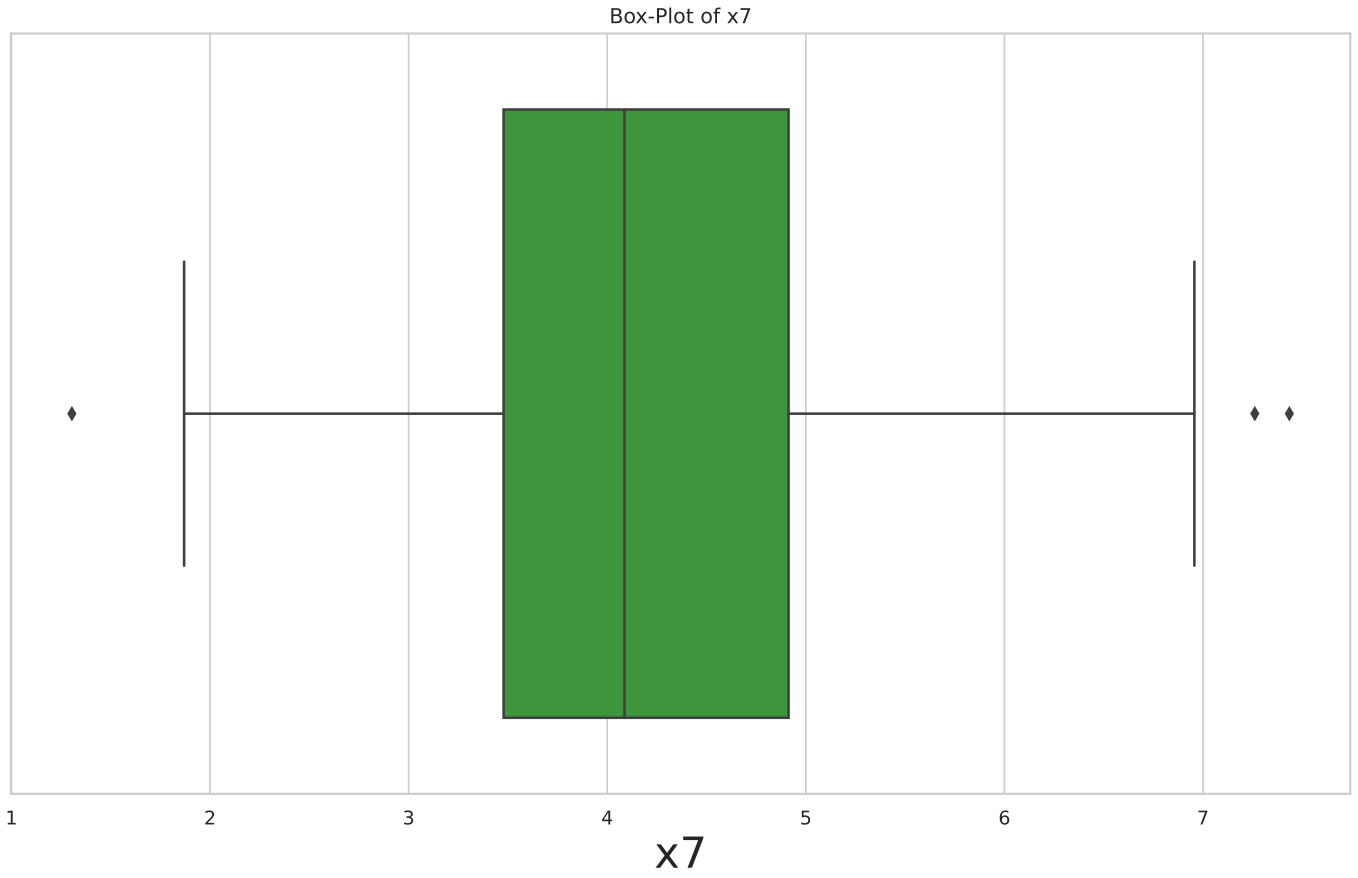

Box-Plot of x2
2
3
4
5
6
7
8
9
x2

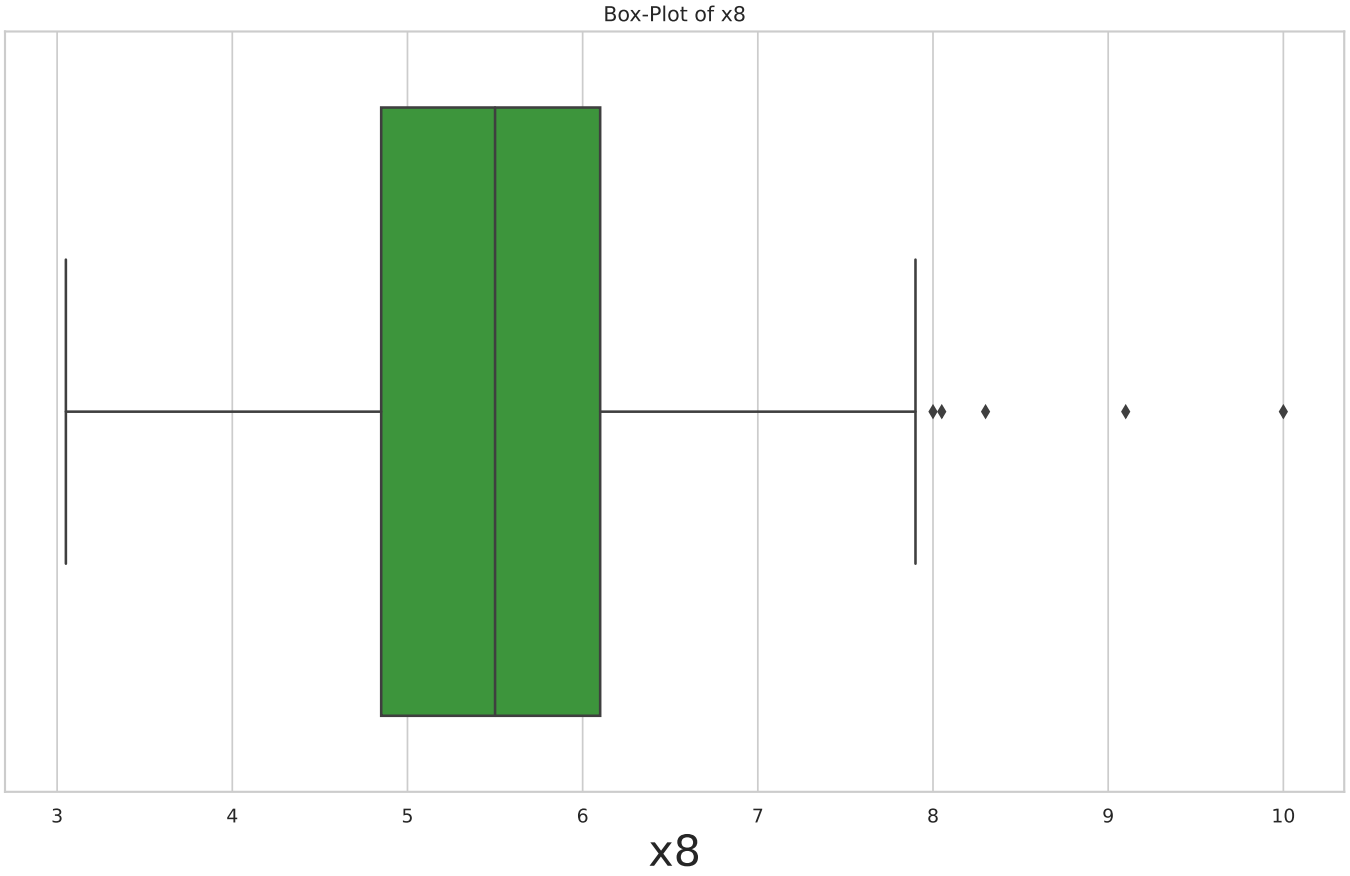

Box-Plot of x3
1
2
3
4
x3

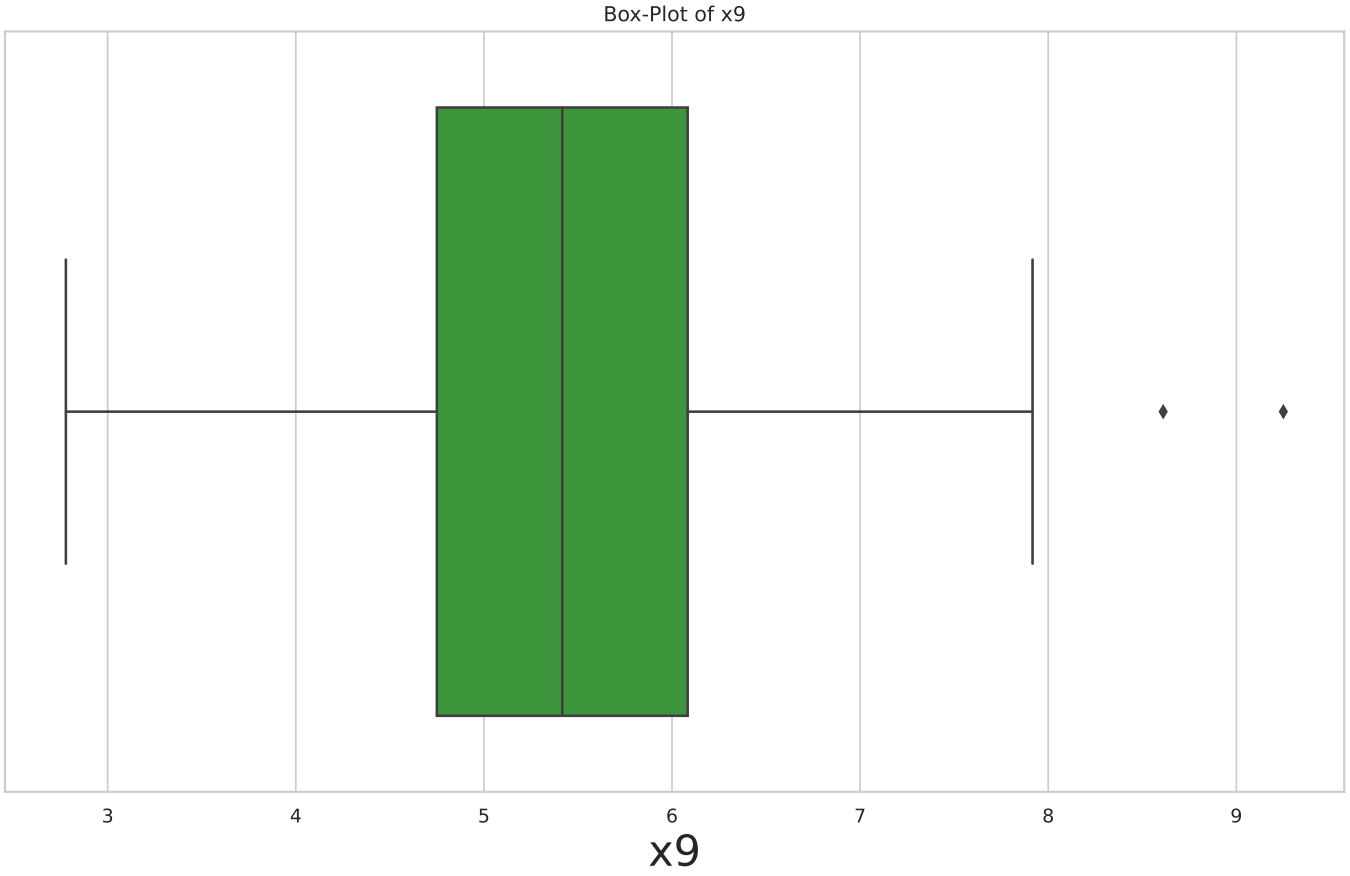

Box-Plot of x4
0
1
2
3
4
5
6
x4


Box-Plot of x5
1
2
3
4
5
6
7
x5


Box-Plot of x6
0
1
2
3
4
5
6
x6

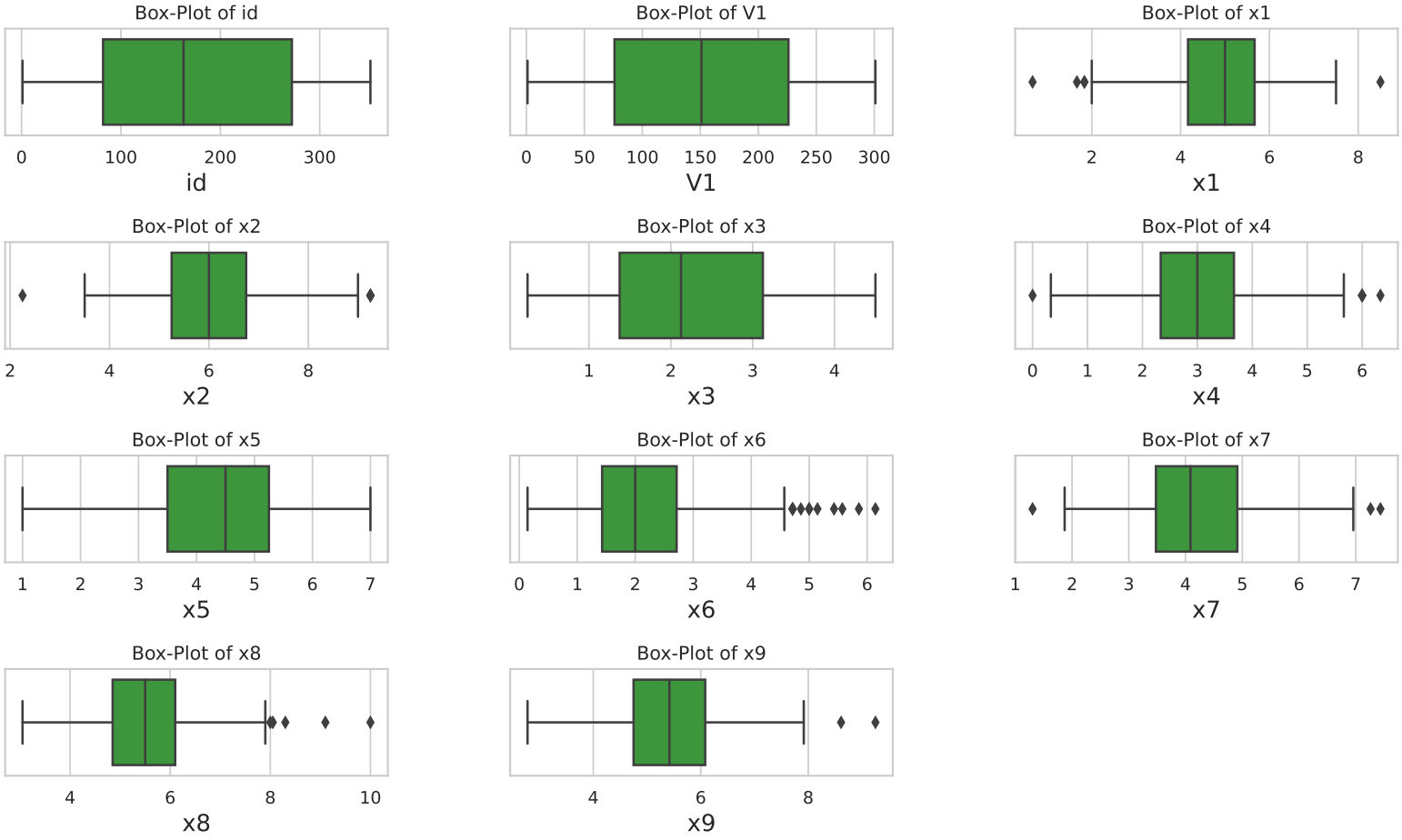

Box-Plot of x7
1
2
3
4
5
6
7
x7


Box-Plot of x8
3
4
5
6
7
8
9
10
x8


Box-Plot of x9
3
4
5
6
7
8
9
x9

Box-Plots Summary

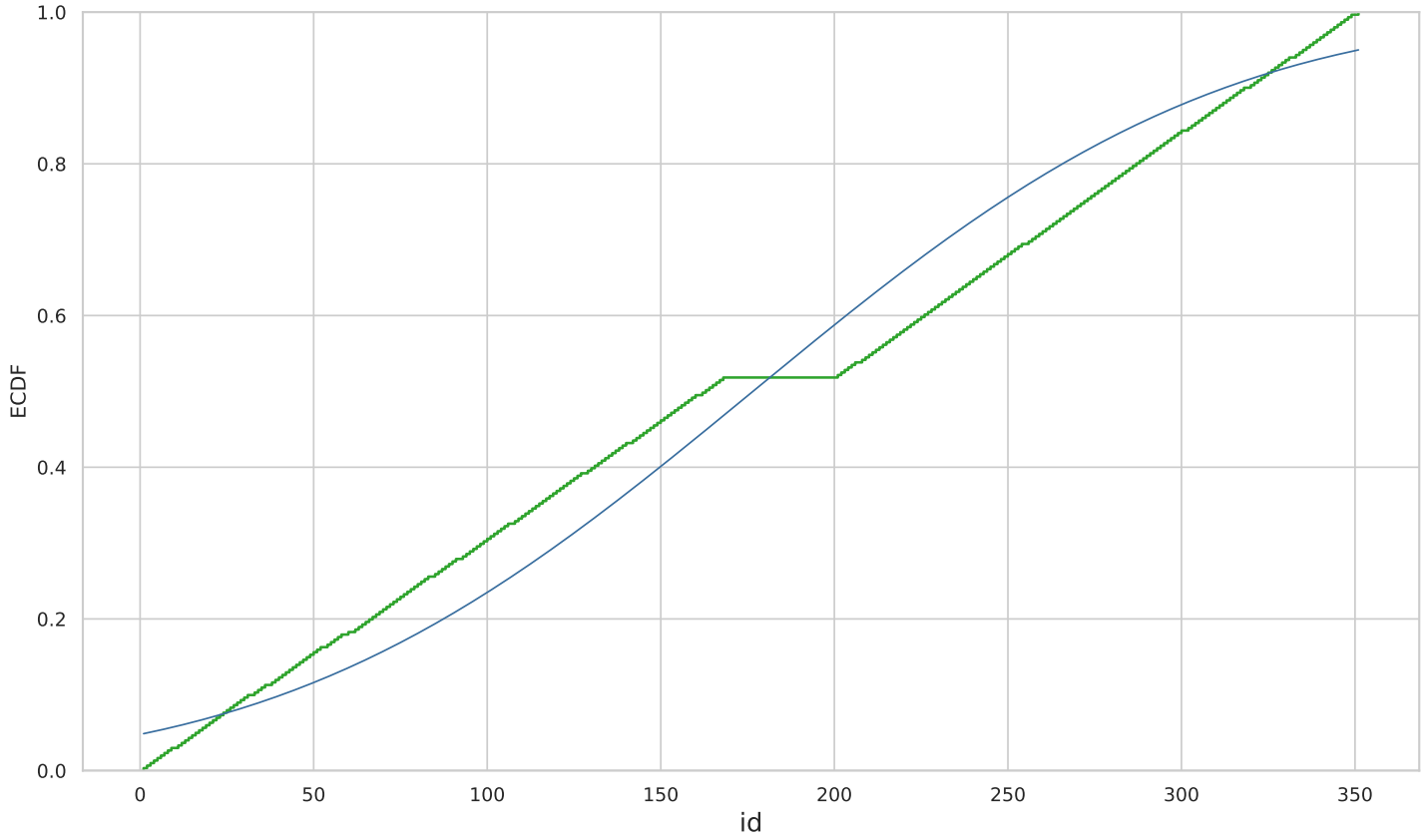
Multiple Box-Plots of variables in one figure. Variables are sorted alphabetically.

