R to LaTeX

Example

Contents

1 Logical **1**
- 1.1 Logical ~ Logical . . . 2
- 1.2 Logical ~ Factor . . . 2
- 1.3 Logical ~ Ordered . . . 5
- 1.4 Logical ~ Discrete . . . 8
- 1.5 Logical ~ Continuous . . . 11

2 Factor **13**
- 2.1 Factor ~ Logical . . . 13
- 2.2 Factor ~ Factor . . . 14
- 2.3 Factor ~ Ordered . . . 17
- 2.4 Factor ~ Discrete . . . 20
- 2.5 Factor ~ Continuous . . . 24

3 Ordered **27**
- 3.1 Ordered ~ Logical . . . 27
- 3.2 Ordered ~ Factor . . . 29
- 3.3 Ordered ~ Ordered . . . 31
- 3.4 Ordered ~ Discrete . . . 33
- 3.5 Ordered ~ Continuous . . . 36

4 Continuous **38**
- 4.1 Continuous ~ Logical . . . 38
- 4.2 Continuous ~ Factor . . . 39
- 4.3 Continuous ~ Ordered . . . 40
- 4.4 Continuous ~ Discrete . . . 41
- 4.5 Continuous ~ Continuous . . . 44

1 Logical

A faire :

- Pour les boxplot logical ~ continue, il faudrait inverser le sens des boxplot et ajouter la courbe de regression logistique
- Pour tous les graphes : ajoute-t-on des couleurs ? Auquel cas la boxplot verte correspondrait la densities verte, and so on...

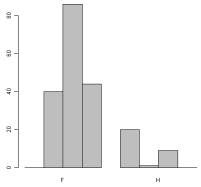
1.1 Logical ~ Logical

Nominal(2) ~ Nominal(2) — **N=200 - NA=0 (0%)**

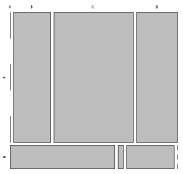
Table

	Echec	Reussite	Total
F	140	30	170
	→ 82.35 %	→ 17.65 %	→ 100 %
H	20	10	30
	→ 66.67 %	→ 33.33 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Barplot



Mosaic



Tests

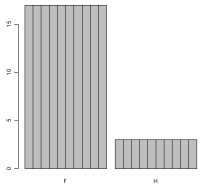
χ^2 test	$\chi^2 = 3.9216$	p = 0.0477	*
Fisher's Exact Test		p = 0.0795	.
Odds Ratio	ODD = 2.3333	p = 0.0522	.
Relative Risk	RR = 1.2353	p = 0.1145	

Nominal(2) ~ Nominal(2) — **N=100 - NA=0 (0%)**

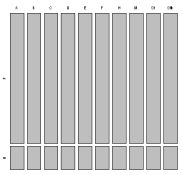
Table

	Mort	Vivant	Total
A	27	22	49
	→ 55.1 %	→ 44.9 %	→ 100 %
B	24	27	51
	→ 47.06 %	→ 52.94 %	→ 100 %
Total	51	49	100
	→ 51 %	→ 49 %	→ 100 %

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 0.6469$	p = 0.4212
Fisher's Exact Test		p = 0.4325
Odds Ratio	ODD = 1.3807	p = 0.4217
Relative Risk	RR = 1.1709	p = 0.4224

1.2 Logical ~ Factor

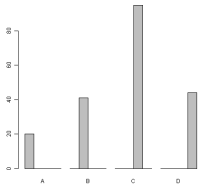
Wide

Nominal(2) ~ Nominal(4) **N=200 - NA=0 (0%)**

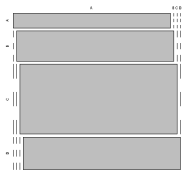
Table

	Echec	Reussite	Total
A	20	0	20
	→ 100 %	→ 0 %	→ 100 %
B	40	1	41
	→ 97.56 %	→ 2.44 %	→ 100 %
C	60	35	95
	→ 63.16 %	→ 36.84 %	→ 100 %
D	40	4	44
	→ 90.91 %	→ 9.09 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 33.0173$	p = 0	$***$
Fisher's Exact Test		p = 5e-04	$***$

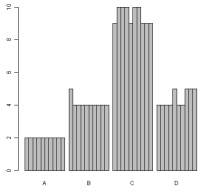
Mixed

Nominal(2) ~ Nominal(4) **N=200 - NA=0 (0%)**

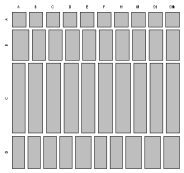
Table

	Echec	Reussite	Total
A	20	0	20
	→ 100 %	→ 0 %	→ 100 %
B	40	1	41
	→ 97.56 %	→ 2.44 %	→ 100 %
C	60	35	95
	→ 63.16 %	→ 36.84 %	→ 100 %
D	40	4	44
	→ 90.91 %	→ 9.09 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 33.0173$	p = 0	$***$
Fisher's Exact Test		p = 5e-04	$***$