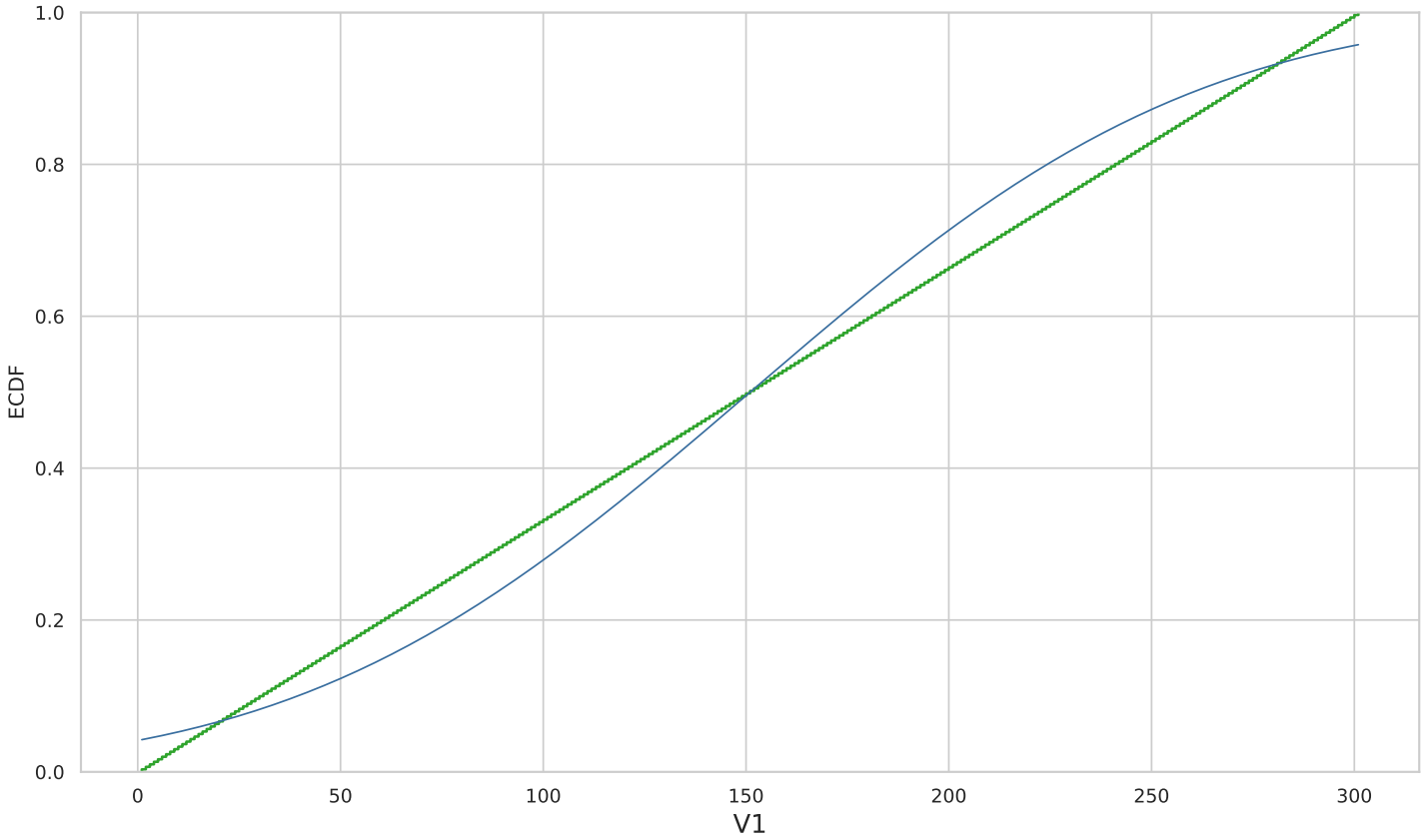


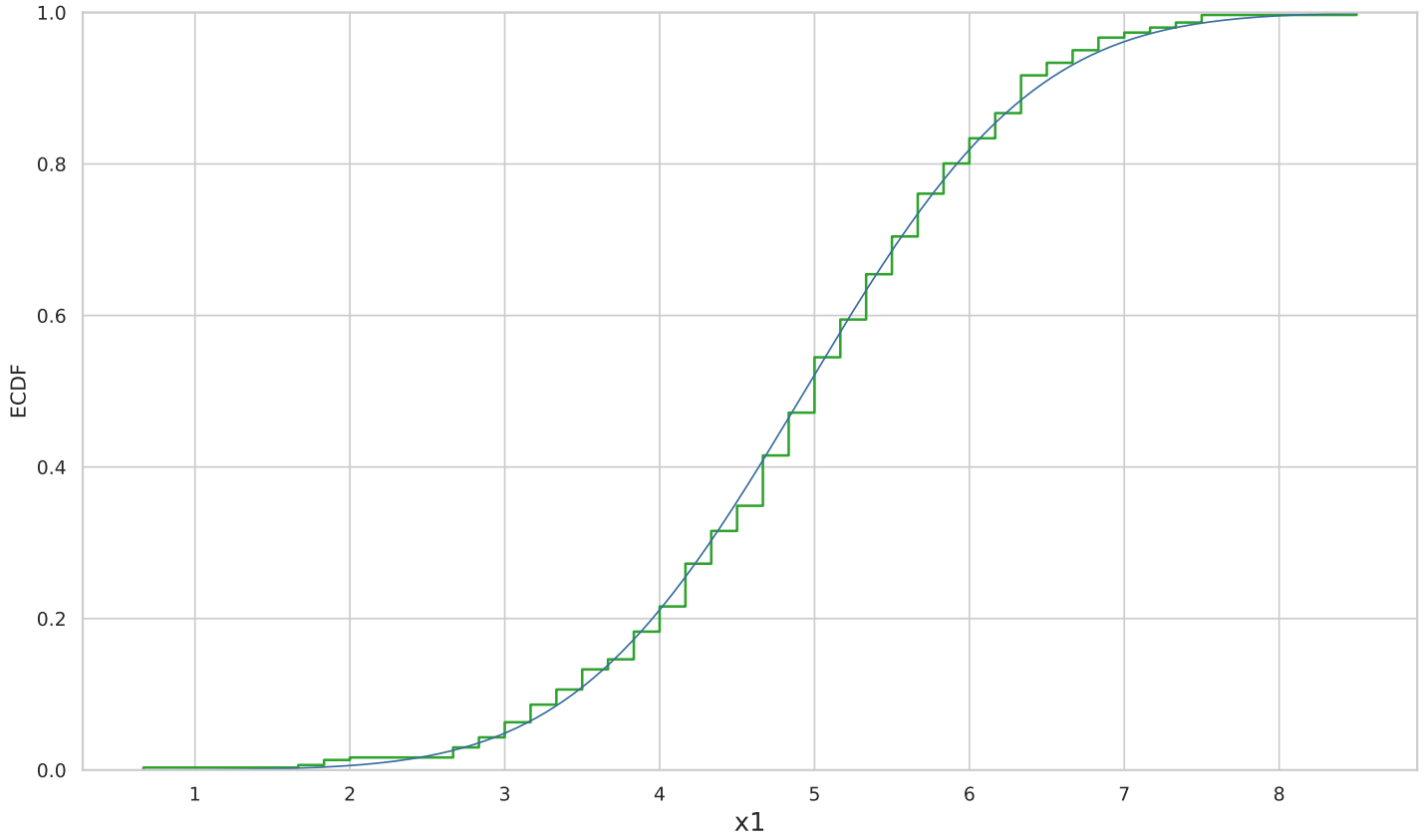
ECDF Plots

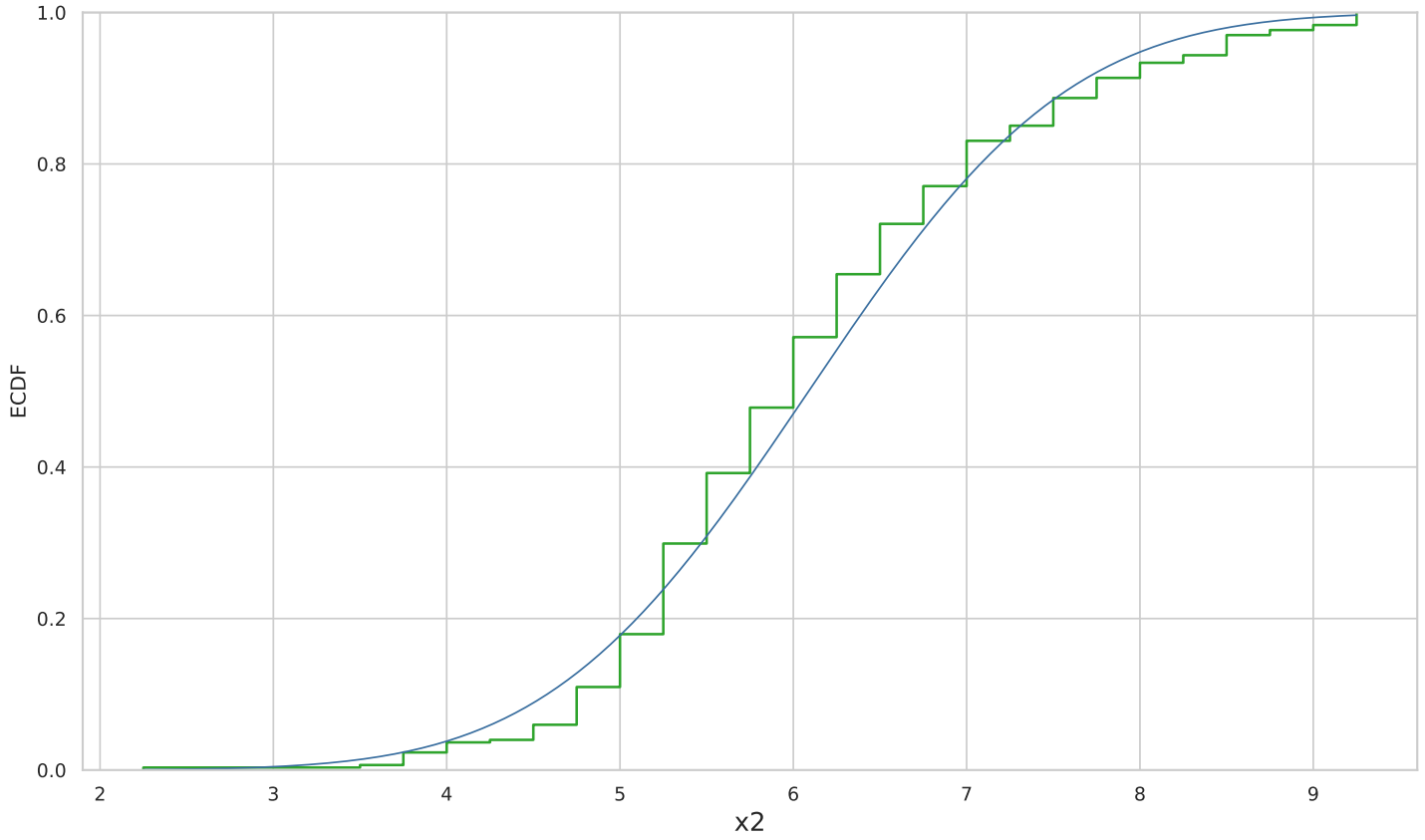
One ECDF (Empirical Cumulative Distribution Function) Plot per page for each variable. Variables are sorted alphabetically. The blue line represents the CDF of a normal distribution. If the variable is normally distributed, the blue line approximates well the ECDF.

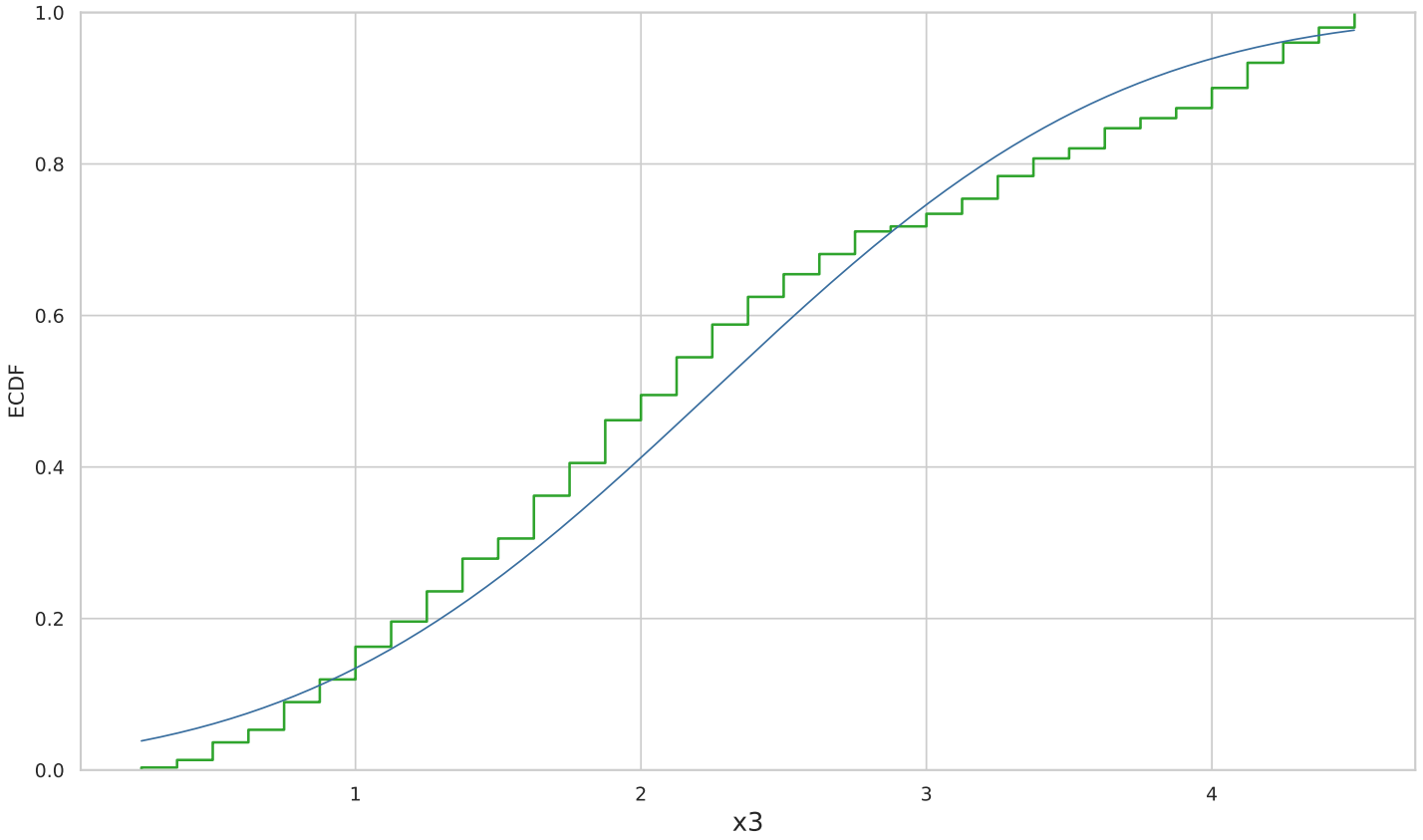
[]

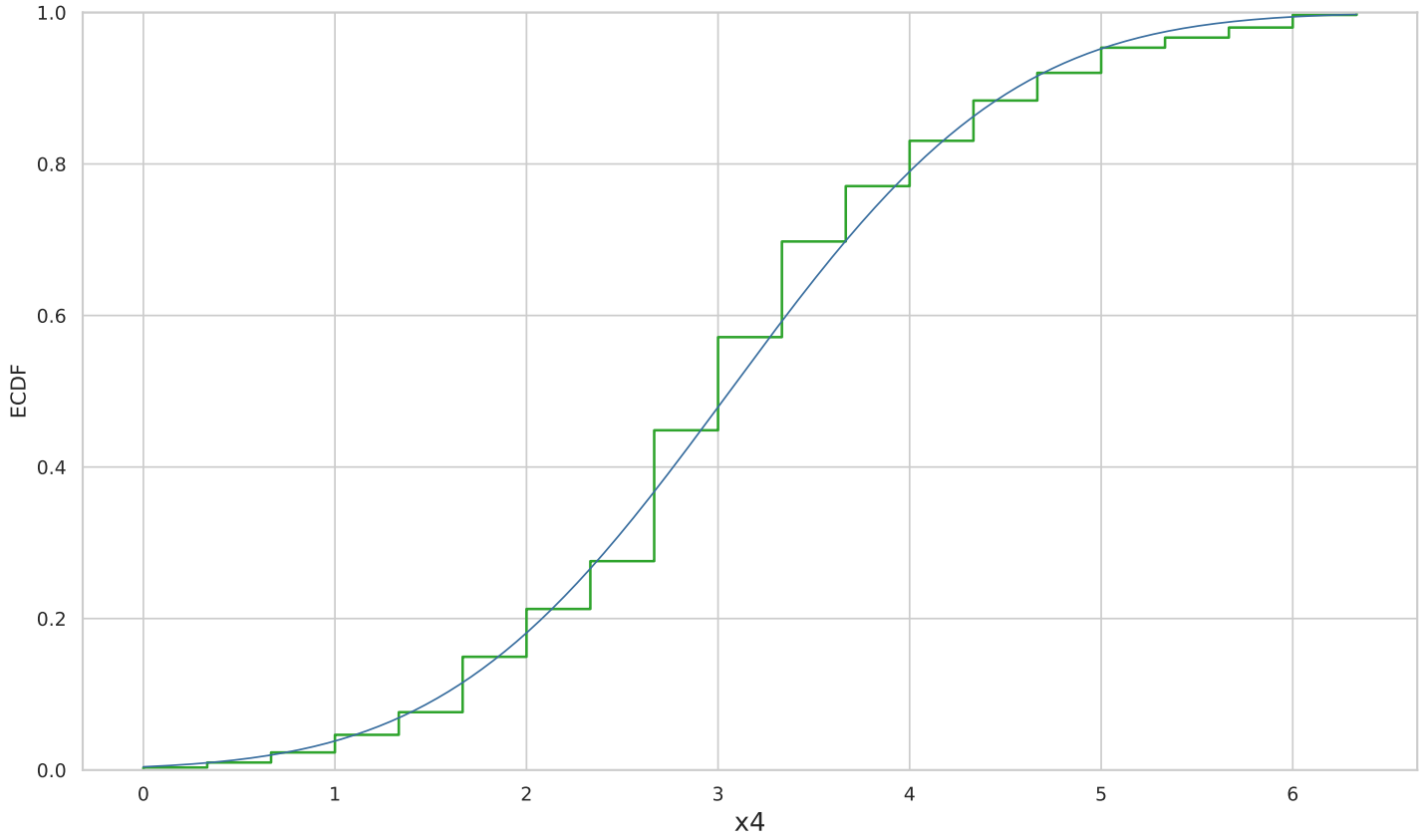


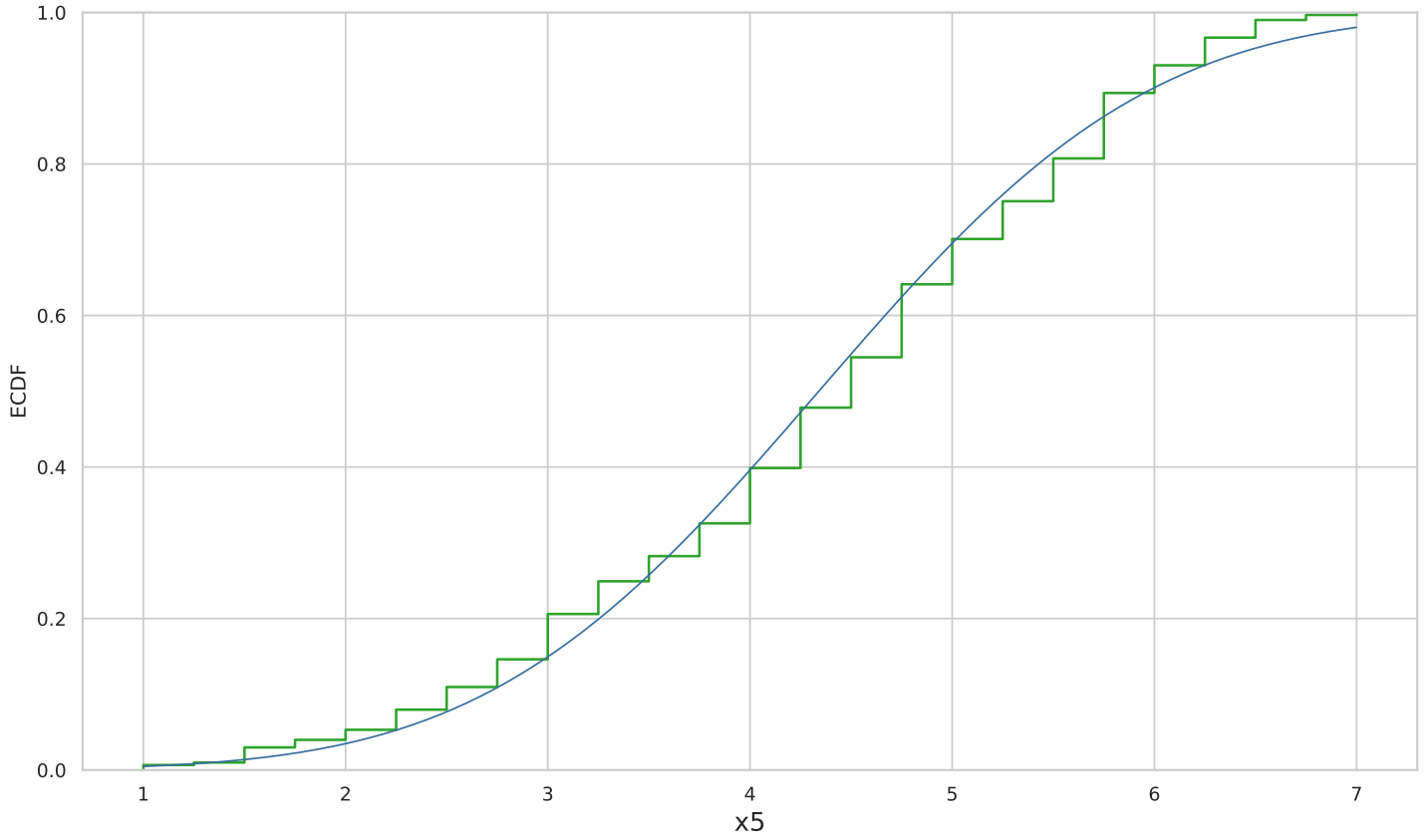

1.0
0.8
0.6
0.4
0.2
0.0
ECDF
0
50
100
150
200
250
300
V1

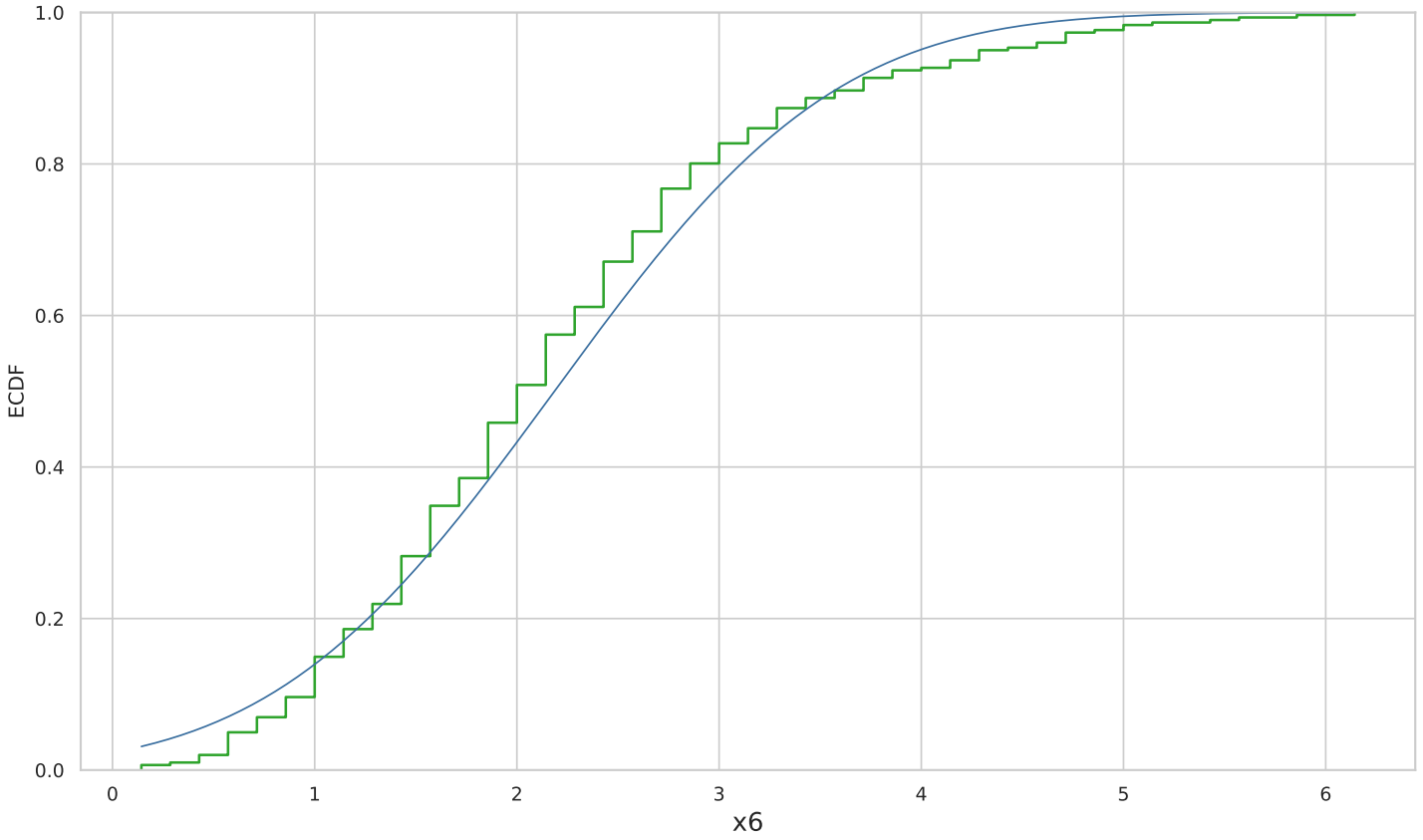

1.0
0.8
0.6
0.4
0.2
0.0
ECDF
1
2
3
4
5
6
7
8
x1

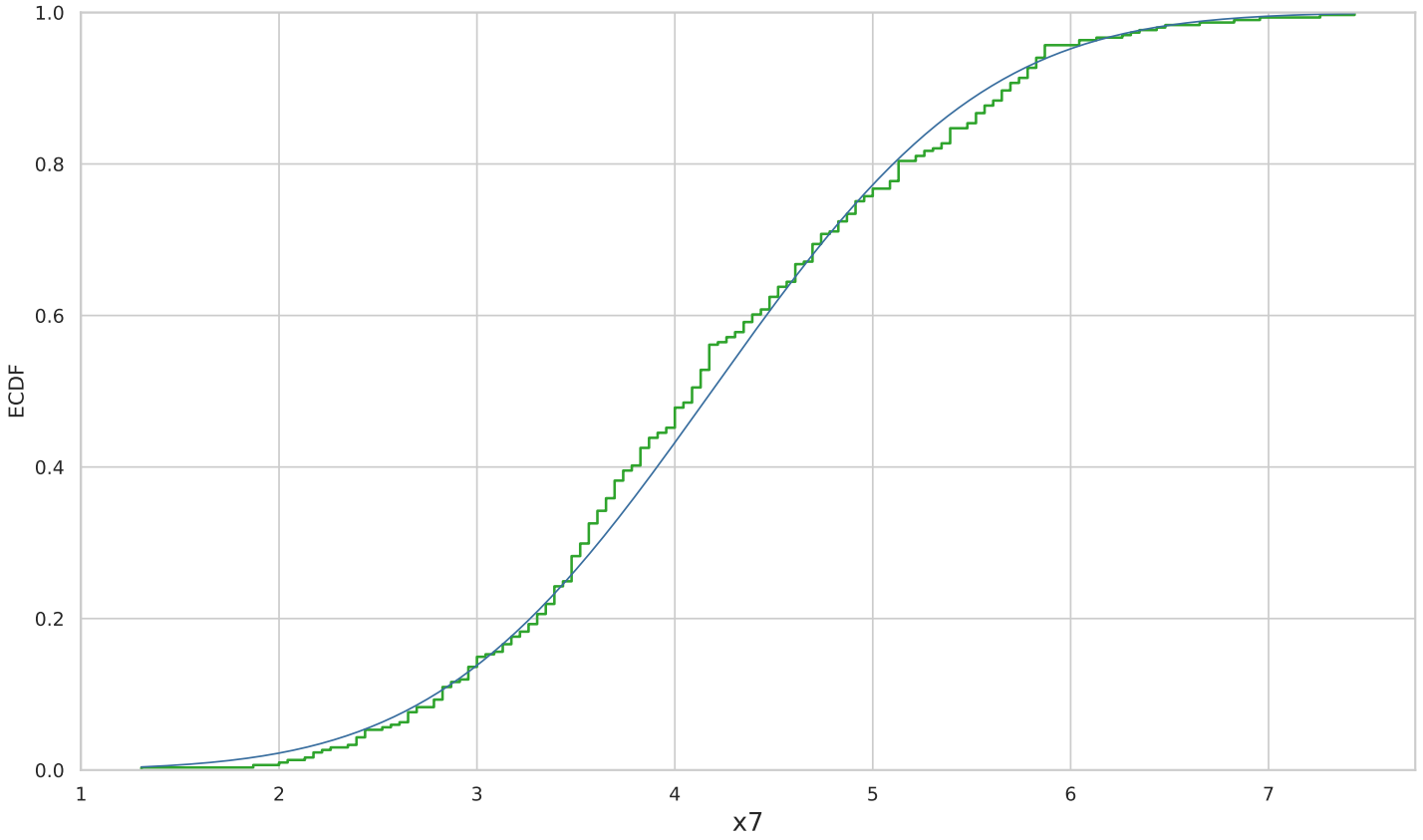

1.0
0.8
0.6
0.4
0.2
0.0
ECDF
2
3
4
5
6
7
8
9
x2

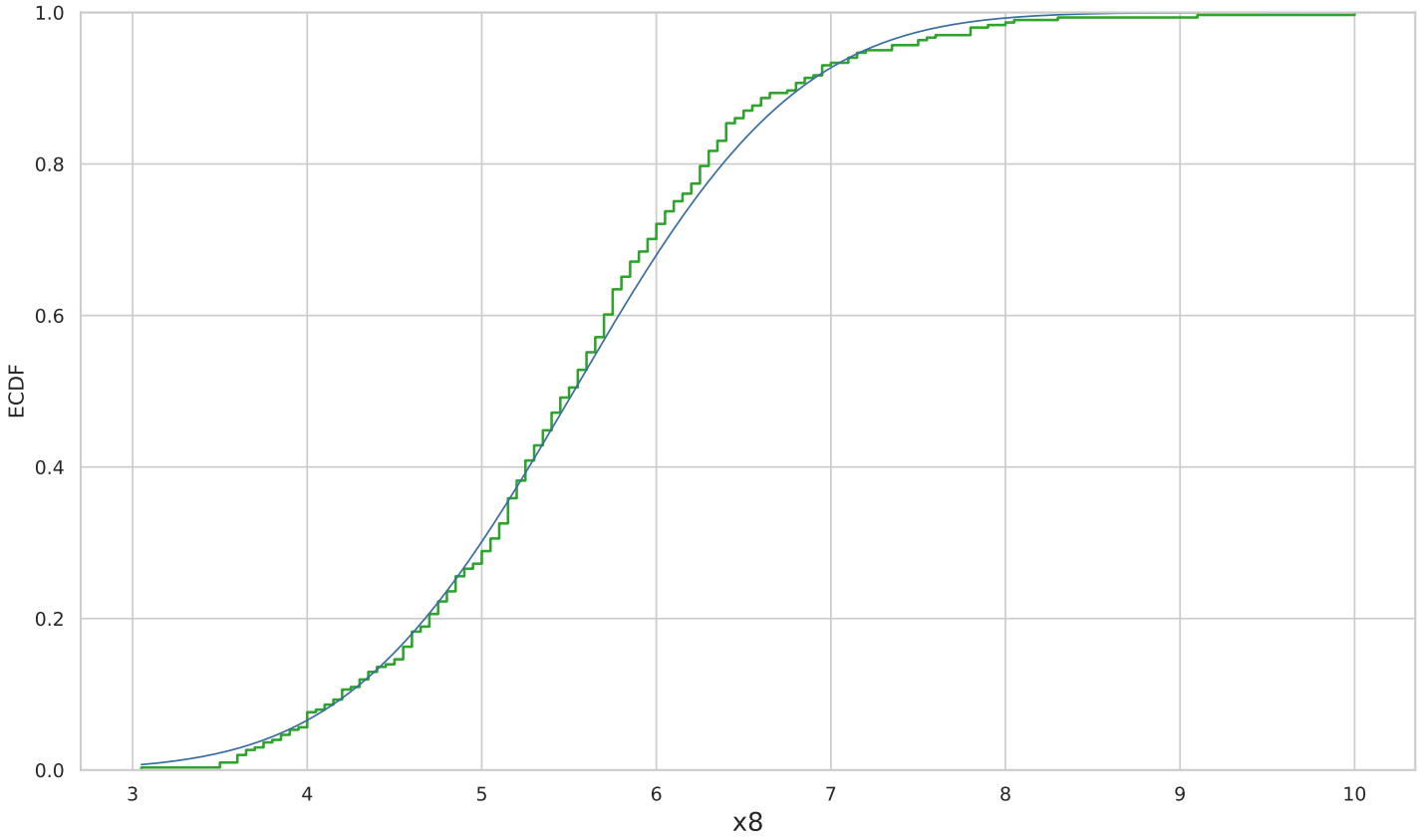

1.0
0.8
0.6
0.4
0.2
0.0
ECDF
1
2
3
4
x3

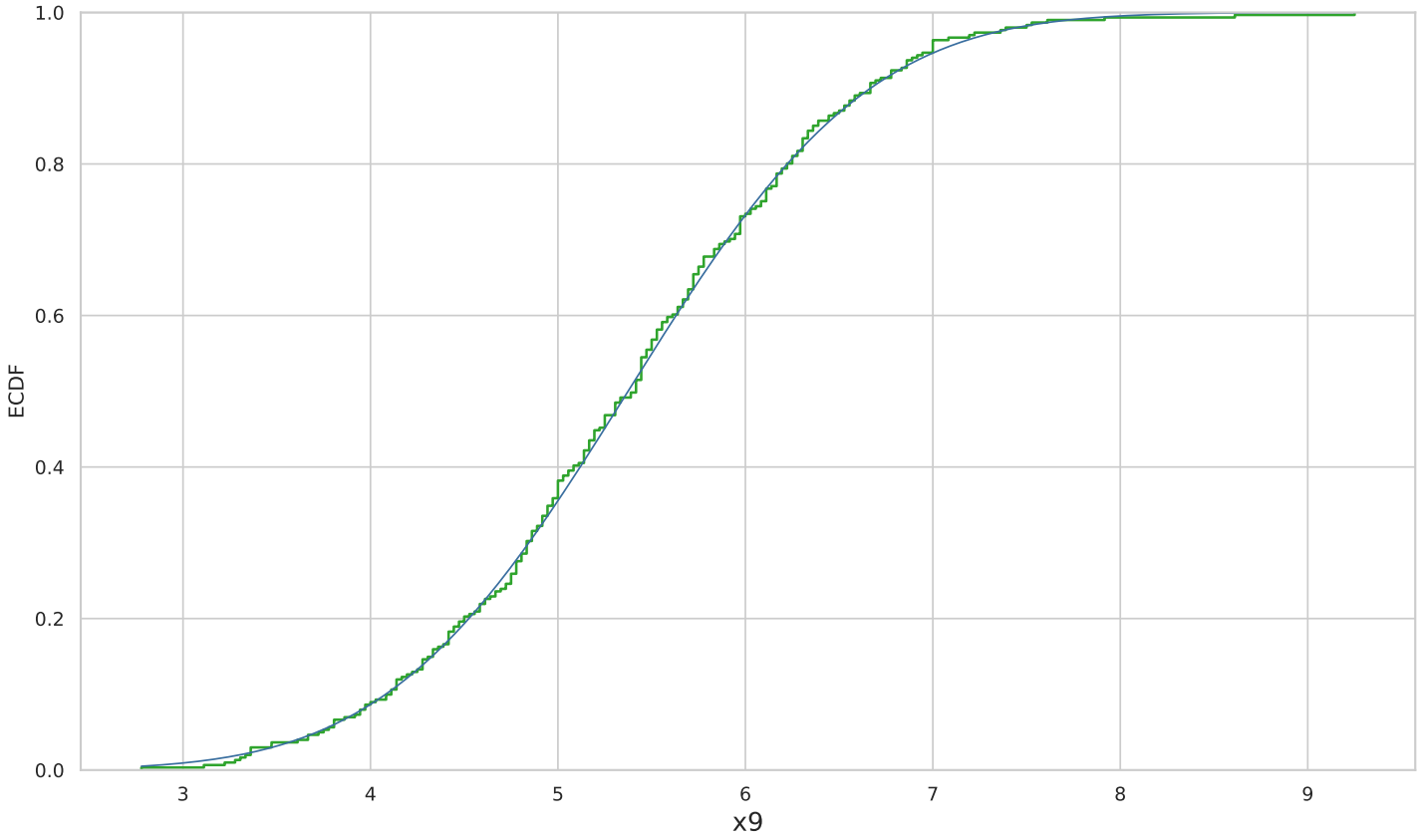

1.0
0.8
0.6