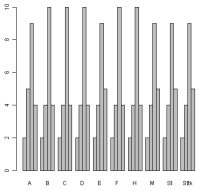
Mixed

Nominal(2) ~ Nominal(10) **N=200 - NA=0 (0%)**

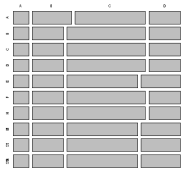
Table

	Echec	Reussite	Total
A	16	4	20
	→ 80 %	→ 20 %	→ 100 %
B	16	4	20
	→ 80 %	→ 20 %	→ 100 %
C	16	4	20
	→ 80 %	→ 20 %	→ 100 %
D	16	4	20
	→ 80 %	→ 20 %	→ 100 %
E	16	4	20
	→ 80 %	→ 20 %	→ 100 %
F	16	4	20
	→ 80 %	→ 20 %	→ 100 %
H	16	4	20
	→ 80 %	→ 20 %	→ 100 %
M	16	4	20
	→ 80 %	→ 20 %	→ 100 %
St	16	4	20
	→ 80 %	→ 20 %	→ 100 %
Sttk	16	4	20
	→ 80 %	→ 20 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 0$	p = 1
Fisher's Exact Test		p = 1

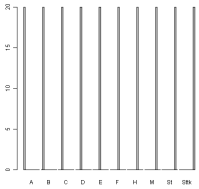
Long

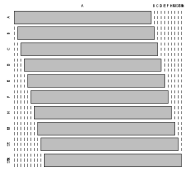
Nominal(2) ~ Nominal(10) N=200 - NA=0 (0%)

Table

	Echec	Reussite	Total
A	16	4	20
	→ 80 %	→ 20 %	→ 100 %
B	16	4	20
	→ 80 %	→ 20 %	→ 100 %
C	16	4	20
	→ 80 %	→ 20 %	→ 100 %
D	16	4	20
	→ 80 %	→ 20 %	→ 100 %
E	16	4	20
	→ 80 %	→ 20 %	→ 100 %
F	16	4	20
	→ 80 %	→ 20 %	→ 100 %
H	16	4	20
	→ 80 %	→ 20 %	→ 100 %
M	16	4	20
	→ 80 %	→ 20 %	→ 100 %
St	16	4	20
	→ 80 %	→ 20 %	→ 100 %
Sttk	16	4	20
	→ 80 %	→ 20 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Barplot **Mosaic**





Tests

χ^2 test	$\chi^2 = 0$	p = 1
Fisher's Exact Test		p = 1

1.3 Logical ~ Ordered

Wide

Nominal(2) ~ Ordered(4) — **N=200 - NA=0 (0%)**

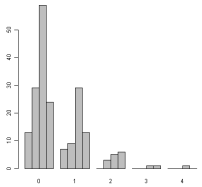
Table

	Echec	Reussite	Total
AB	45	5	50
	→ 90 %	→ 10 %	→ 100 %
B	15	15	30
	→ 50 %	→ 50 %	→ 100 %
P	93	7	100
	→ 93 %	→ 7 %	→ 100 %
TB	7	13	20
	→ 35 %	→ 65 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

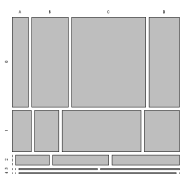
Summary

Modal.	:	Echec	Reussite
Q1	:	AB	AB
Q2	:	AB	B
Q3	:	P	B
Q4	:	P	TB
Q5	:	TB	TB

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 55.875$	p = 0	* * *
Fisher's Exact Test		p = 5e-04	* * *

Mixed

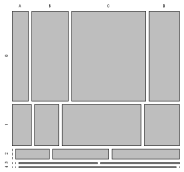
Nominal(2) ~ Ordered(4) — **N=200 - NA=0 (0%)**

Table

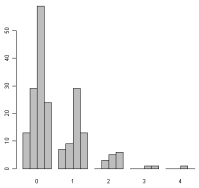
	Echec	Reussite	Total
AB	45	5	50
	→ 90 %	→ 10 %	→ 100 %
B	15	15	30
	→ 50 %	→ 50 %	→ 100 %
P	93	7	100
	→ 93 %	→ 7 %	→ 100 %
TB	7	13	20
	→ 35 %	→ 65 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Summary - Mosaic