0.4
0.2
0.0
ECDF
0
1
2
3
4
5
6
x4


1.0
0.8
0.6
0.4
0.2
0.0
ECDF
1
2
3
4
5
6
7
x5


1.0
0.8
0.6
0.4
0.2
0.0
ECDF
0
1
2
3
4
5
6
x6

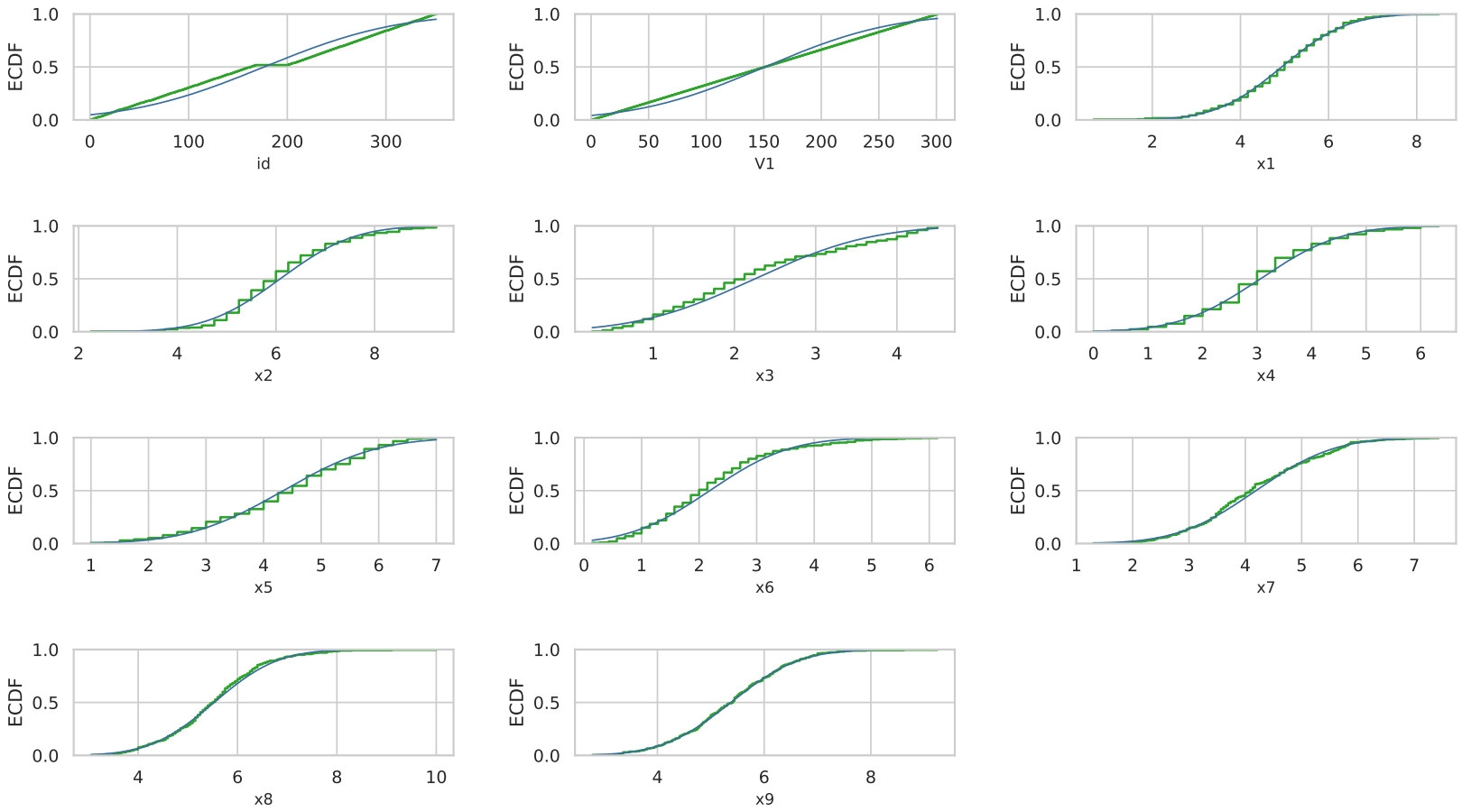

1.0
0.8
0.6
0.4
0.2
0.0
ECDF
1
2
3
4
5
6
7
x7


1.0
0.8
0.6
0.4
0.2
0.0
ECDF
3
4
5
6
7
8
9
10
x8


1.0
0.8
0.6
0.4
0.2
0.0
ECDF
3
4
5
6
7
8
9
x9

ECDF Plots Summary

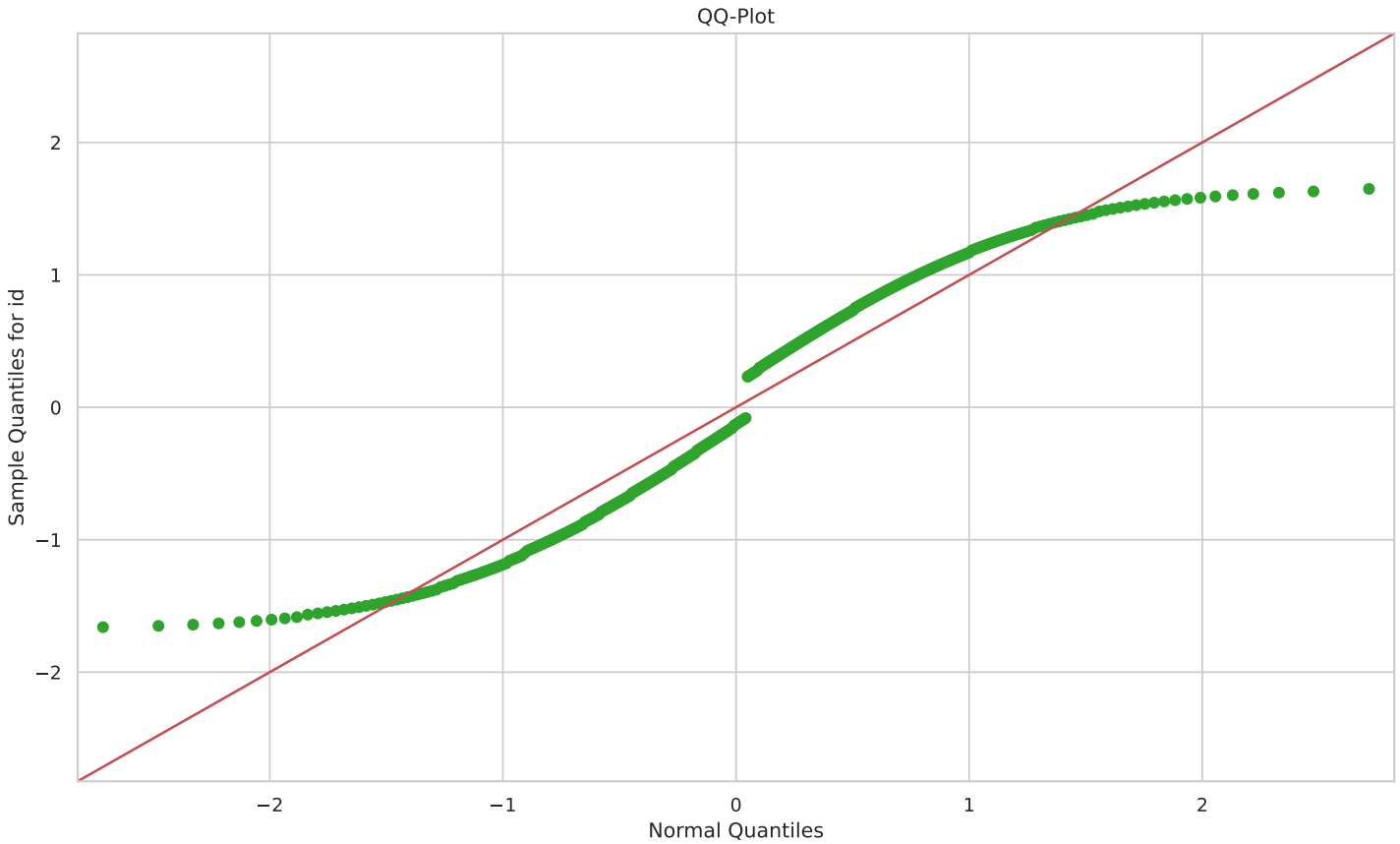
Multiple ECDF Plots of variables in one figure. Variables are sorted alphabetically.