Modal.	:	Echec	Reussite
Q1	:	AB	AB
Q2	:	AB	B
Q3	:	P	B
Q4	:	P	TB
Q5	:	TB	TB



Barplot



Tests

χ^2 test	$\chi^2 = 55.875$	p = 0	* * *
Fisher's Exact Test		p = 5e-04	* * *
T test	T = -1.6937	p = 0.0959	.
Wilcoxon	W = 2720	p = 0.1132	

Mixed

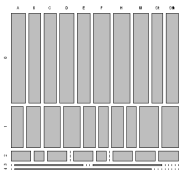
Nominal(2) ~ Ordered(8) **N=200 - NA=0 (0%)**

Table

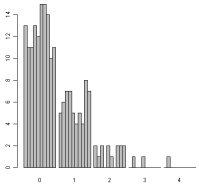
	Echec	Reussite	Total
AB	20	3	23
	→ 86.96 %	→ 13.04 %	→ 100 %
AB+	25	4	29
	→ 86.21 %	→ 13.79 %	→ 100 %
B	18	7	25
	→ 72 %	→ 28 %	→ 100 %
B+	5	8	13
	→ 38.46 %	→ 61.54 %	→ 100 %
P	40	2	42
	→ 95.24 %	→ 4.76 %	→ 100 %
P+	45	3	48
	→ 93.75 %	→ 6.25 %	→ 100 %
TB	3	9	12
	→ 25 %	→ 75 %	→ 100 %
TB+	4	4	8
	→ 50 %	→ 50 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Summary - Mosaic

Modal.	:	Echec	Reussite
Q1	:	AB	AB
Q2	:	AB+	B
Q3	:	P	B+
Q4	:	P+	TB
Q5	:	TB+	TB+



Barplot



Tests

χ^2 test	χ^2 = 55.3678	p = 0	* * *
Fisher's Exact Test		p = 5e-04	* * *
T test	T = -1.3247	p = 0.1907	
Wilcoxon	W = 2748	p = 0.1614	

Long

Nominal(2) ~ Ordered(8) **N=200 - NA=0 (0%)**

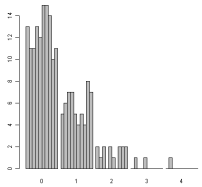
Table

	Echec	Reussite	Total
AB	20	3	23
	→ 86.96 %	→ 13.04 %	→ 100 %
AB+	25	4	29
	→ 86.21 %	→ 13.79 %	→ 100 %
B	18	7	25
	→ 72 %	→ 28 %	→ 100 %
B+	5	8	13
	→ 38.46 %	→ 61.54 %	→ 100 %
P	40	2	42
	→ 95.24 %	→ 4.76 %	→ 100 %
P+	45	3	48
	→ 93.75 %	→ 6.25 %	→ 100 %
TB	3	9	12
	→ 25 %	→ 75 %	→ 100 %
TB+	4	4	8
	→ 50 %	→ 50 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

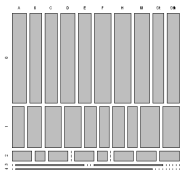
Summary

Modal.	:	**Echec**	**Reussite**
Q1	:	AB	AB
Q2	:	AB+	B
Q3	:	P	B+
Q4	:	P+	TB
Q5	:	TB+	TB+

Barplot



Mosaic



Tests

χ^2 test	χ^2 = 55.3678	p = 0	* * *
Fisher's Exact Test		p = 5e-04	* * *
T test	T = -1.3247	p = 0.1907	
Wilcoxon	W = 2748	p = 0.1614	

1.4 Logical ~ Discrete

Wide

Nominal(2) ~ Discrete(4) — **N=200 - NA=0 (0%)**

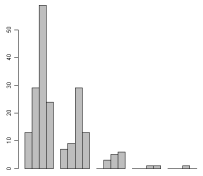
Table

	Echec	Reussite	Total
0	103	21	124
	→ 83.06 %	→ 16.94 %	→ 100 %
1	42	13	55
	→ 76.36 %	→ 23.64 %	→ 100 %
2	10	6	16
	→ 62.5 %	→ 37.5 %	→ 100 %
3	5	0	5
	→ 100 %	→ 0 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

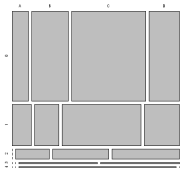
Summary

Modal.	:	**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	0.48	0.62
Var	:	0.57	0.55
SD	:	0.75	0.74
Min	:	0	0
Q1	:	0	0
Median	:	0	0
Q3	:	1	1
Max	:	3	2

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 5.4949$	p = 0.1389
Fisher's Exact Test		p = 0.1699

Mixed

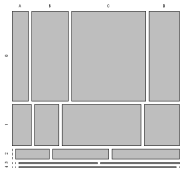
Nominal(2) ~ Discrete(4) — **N=200 - NA=0 (0%)**

Table

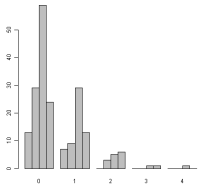
	Echec	Reussite	Total
0	103	21	124
	→ 83.06 %	→ 16.94 %	→ 100 %
1	42	13	55
	→ 76.36 %	→ 23.64 %	→ 100 %
2	10	6	16
	→ 62.5 %	→ 37.5 %	→ 100 %
3	5	0	5
	→ 100 %	→ 0 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Summary - Mosaic

Modal.	:	**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	0.48	0.62
Var	:	0.57	0.55
SD	:	0.75	0.74
Min	:	0	0
Q1	:	0	0
Median	:	0	0
Q3	:	1	1
Max	:	3	2



Barplot



Tests

χ^2 test	$\chi^2 = 5.4949$	p = 0.1389
Fisher's Exact Test		p = 0.1509
T test	T = -1.0949	p = 0.2779
Wilcoxon	W = 2806.5	p = 0.163

Mixed

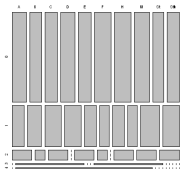
Nominal(2) ~ Discrete(4) — **N=200 - NA=0 (0%)**

Table

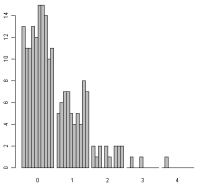
	Echec	Reussite	Total
0	103	21	124
	→ 83.06 %	→ 16.94 %	→ 100 %
1	42	13	55
	→ 76.36 %	→ 23.64 %	→ 100 %
2	10	6	16
	→ 62.5 %	→ 37.5 %	→ 100 %
3	5	0	5
	→ 100 %	→ 0 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

Summary - Mosaic

Modal.	:	**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	0.48	0.62
Var	:	0.57	0.55
SD	:	0.75	0.74
Min	:	0	0
Q1	:	0	0
Median	:	0	0
Q3	:	1	1
Max	:	3	2



Barplot



Tests

χ^2 test	χ^2 = 5.4949	p = 0.1389
Fisher's Exact Test		p = 0.1644
T test	T = -1.0949	p = 0.2779
Wilcoxon	W = 2806.5	p = 0.163

Long

Nominal(2) ~ Discrete(4) — **N=200 - NA=0 (0%)**

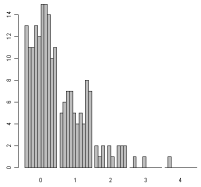
Table

	Echec	Reussite	Total
0	103	21	124
	→ 83.06 %	→ 16.94 %	→ 100 %
1	42	13	55
	→ 76.36 %	→ 23.64 %	→ 100 %
2	10	6	16
	→ 62.5 %	→ 37.5 %	→ 100 %
3	5	0	5
	→ 100 %	→ 0 %	→ 100 %
Total	160	40	200
	→ 80 %	→ 20 %	→ 100 %

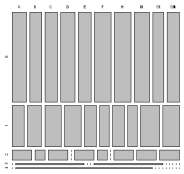
Summary

Modal.	:	**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	0.48	0.62
Var	:	0.57	0.55
SD	:	0.75	0.74
Min	:	0	0
Q1	:	0	0
Median	:	0	0
Q3	:	1	1
Max	:	3	2

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 5.4949$	p = 0.1389
Fisher's Exact Test		p = 0.1824
T test	T = -1.0949	p = 0.2779
Wilcoxon	W = 2806.5	p = 0.163

1.5 Logical ~ Continuous

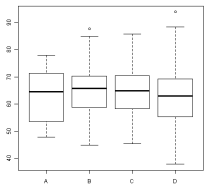
Wide

Nominal(2) ~ Continuous — **N=200 - NA=0 (0%)**

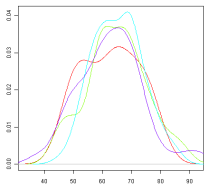
Summary

Modal.	:	**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	169.26	168.9
Var	:	21.58	21.13
SD	:	4.64	4.6
Min	:	159.2	155.8
Q1	:	166.2	165.6
Median	:	169.2	168.7
Q3	:	172.5	172
Max	:	184	177.7