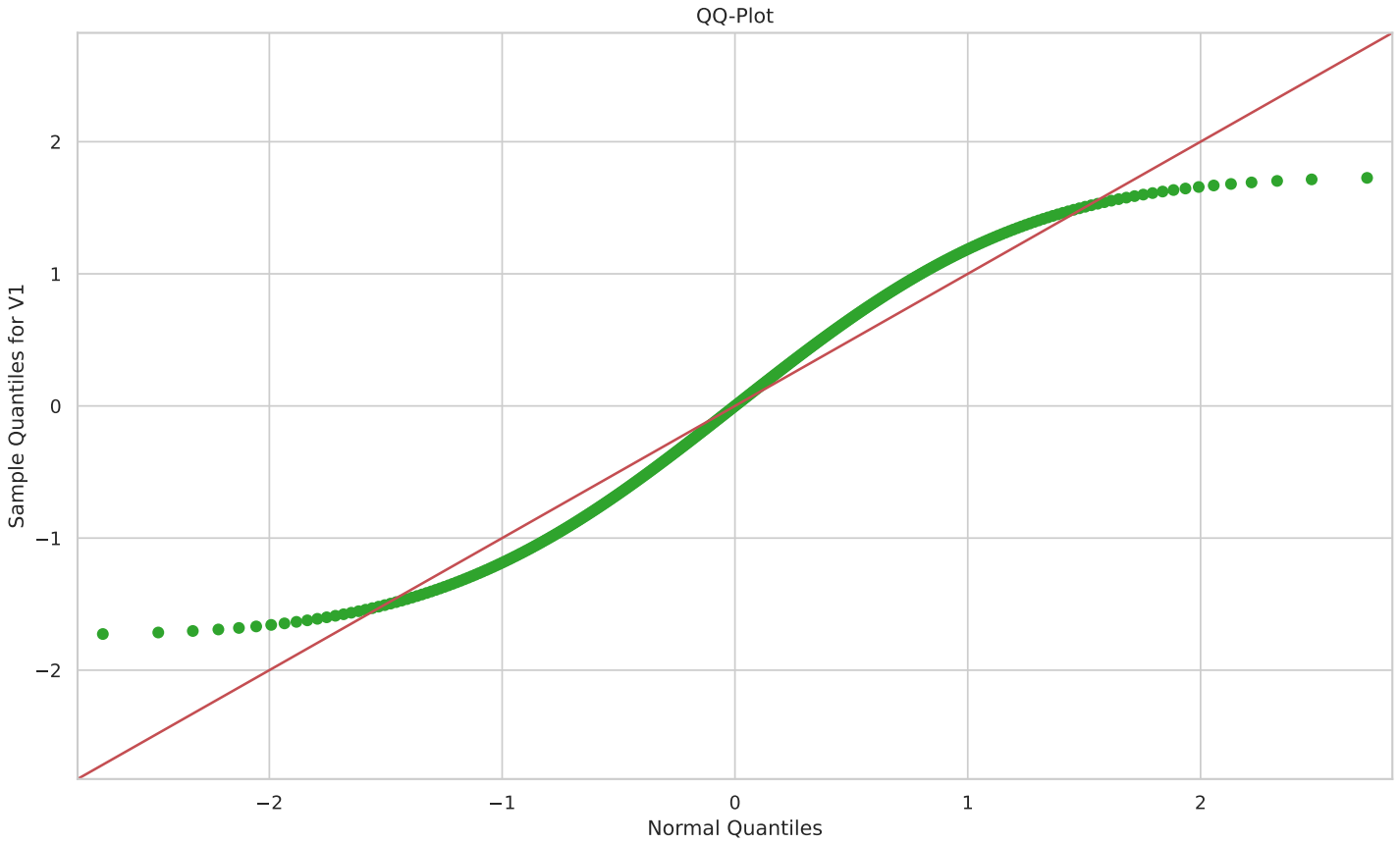


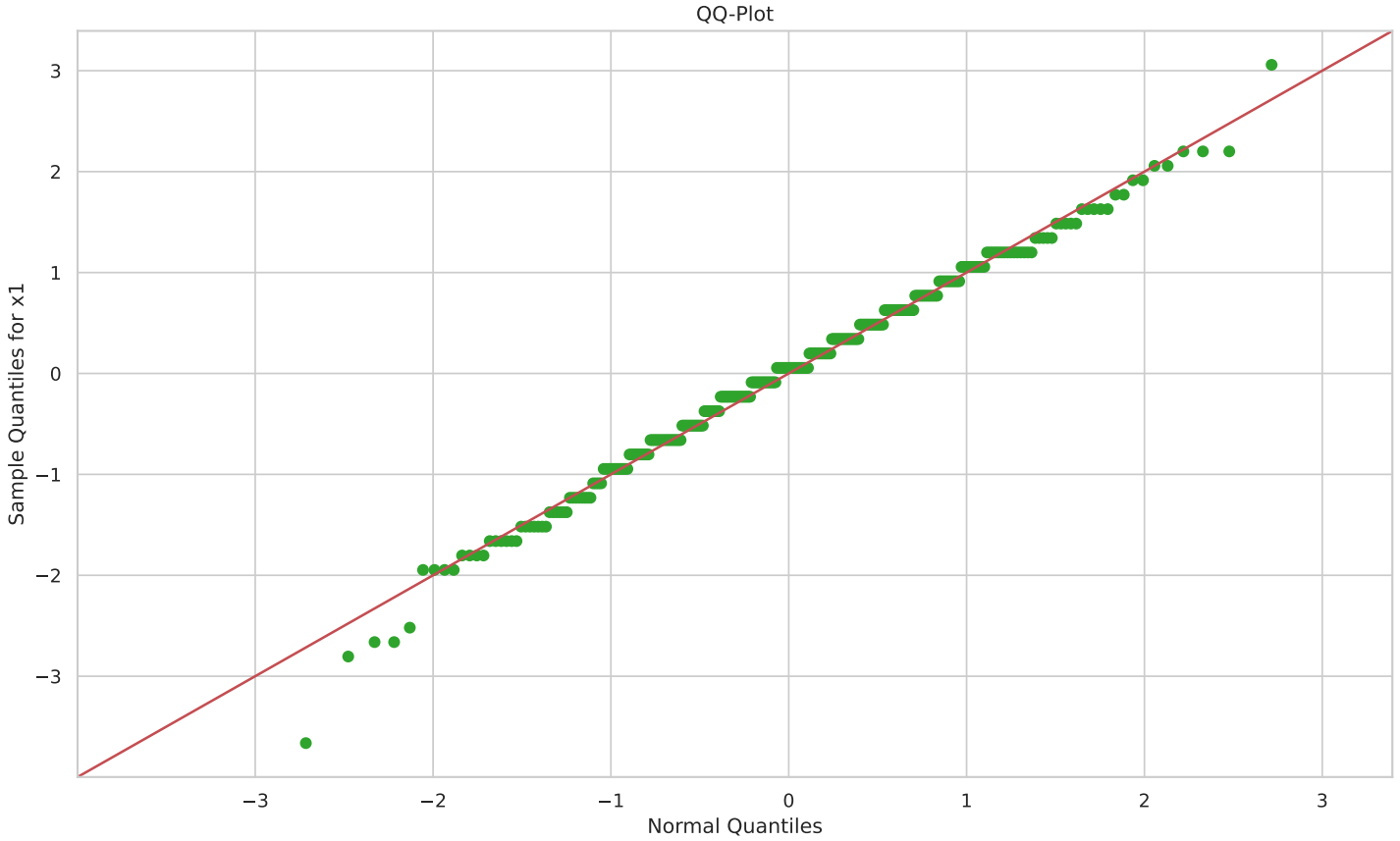
QQ-Plots

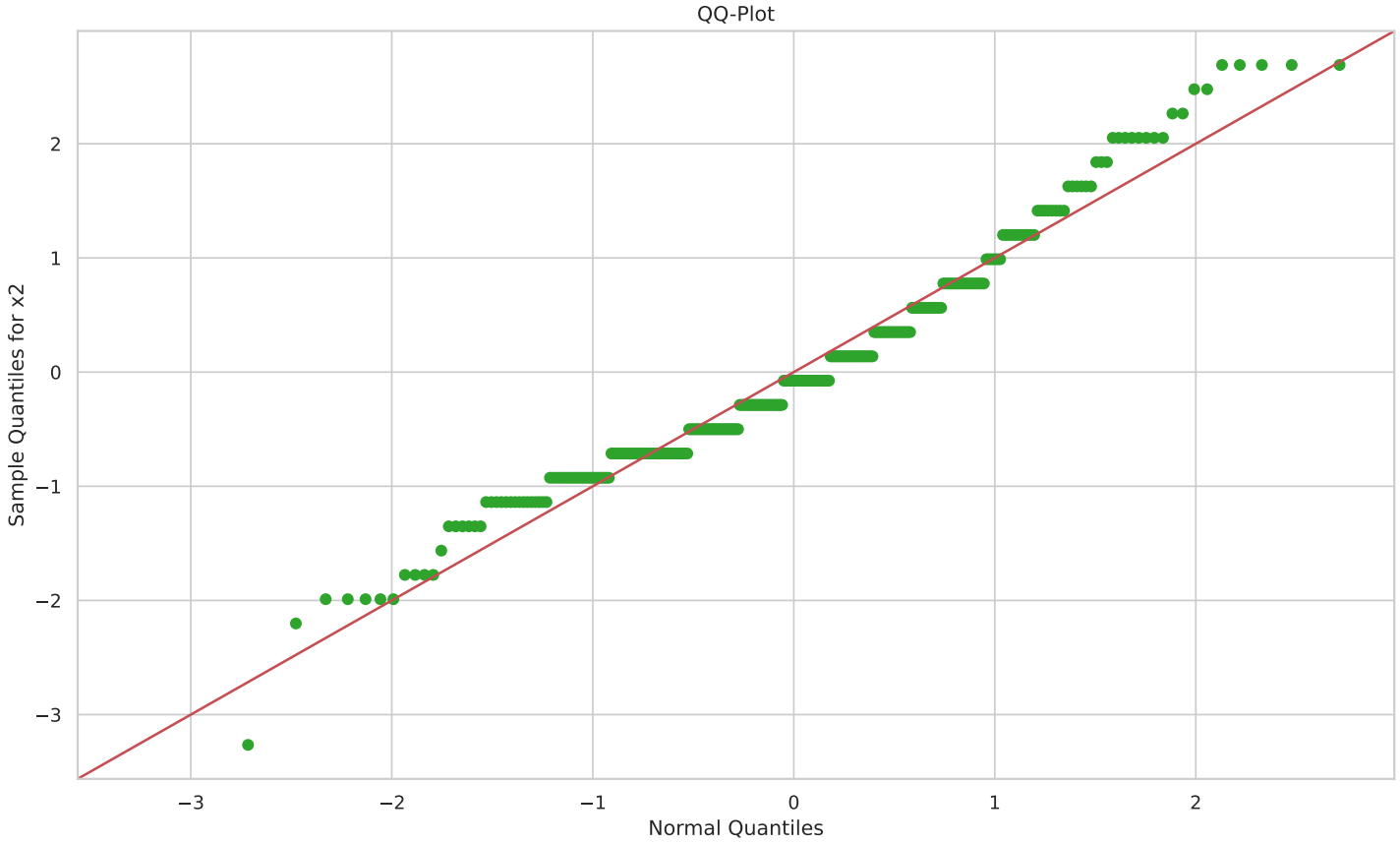
One QQ-Plot per page for each variable. Variables are sorted alphabetically.

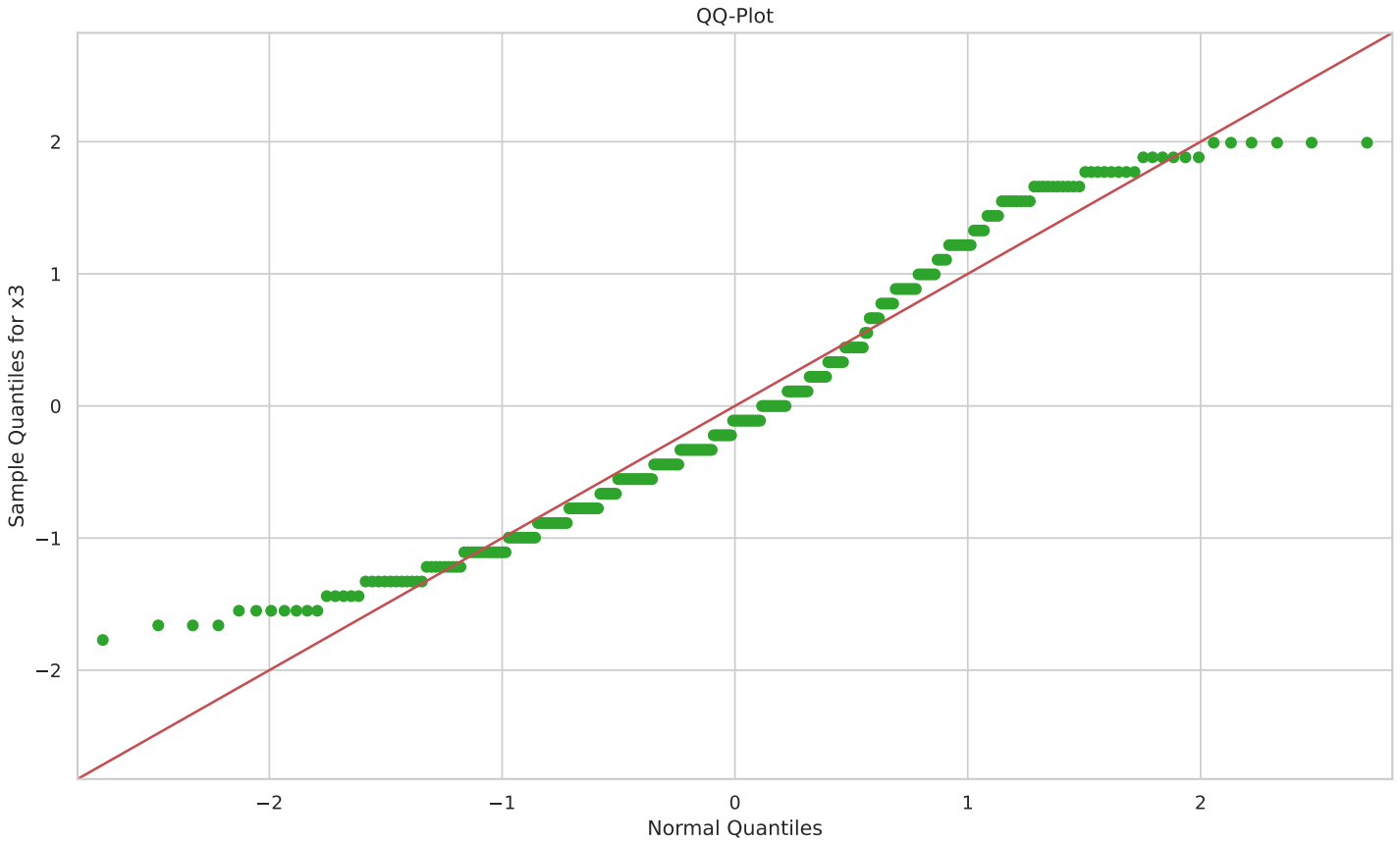
[]

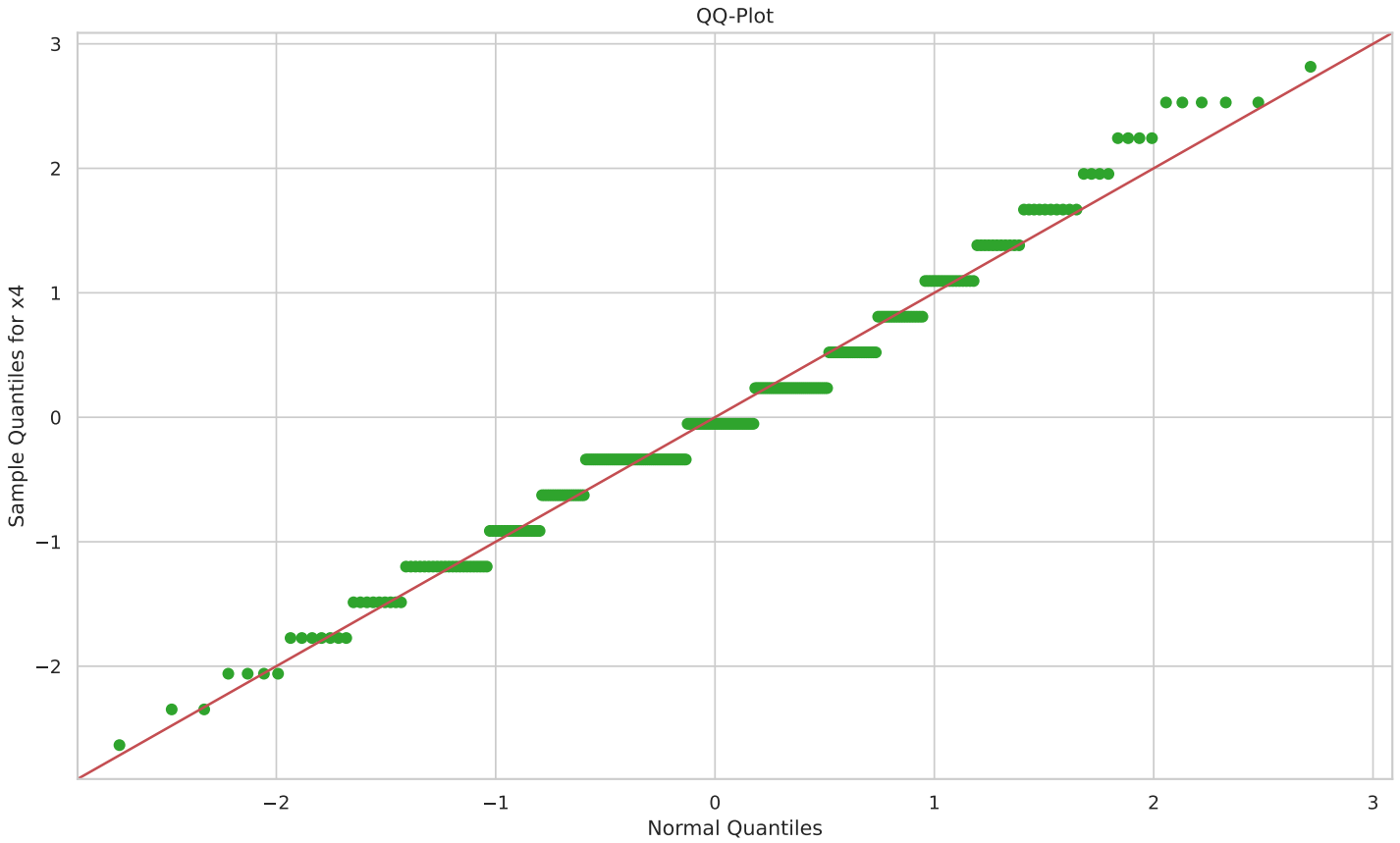


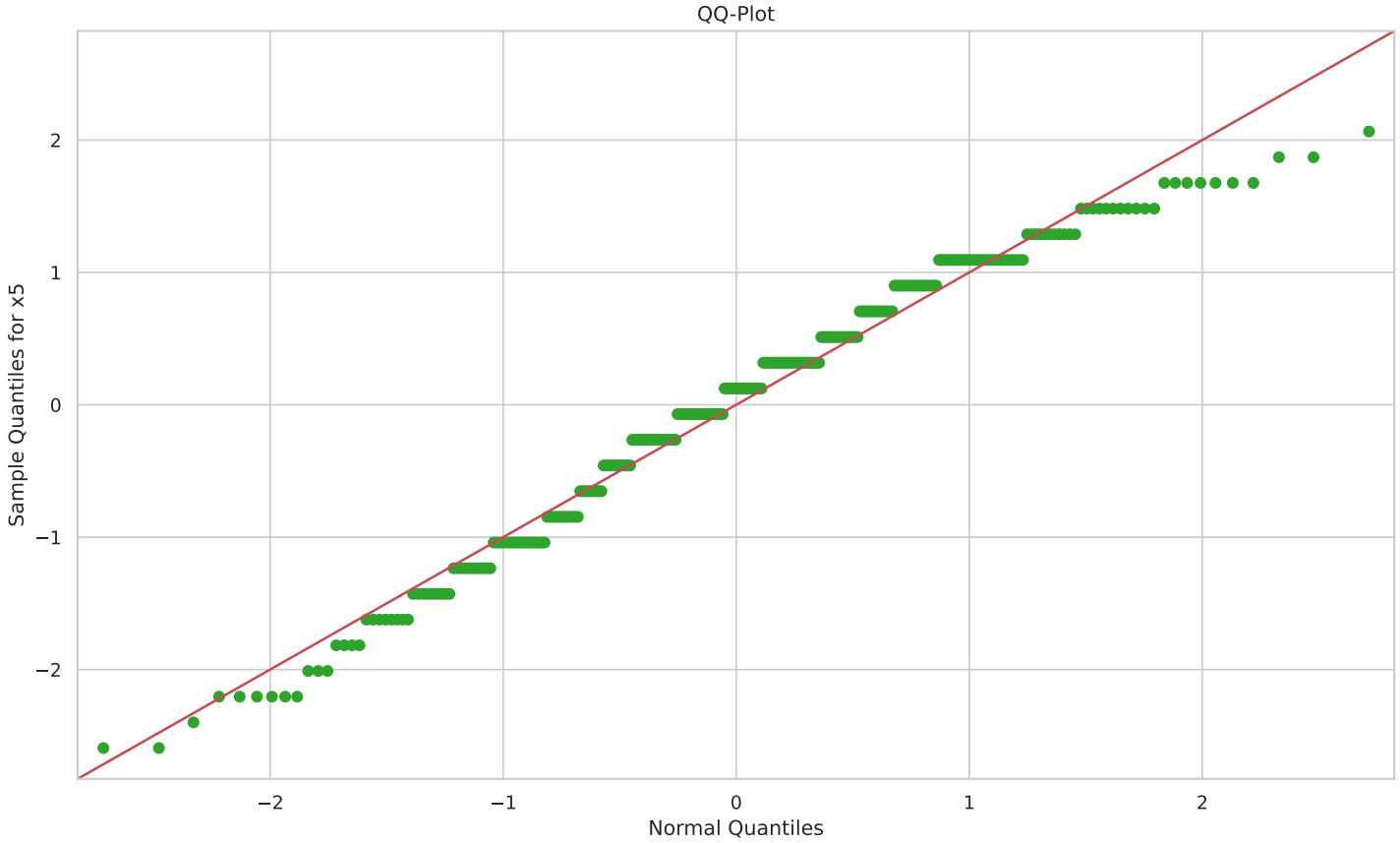

QQ-Plot
Sample Quantiles for V1
Normal Quantiles
2
1
0
−1
−2
−2
−1
0
1
2

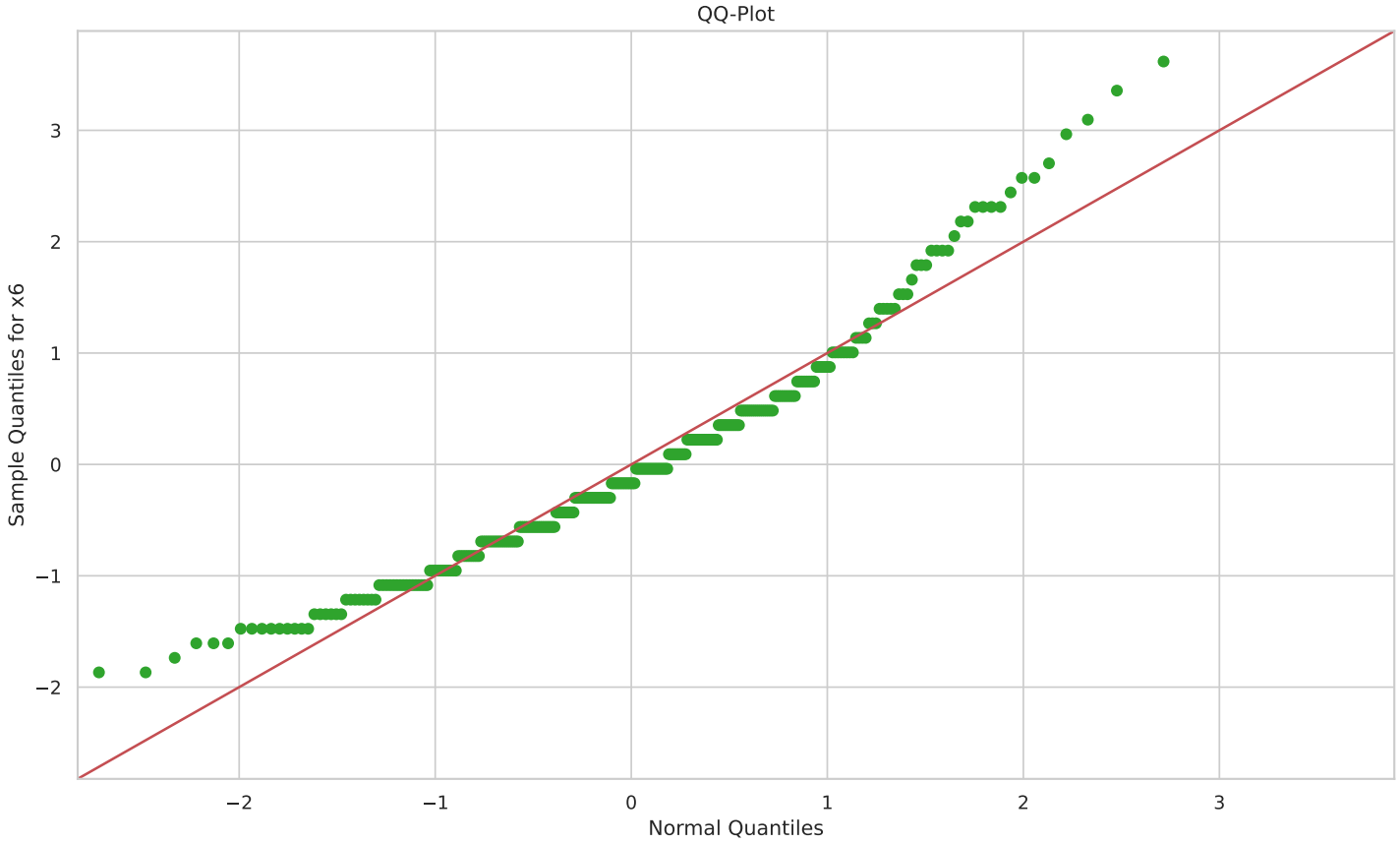

QQ-Plot
Sample Quantiles for x1
Normal Quantiles
3
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2
3

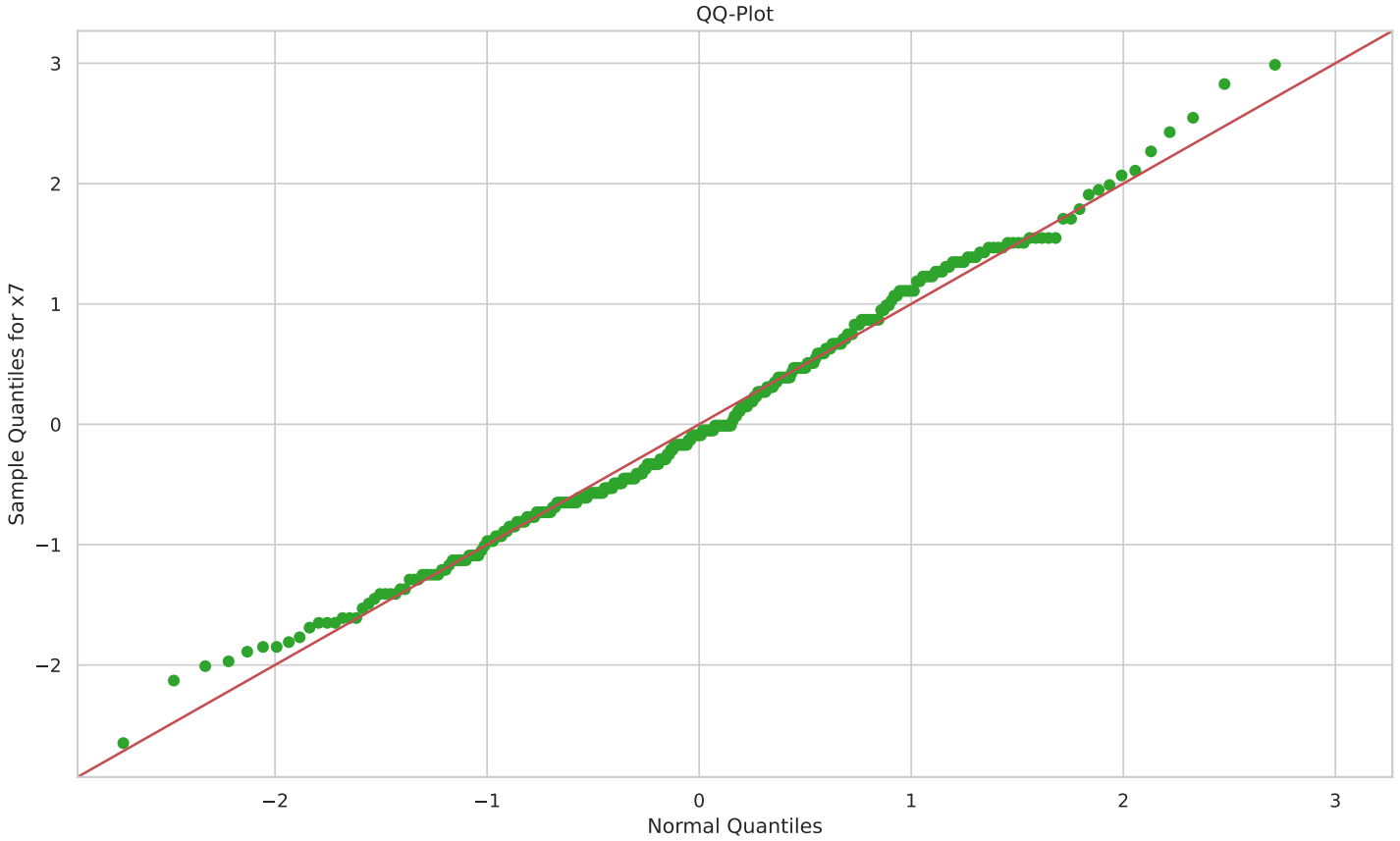

QQ-Plot
Sample Quantiles for x2
Normal Quantiles
2
1
0
−1
−2
−3
−3
−2
−1
0
1
2

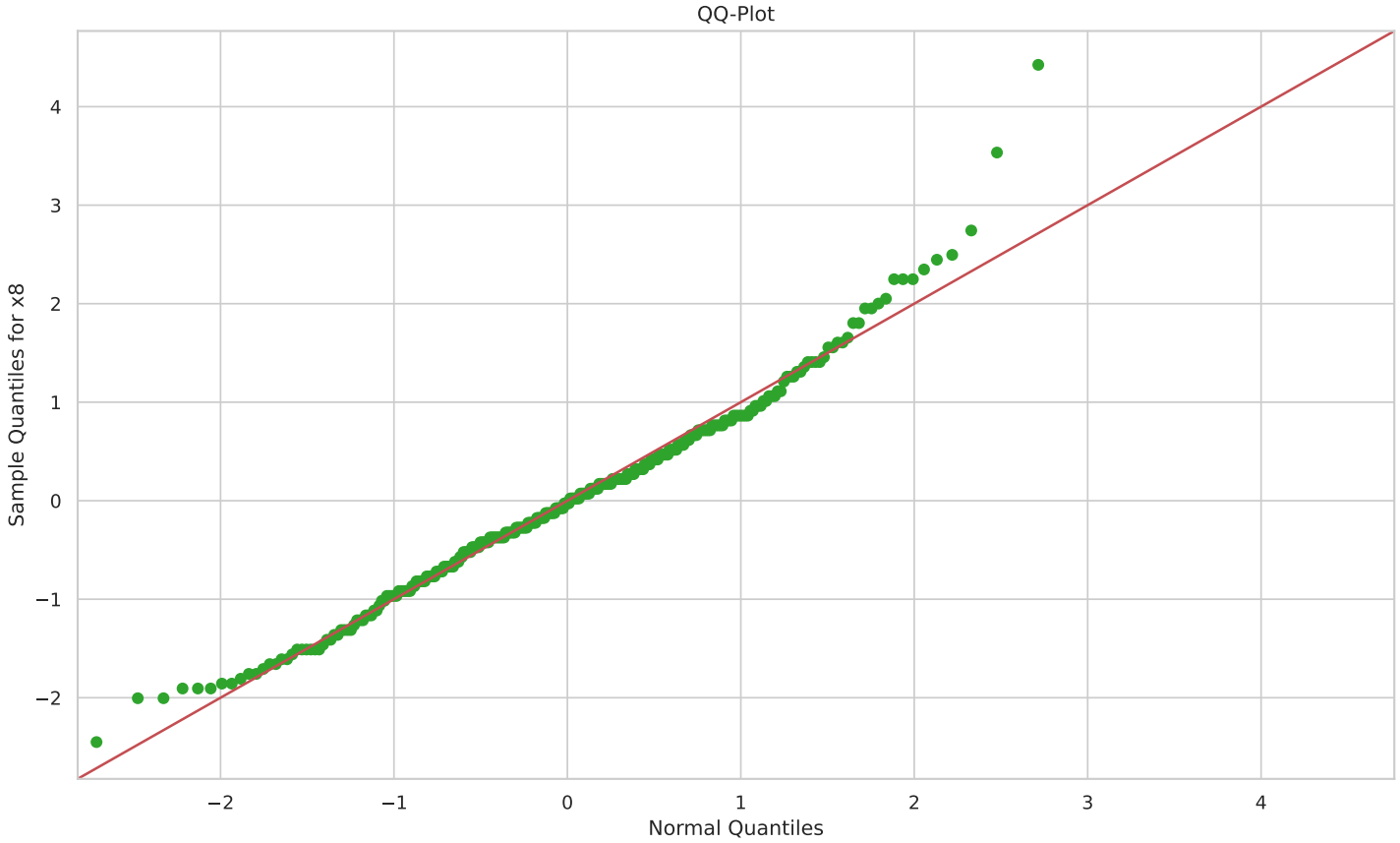

QQ-Plot
Sample Quantiles for x3
Normal Quantiles
2
1
0
−1
−2
−2
−1
0
1
2

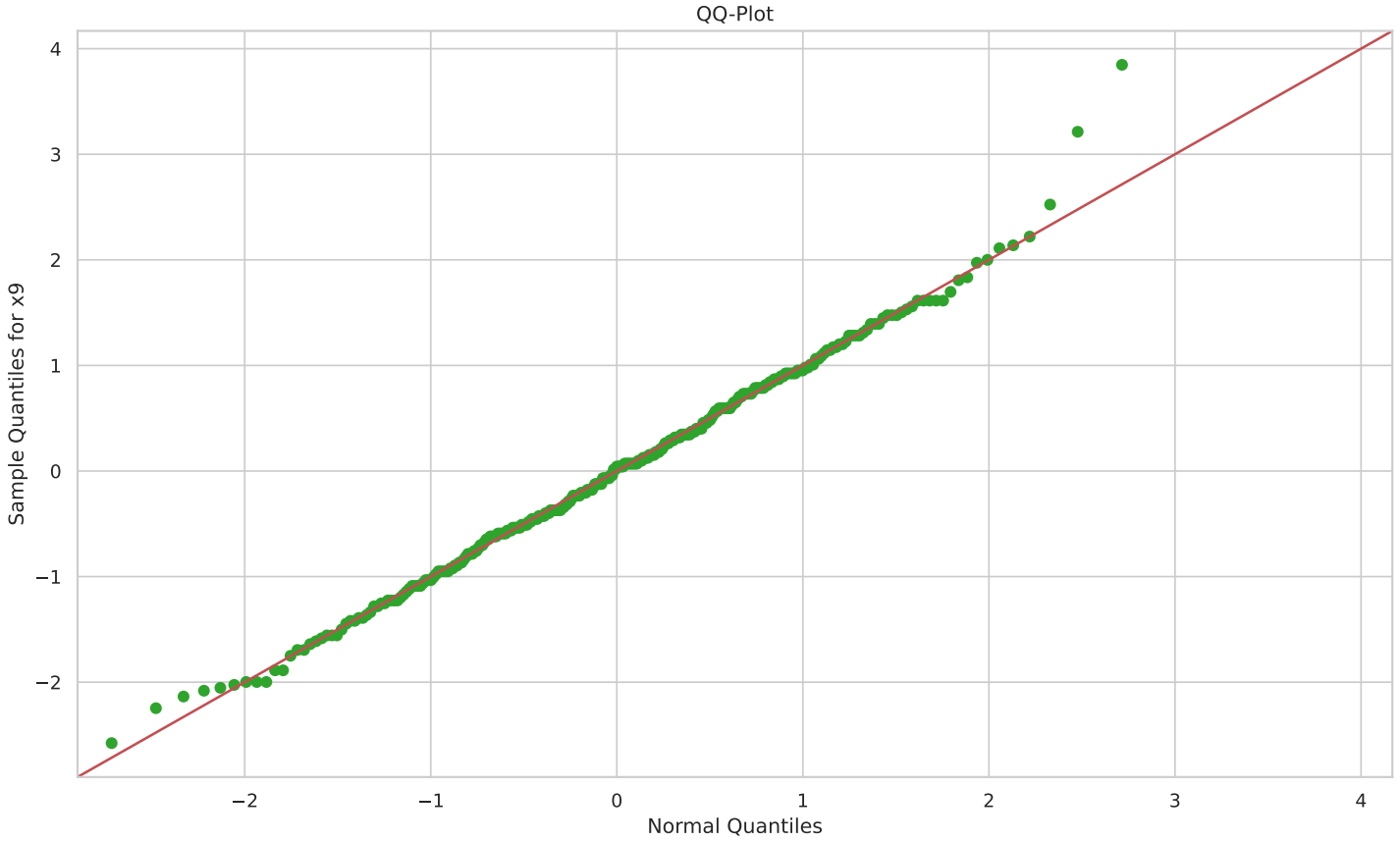

QQ-Plot
Sample Quantiles for x4
Normal Quantiles
3
2
1
0
−1
−2
−2
−1
0
1
2
3


QQ-Plot
Sample Quantiles for x5
Normal Quantiles
2
1
0
−1
−2
−2
−1
0
1
2


QQ-Plot
Sample Quantiles for x6
Normal Quantiles
3
2
1
0
−1
−2
−2
−1
0
1
2
3

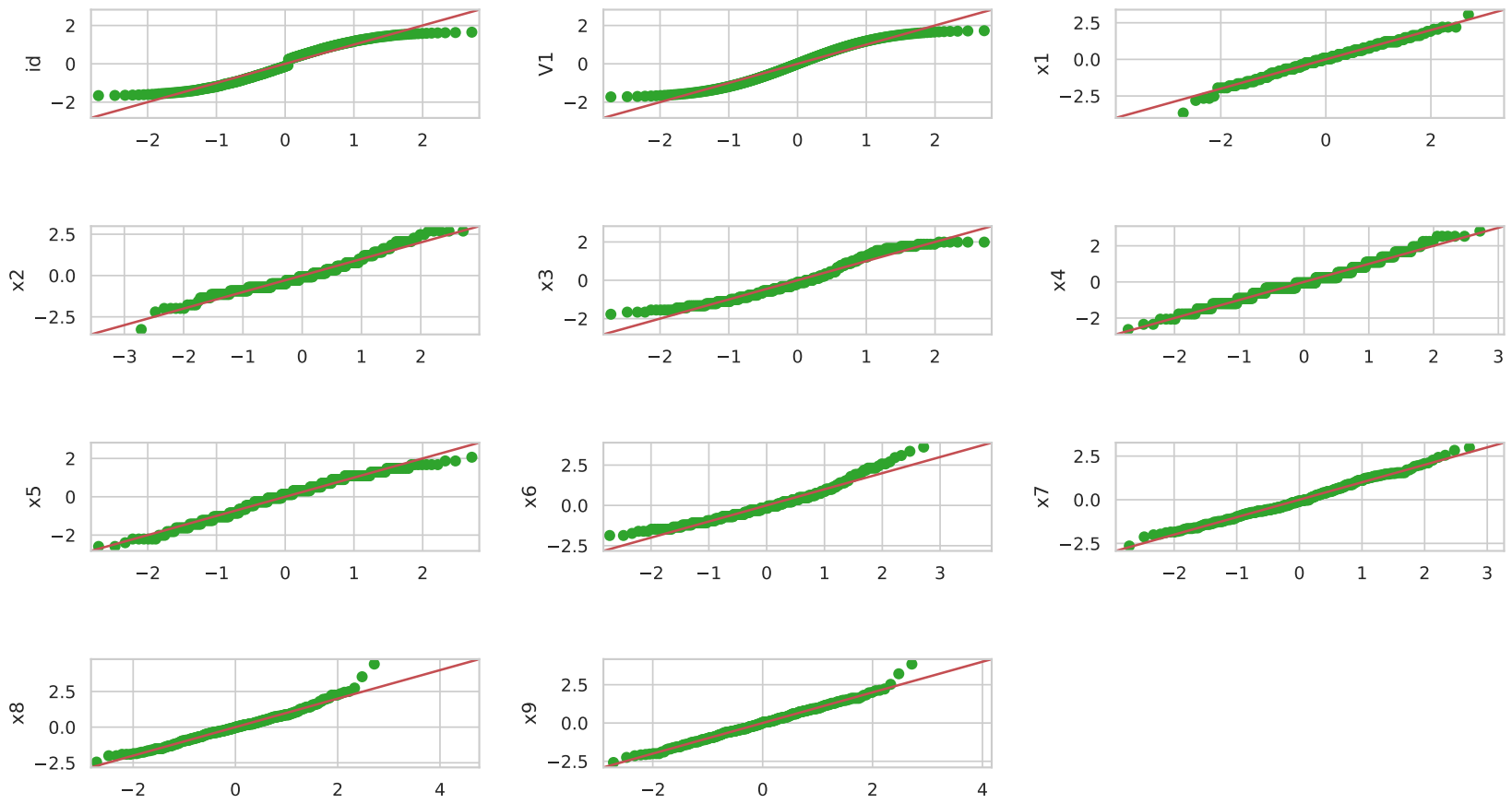

QQ-Plot
Sample Quantiles for x7
Normal Quantiles
3
2
1
0
−1
−2
−2
−1
0
1
2
3


QQ-Plot
Sample Quantiles for x8
Normal Quantiles
4
3
2
1
0
−1
−2
−2
−1
0
1
2
3
4


QQ-Plot
Sample Quantiles for x9
Normal Quantiles
4
3
2
1
0
−1
−2
−2
−1
0
1
2
3
4

QQ-Plots Summary

Multiple QQ-Plots of variables in one figure. Variables are sorted alphabetically.