Boxplot



Density



Tests

T test	T = 0.4509	p = 0.6537
Wilcoxon	W = 3324	p = 0.706

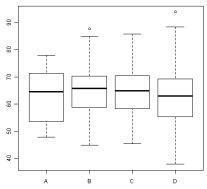
Wide

Nominal(2) ~ Continuous **N=200 - NA=0 (0%)**

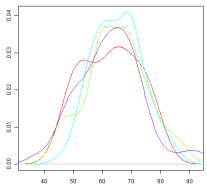
Summary

Modal.		**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	64.42	65.53
Var	:	87.78	121.52
SD	:	9.37	11.02
Min	:	41.22	46.64
Q1	:	57.3	58.1
Median	:	65.08	64.8
Q3	:	71.37	72.3
Max	:	88.83	88.28

Boxplot



Density



Tests

T test	T = -0.5874	p = 0.5594
Wilcoxon	W = 3108	p = 0.7799

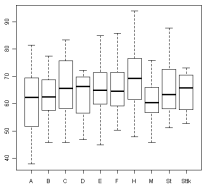
Long

Nominal(2) ~ Continuous N=200 - NA=0 (0%)

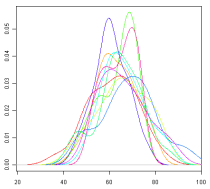
Summary

Modal.		**Echec**	**Reussite**
N	:	160	40
NA	:	0	0
Mean	:	169.26	168.9
Var	:	21.58	21.13
SD	:	4.64	4.6
Min	:	159.2	155.8
Q1	:	166.2	165.6
Median	:	169.2	168.7
Q3	:	172.5	172
Max	:	184	177.7

Boxplot



Densities



Tests

T test	T = 0.4509	p = 0.6537
Wilcoxon	W = 3324	p = 0.706

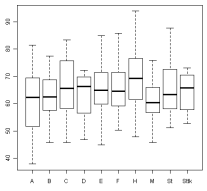
Long

Nominal(2) ~ Continuous N=200 - NA=0 (0%)

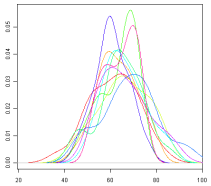
Summary

Modal.	:	Echec	Reussite
N	:	160	40
NA	:	0	0
Mean	:	64.42	65.53
Var	:	87.78	121.52
SD	:	9.37	11.02
Min	:	41.22	46.64
Q1	:	57.3	58.1
Median	:	65.08	64.8
Q3	:	71.37	72.3
Max	:	88.83	88.28

Boxplot



Densities



Tests

T test	T = -0.5874	p = 0.5594
Wilcoxon	W = 3108	p = 0.7799

2 Factor

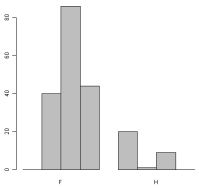
2.1 Factor ~ Logical

Nominal(4) ~ Nominal(2) **N=200 - NA=0 (0%)**

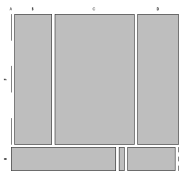
Table

	A	B	C	D	Total
F	0	40	86	44	170
	→ 0 %	→ 23.53 %	→ 50.59 %	→ 25.88 %	→ 100 %
H	20	1	9	0	30
	→ 66.67 %	→ 3.33 %	→ 30 %	→ 0 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

Barplot



Mosaic



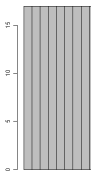
Tests

χ^2 test	χ^2 = 128.4472	p = 0	* * *
Fisher's Exact Test		p = 5e-04	* * *

Nominal(10) ~ Nominal(2)

Table **Ba**

	A	B	C	D	E	F	H	M	St	Sttk	Total
F	17	17	17	17	17	17	17	17	17	17	170
	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 100 %
H	3	3	3	3	3	3	3	3	3	3	30
	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 100 %
Total	20	20	20	20	20	20	20	20	20	20	200
	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 100 %



Tests

χ^2 test	$\chi^2 = 0$	p = 1
Fisher's Exact Test		p = 1

2.2 Factor ~ Factor

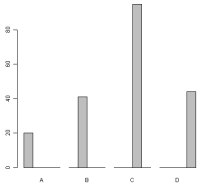
Wide

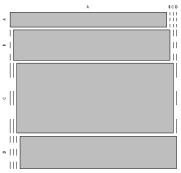
Nominal(4) ~ Nominal(4) **N=200 - NA=0 (0%)**

Table

	A	B	C	D	Total
blond	4	6	23	8	41
	→ 9.76 %	→ 14.63 %	→ 56.1 %	→ 19.51 %	→ 100 %
chatain	8	12	23	13	56
	→ 14.29 %	→ 21.43 %	→ 41.07 %	→ 23.21 %	→ 100 %
noir	4	12	26	11	53
	→ 7.55 %	→ 22.64 %	→ 49.06 %	→ 20.75 %	→ 100 %
roux	4	11	23	12	50
	→ 8 %	→ 22 %	→ 46 %	→ 24 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