Results for Discrete Variables

Descriptive Statistics

Totals

The table is sorted by the variable name. If any, N Unique contains the missing category.

	N Obs	N Missing	N Valid	% Complete	N Unique
agemo	301	0	301	100	12
ageyr	301	0	301	100	6
grade	301	1	300	99.67	3
school	301	0	301	100	2
sex	301	0	301	100	2

Frequencies

The table is sorted by the variable name. For each variable, a maximum of 20 unique values are considered, sorted in decreasing order of their frequency. If any, missings are counted as a category.

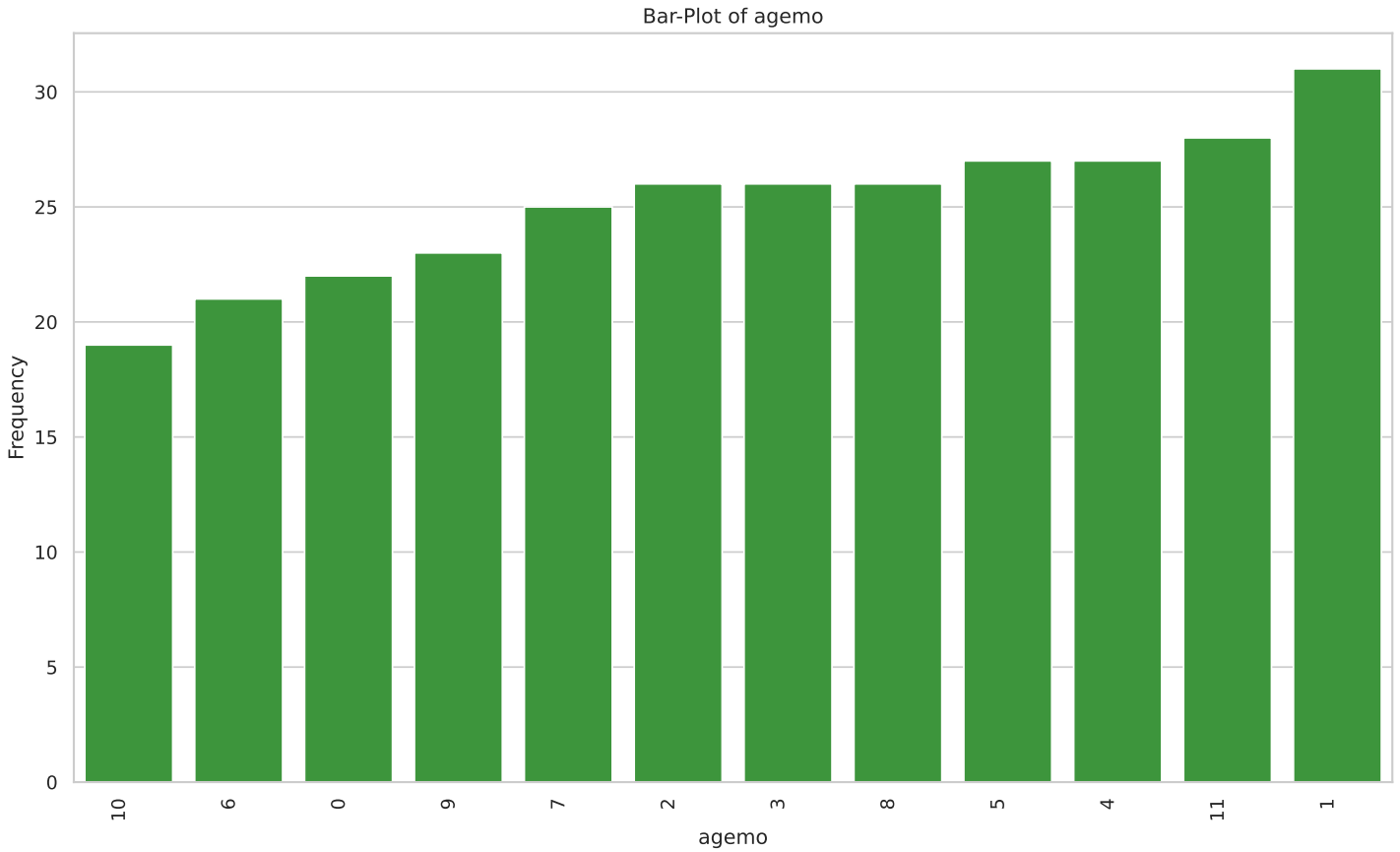
Variable	Category	Frequency	Percent
agemo	1	31	0.10299
agemo	11	28	0.0930233
agemo	5	27	0.089701
agemo	4	27	0.089701
agemo	2	26	0.0863787
agemo	3	26	0.0863787
agemo	8	26	0.0863787
agemo	7	25	0.0830565
agemo	9	23	0.076412
agemo	0	22	0.0730897
agemo	6	21	0.0697674
agemo	10	19	0.0631229
ageyr	13	110	0.365449
ageyr	12	101	0.335548
ageyr	14	55	0.182724
ageyr	15	20	0.0664452
ageyr	11	8	0.0265781
ageyr	16	7	0.0232558
grade	7	157	0.521595
grade	8	143	0.475083
grade	Missin	1	0.00332226
school	Pasteu	156	0.518272
school	Grant-	145	0.481728
sex	2	155	0.51495
sex	1	146	0.48505

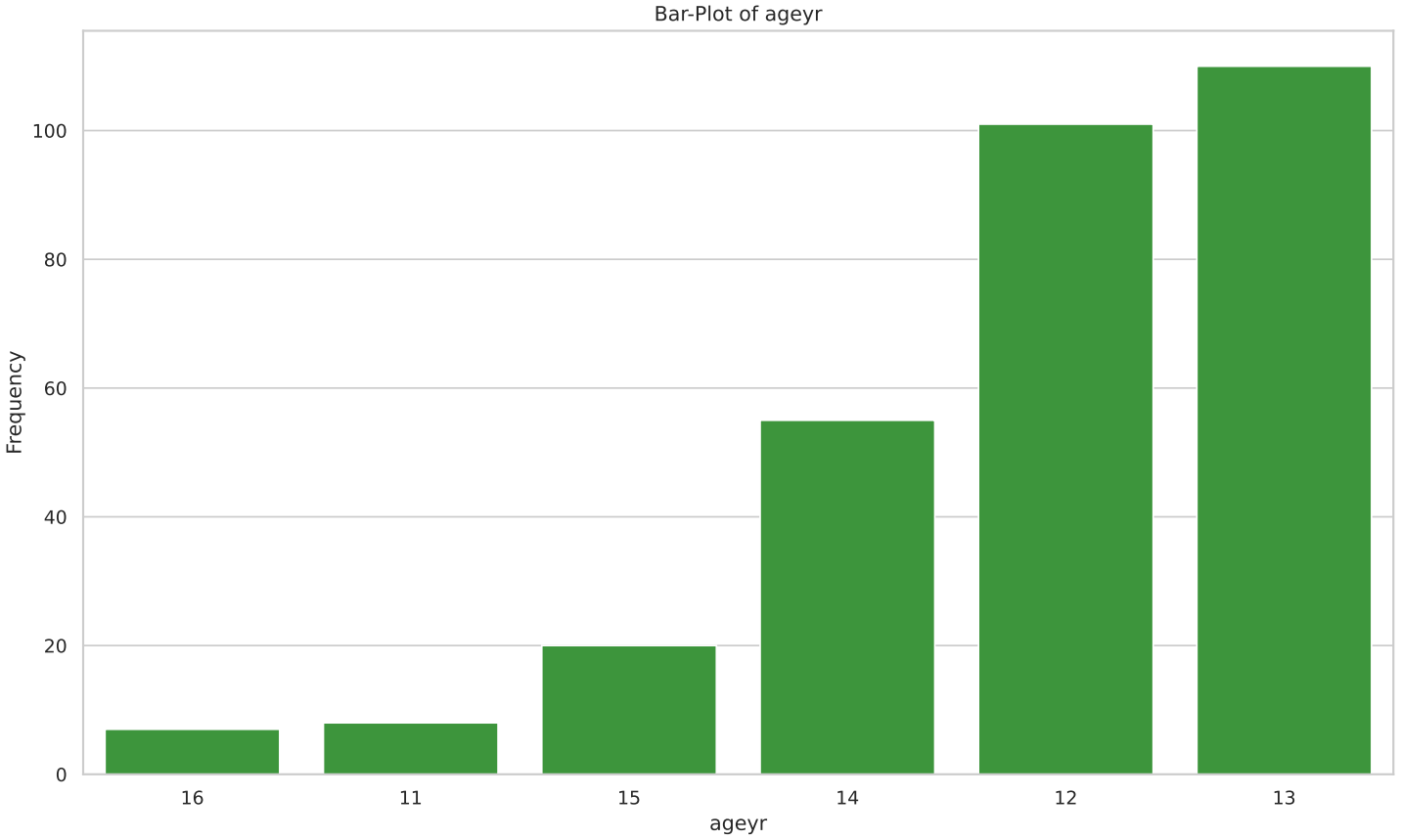
Graphics

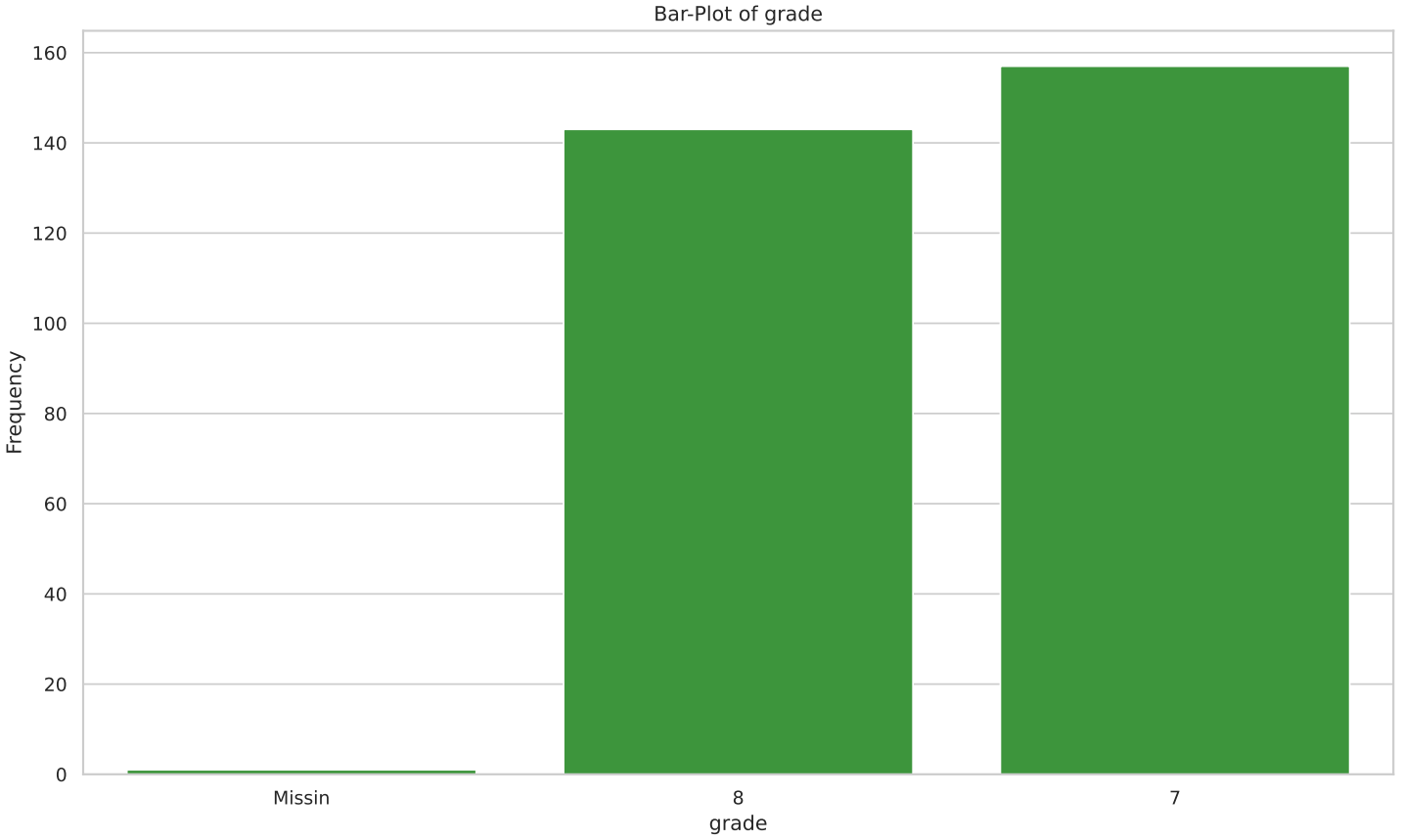
Bar-Plots

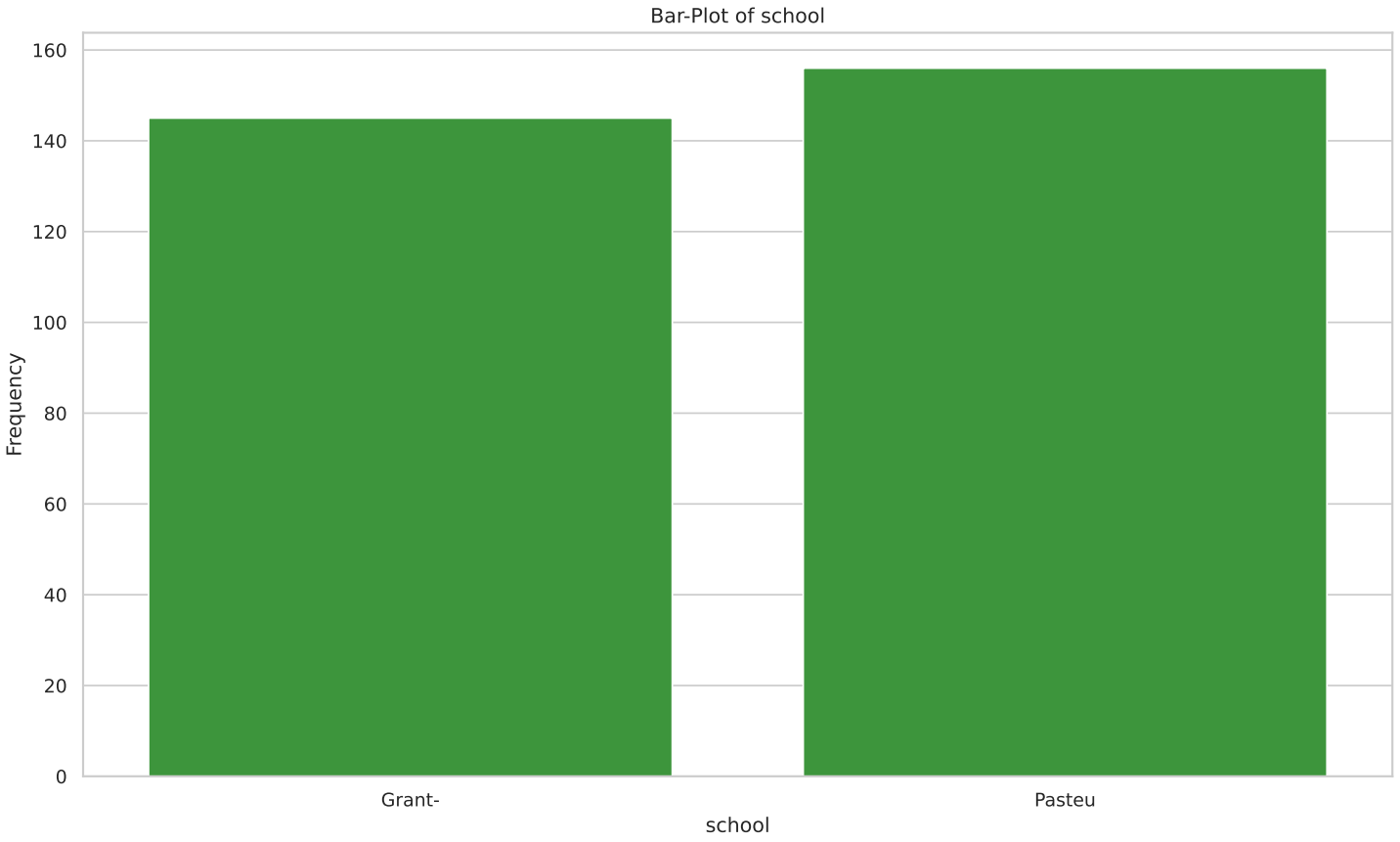
One Bar-Plot per page for each variable. Variables are sorted alphabetically. No labels for variables with more than 40 categories.

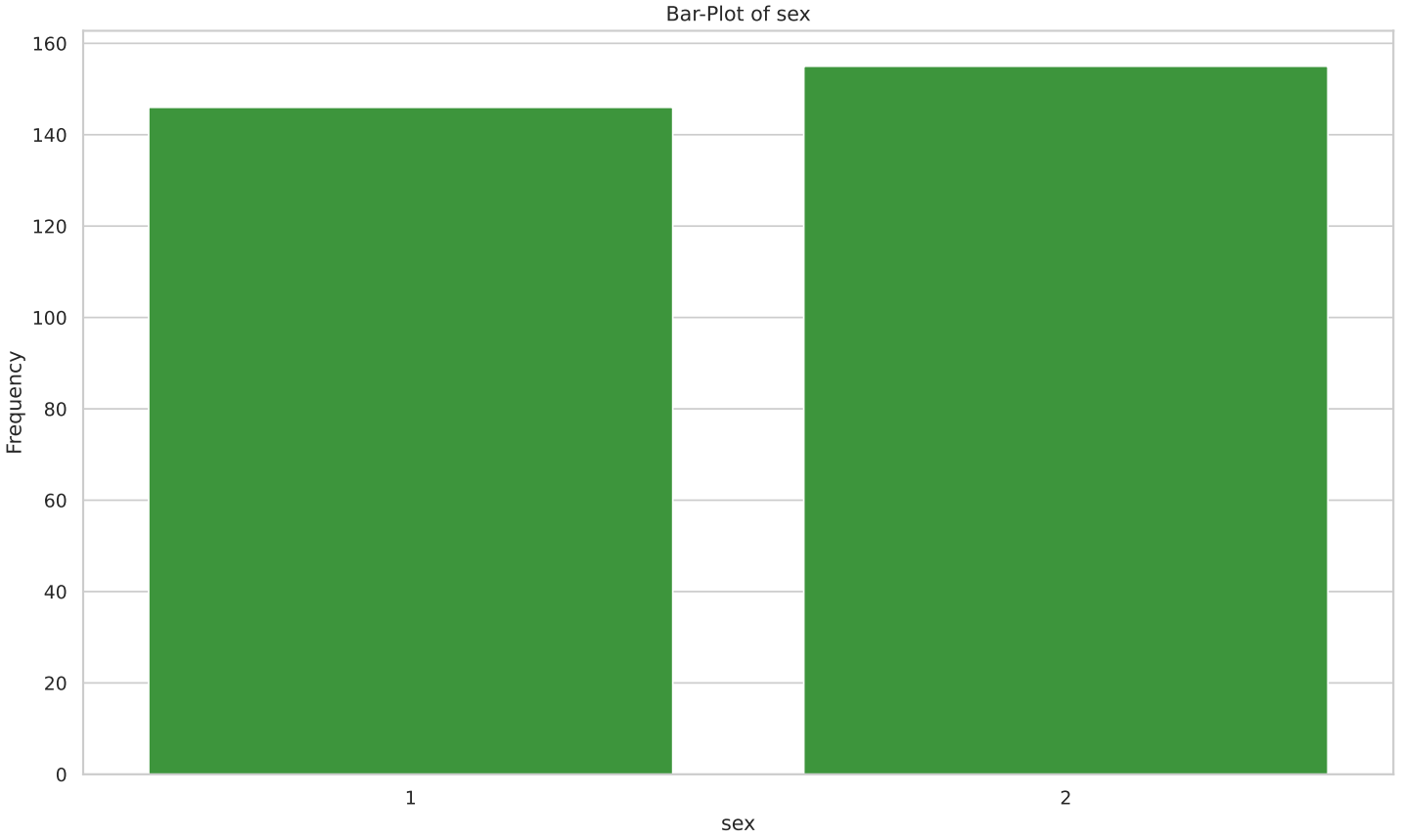
[]




Bar-Plot of ageyr
Frequency
0
20
40
60
80
100
16
11
15
14
12
13
ageyr

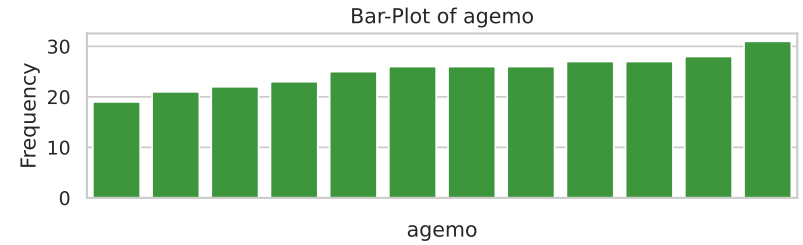

Bar-Plot of grade
160
140
120
100
80
60
40
20
0
Frequency
Missin
8
7
grade

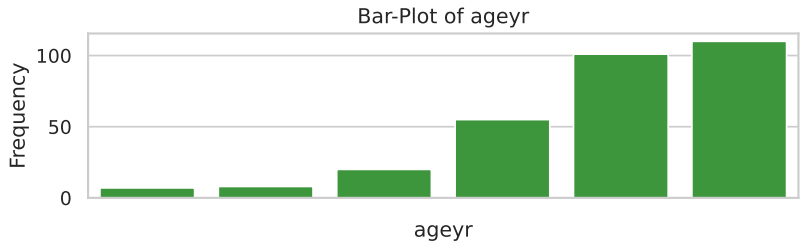

Bar-Plot of school
160
140
120
100
80
60
40
20
0
Frequency
Grant-
Pasteu
school

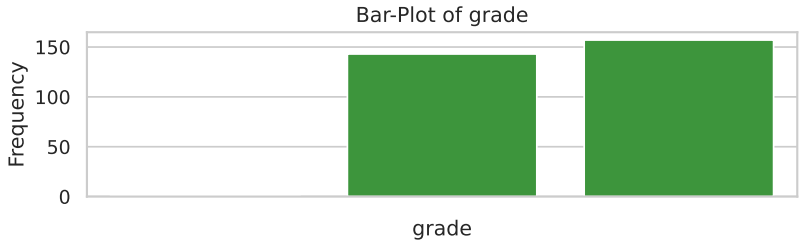

Bar-Plot of sex
160
140
120
100
80
60
40
20
0
Frequency
1
2
sex

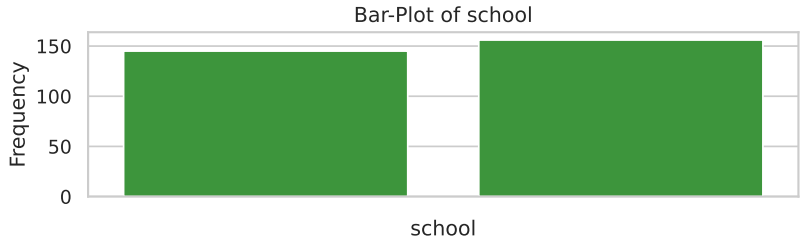
Bar-Plots Summary

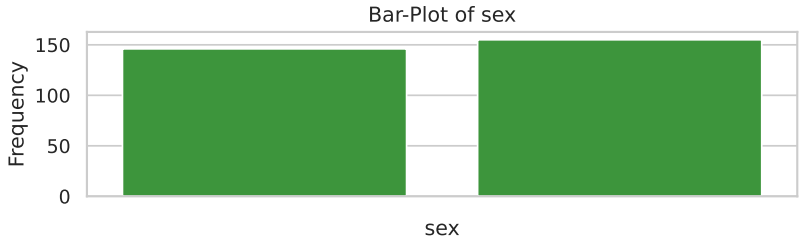
Multiple Bar-Plots of variables in one figure. Variables are sorted alphabetically. No labels displayed.







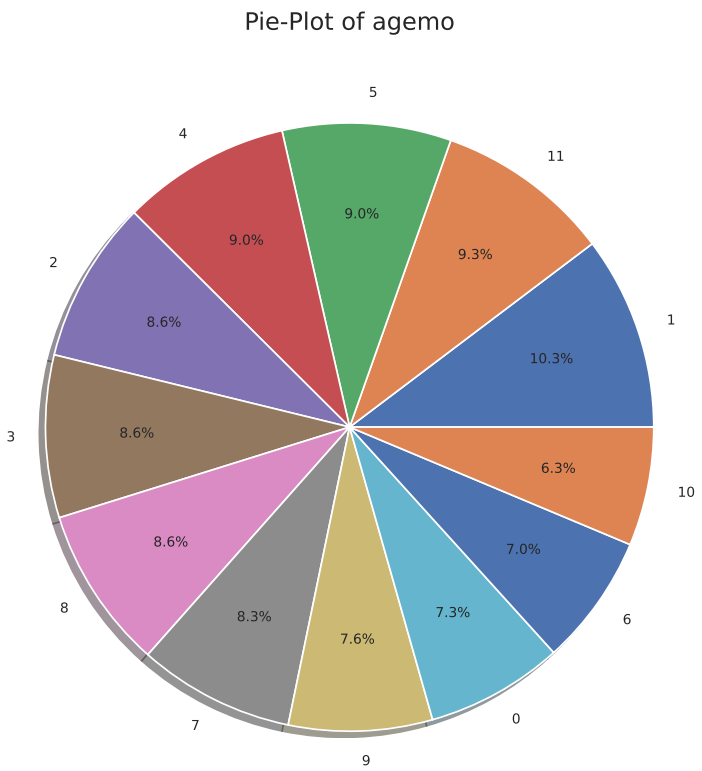


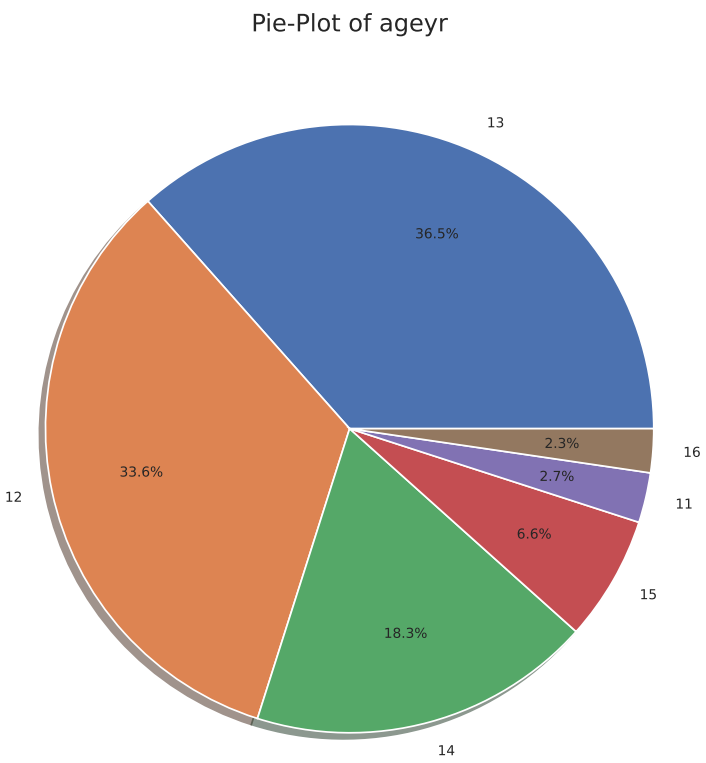


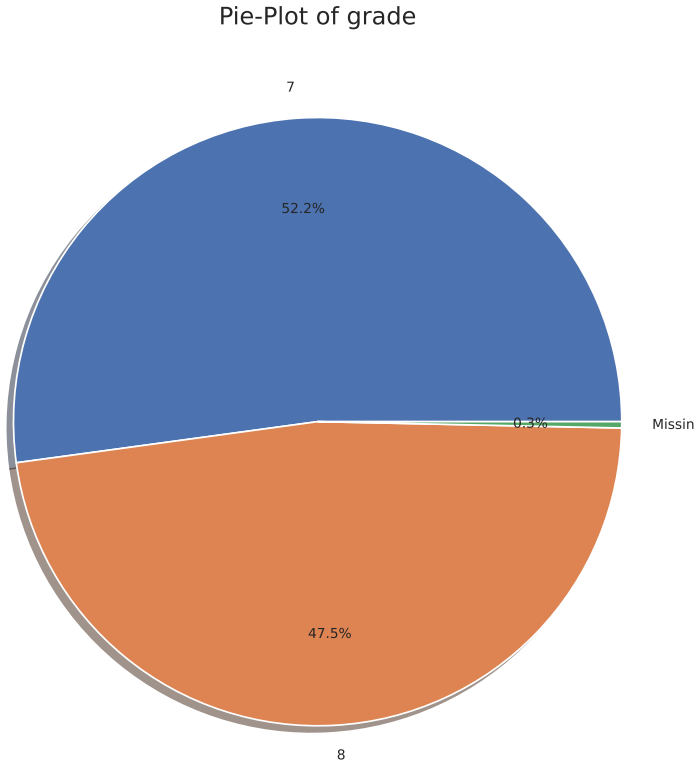
Pie Plots

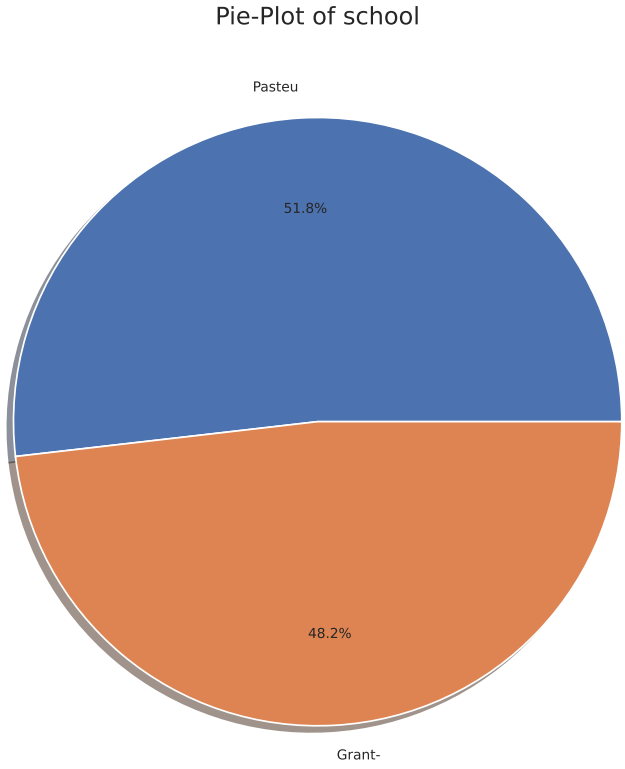
One Pie Plot per page for each variable. Variables are sorted alphabetically.

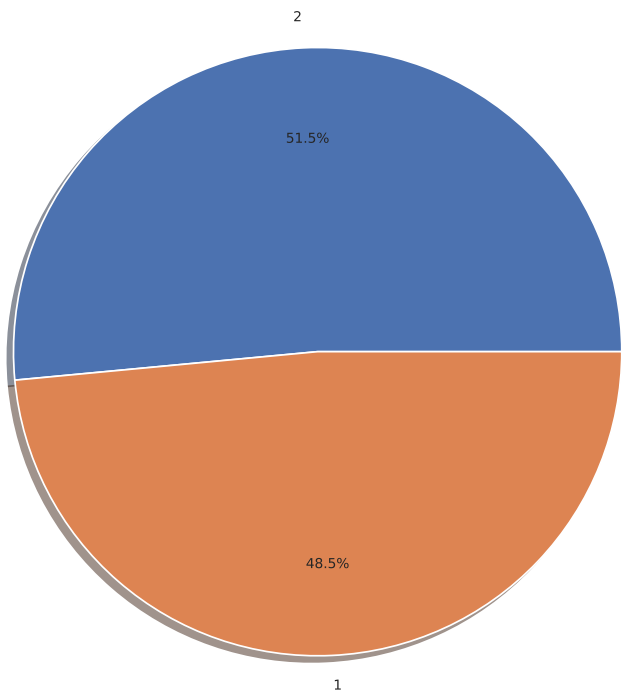
[]




Pie-Plot of ageyr
13
36.5%
12
33.6%
14
18.3%
15
6.6%
11
2.7%
16
2.3%


Pie-Plot of grade
7
52.2%
0.3%
Missin
47.5%
8

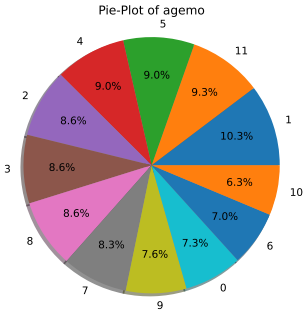

Pie-Plot of school
Pasteu
51.8%
48.2%
Grant-

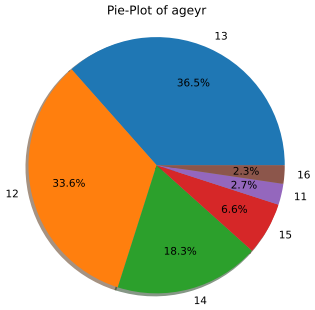

Pie-Plot of sex
2
51.5%
48.5%
1

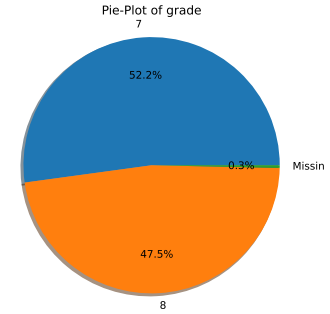
Pie Plots Summary

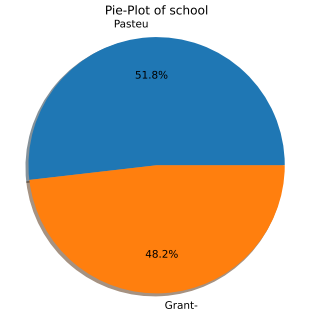
Multiple Pie Plots of variables in one figure. Variables are sorted alphabetically.

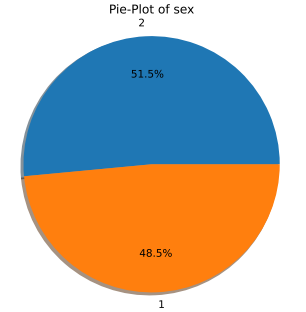
See figures on next page.


Pie-Plot of agemo
5
11
1
10
6
0
9
7
8
3
2
4
9.0%
9.0%
9.3%
10.3%
6.3%
7.0%
7.3%
7.6%
8.3%
8.6%
8.6%
8.6%


Pie-Plot of ageyr
13
16
11
15
14
12
36.5%
2.3%
2.7%
6.6%
18.3%
33.6%


Pie-Plot of grade
7
Missin
8
52.2%
0.3%
47.5%


Pie-Plot of school
Pasteu
Grant-
51.8%
48.2%


Pie-Plot of sex
2
1
51.5%
48.5%