Barplot **Mosaic**





Tests

χ^2 test	$\chi^2 = 3.8922$	p = 0.9184
Fisher's Exact Test		p = 0.936

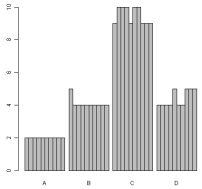
Mixed

Nominal(4) ~ Nominal(10) **N=200 - NA=0 (0%)**

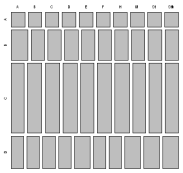
Table

	A	B	C	D	Total
A	2	5	9	4	20
	→ 10 %	→ 25 %	→ 45 %	→ 20 %	→ 100 %
B	2	4	10	4	20
	→ 10 %	→ 20 %	→ 50 %	→ 20 %	→ 100 %
C	2	4	10	4	20
	→ 10 %	→ 20 %	→ 50 %	→ 20 %	→ 100 %
D	2	4	10	4	20
	→ 10 %	→ 20 %	→ 50 %	→ 20 %	→ 100 %
E	2	4	9	5	20
	→ 10 %	→ 20 %	→ 45 %	→ 25 %	→ 100 %
F	2	4	10	4	20
	→ 10 %	→ 20 %	→ 50 %	→ 20 %	→ 100 %
H	2	4	10	4	20
	→ 10 %	→ 20 %	→ 50 %	→ 20 %	→ 100 %
M	2	4	9	5	20
	→ 10 %	→ 20 %	→ 45 %	→ 25 %	→ 100 %
St	2	4	9	5	20
	→ 10 %	→ 20 %	→ 45 %	→ 25 %	→ 100 %
Sttk	2	4	9	5	20
	→ 10 %	→ 20 %	→ 45 %	→ 25 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 1.0281$	p = 1
Fisher's Exact Test		p = 1

Mixed

Nominal(10) ~ Nominal(4)

Table

	A	B	C	D	E	F	H	M	St	Sttk
blond	3 → 7.32 %	1 → 2.44 %	3 → 7.32 %	2 → 4.88 %	5 → 12.2 %	6 → 14.63 %	6 → 14.63 %	6 → 14.63 %	7 → 17.07 %	2 → 4.88
chatain	6 → 10.71 %	5 → 8.93 %	4 → 7.14 %	8 → 14.29 %	3 → 5.36 %	6 → 10.71 %	6 → 10.71 %	7 → 12.5 %	4 → 7.14 %	7 → 12.5
noir	5 → 9.43 %	5 → 9.43 %	6 → 11.32 %	5 → 9.43 %	6 → 11.32 %	5 → 9.43 %	5 → 9.43 %	5 → 9.43 %	5 → 9.43 %	6 → 11.3
roux	6 → 12 %	9 → 18 %	7 → 14 %	5 → 10 %	6 → 12 %	3 → 6 %	3 → 6 %	2 → 4 %	4 → 8 %	5 → 10
Total	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10

Tests

χ^2 test	$\chi^2 = 22.3718$	p = 0.7183
Fisher's Exact Test		p = 0.7276

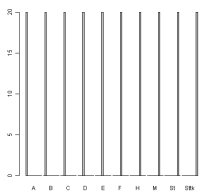
Long

Nominal(10) ~ Nominal(4) **N=200 -**

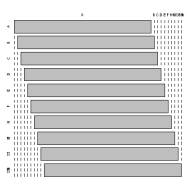
Table

	A	B	C	D	E	F	H	M	St	Sttk
A	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %	2 → 10 %
B	5 → 12.2 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %	4 → 9.76 %
C	9 → 9.47 %	10 → 10.53 %	10 → 10.53 %	10 → 10.53 %	9 → 9.47 %	10 → 10.53 %	10 → 10.53 %	9 → 9.47 %	9 → 9.47 %	9 → 9.47 %
D	4 → 9.09 %	4 → 9.09 %	4 → 9.09 %	4 → 9.09 %	5 → 11.36 %	4 → 9.09 %	4 → 9.09 %	5 → 11.36 %	5 → 11.36 %	5 → 11.36 %
Total	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 1.0281$	p = 1
Fisher's Exact Test		p = 1

2.3 Factor ~ Ordered

Wide

Nominal(4) ~ Ordered(4) — **N=200 - NA=0 (0%)**

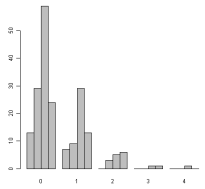
Table

	A	B	C	D	Total
AB	0	0	32	18	50
	→ 0 %	→ 0 %	→ 64 %	→ 36 %	→ 100 %
B	0	0	15	15	30
	→ 0 %	→ 0 %	→ 50 %	→ 50 %	→ 100 %
P	20	41	37	2	100
	→ 20 %	→ 41 %	→ 37 %	→ 2 %	→ 100 %
TB	0	0	11	9	20
	→ 0 %	→ 0 %	→ 55 %	→ 45 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

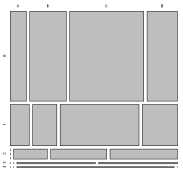
Summary

Modal.	: **A**	**B**	**C**	**D**
Q1	: P	P	AB	AB
Q2	: P	P	AB	AB
Q3	: P	P	P	B
Q4	: P	P	P	B
Q5	: P	P	TB	TB

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 104.5995$	p = 0	$***$
Fisher's Exact Test		p = 5e-04	$***$

Mixed

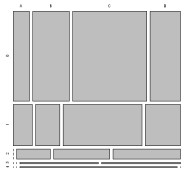
Nominal(4) ∼ Ordered(8) **N=200 - NA=0 (0%**

Table

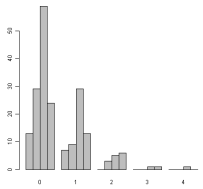
	A	B	C	D	Total
AB	0	0	23	0	23
	→ 0 %	→ 0 %	→ 100 %	→ 0 %	→ 100 %
AB+	0	0	19	10	29
	→ 0 %	→ 0 %	→ 65.52 %	→ 34.48 %	→ 100 %
B	0	0	7	18	25
	→ 0 %	→ 0 %	→ 28 %	→ 72 %	→ 100 %
B+	0	0	8	5	13
	→ 0 %	→ 0 %	→ 61.54 %	→ 38.46 %	→ 100 %
P	20	21	1	0	42
	→ 47.62 %	→ 50 %	→ 2.38 %	→ 0 %	→ 100 %
P+	0	20	28	0	48
	→ 0 %	→ 41.67 %	→ 58.33 %	→ 0 %	→ 100 %
TB	0	0	9	3	12
	→ 0 %	→ 0 %	→ 75 %	→ 25 %	→ 100 %
TB+	0	0	0	8	8
	→ 0 %	→ 0 %	→ 0 %	→ 100 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

Summary - Mosaic

Modal.	: **A**	**B**	**C**	**D**
Q1	: P	P	AB	AB+
Q2	: P	P	AB+	B
Q3	: P	P	B	B
Q4	: P	P+	P+	B+
Q5	: P	P+	TB	TB+



Barplot



Tests

χ^2 test	$\chi^2 = 247.9703$	p = 0	∗ ∗ ∗
Fisher's Exact Test		p = 5e-04	∗ ∗ ∗
ANOVA	F = 9.9142	p = 0	∗ ∗ ∗
Kruskal-Wallis (y x)	K = 20.2313	p = 2e-04	∗ ∗ ∗

Mixed

Nominal(10) ~ Ordered(4)

Table

	A	B	C	D	E	F	H	M	St	Sttk	Total
AB	4	4	4	5	6	6	5	5	6	5	50
	→ 8 %	→ 8 %	→ 8 %	→ 10 %	→ 12 %	→ 12 %	→ 10 %	→ 10 %	→ 12 %	→ 10 %	→ 100 %
B	4	4	4	3	2	2	3	3	2	3	30
	→ 13.33 %	→ 13.33 %	→ 13.33 %	→ 10 %	→ 6.67 %	→ 6.67 %	→ 10 %	→ 10 %	→ 6.67 %	→ 10 %	→ 100 %
P	11	11	11	10	9	9	10	10	9	10	100
	→ 11 %	→ 11 %	→ 11 %	→ 10 %	→ 9 %	→ 9 %	→ 10 %	→ 10 %	→ 9 %	→ 10 %	→ 100 %
TB	1	1	1	2	3	3	2	2	3	2	20
	→ 5 %	→ 5 %	→ 5 %	→ 10 %	→ 15 %	→ 15 %	→ 10 %	→ 10 %	→ 15 %	→ 10 %	→ 100 %
Total	20	20	20	20	20	20	20	20	20	20	200
	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 10 %	→ 100 %

Tests

χ^2 test	$\chi^2 = 6.8$	p
Fisher's Exact Test		p
ANOVA	F = 0	p
Kruskal-Wallis (y x)	K = 0.0419	p

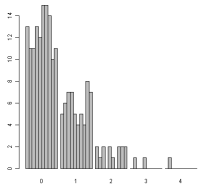
Long

Nominal(10) ~ Ordered(8)

Table

	A	B	C	D	E	F	H	M	St	Sttk
AB	2 → 8.7 %	2 → 8.7 %	2 → 8.7 %	2 → 8.7 %	3 → 13.04 %	3 → 13.04 %	2 → 8.7 %	2 → 8.7 %	3 → 13.04 %	2 → 8.7 %
AB+	3 → 10.34 %	3 → 10.34 %	2 → 6.9 %	2 → 6.9 %	3 → 10.34 %	3 → 10.34 %	2 → 6.9 %	4 → 13.79 %	3 → 10.34 %	4 → 13.79
B	2 → 8 %	2 → 8 %	3 → 12 %	3 → 12 %	3 → 12 %	3 → 12 %	3 → 12 %	2 → 8 %	3 → 12 %	1 → 4 %
B+	2 → 15.38 %	2 → 15.38 %	2 → 15.38 %	1 → 7.69 %	0 → 0 %	1 → 7.69 %	1 → 7.69 %	1 → 7.69 %	1 → 7.69 %	2 → 15.38
P	5 → 11.9 %	5 → 11.9 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52
P+	5 → 10.42 %	5 → 10.42 %	6 → 12.5 %	6 → 12.5 %	4 → 8.33 %	4 → 8.33 %	6 → 12.5 %	4 → 8.33 %	4 → 8.33 %	4 → 8.33
TB	1 → 8.33 %	1 → 8.33 %	1 → 8.33 %	2 → 16.67 %	1 → 8.33 %	2 → 16.67 %	2 → 16.67 %	1 → 8.33 %	0 → 0 %	1 → 8.33
TB+	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	2 → 25 %	0 → 0 %	0 → 0 %	2 → 25 %	2 → 25 %	2 → 25 %
Total	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %

Barplot



Tests

χ^2 test	$\chi^2 = 24.5208$	p =
Fisher's Exact Test		p =
ANOVA	F = 0.1062	p =
Kruskal-Wallis (y x)	K = 1.1241	p =

2.4 Factor ~ Discrete

Wide

Nominal(4) ~ Discrete(5) **N=200 - NA=0 (0%**

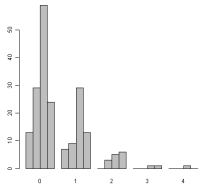
Table

	A	B	C	D	Total
0	13	29	59	24	125
	→ 10.4 %	→ 23.2 %	→ 47.2 %	→ 19.2 %	→ 100 %
1	7	9	29	13	58
	→ 12.07 %	→ 15.52 %	→ 50 %	→ 22.41 %	→ 100 %
2	0	3	5	6	14
	→ 0 %	→ 21.43 %	→ 35.71 %	→ 42.86 %	→ 100 %
3	0	0	1	1	2
	→ 0 %	→ 0 %	→ 50 %	→ 50 %	→ 100 %
4	0	0	1	0	1
	→ 0 %	→ 0 %	→ 100 %	→ 0 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

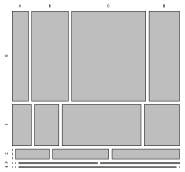
Summary

Modal.	:	**A**	**B**	**C**	**D**
N	:	20	41	95	44
NA	:	0	0	0	0
Mean	:	0.35	0.37	0.48	0.64
Var	:	0.24	0.39	0.55	0.66
SD	:	0.49	0.62	0.74	0.81
Min	:	0	0	0	0
Q1	:	0	0	0	0
Median	:	0	0	0	0
Q3	:	1	1	1	1
Max	:	1	2	4	3

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 8.9581$	p = 0.7065
Fisher's Exact Test		p = 0.6787
ANOVA	F = 1.2742	p = 0.2844
Kruskal-Wallis (y x)	K = 3.1355	p = 0.3712

Mixed

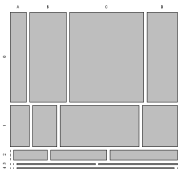
Nominal(4) ~ Discrete(9) **N=200 - NA=0 (0%**

Table

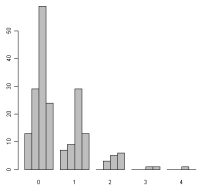
	A	B	C	D	Total
0	2	0	4	2	8
	→ 25 %	→ 0 %	→ 50 %	→ 25 %	→ 100 %
1	2	7	19	4	32
	→ 6.25 %	→ 21.88 %	→ 59.38 %	→ 12.5 %	→ 100 %
2	4	10	23	10	47
	→ 8.51 %	→ 21.28 %	→ 48.94 %	→ 21.28 %	→ 100 %
3	5	10	20	7	42
	→ 11.9 %	→ 23.81 %	→ 47.62 %	→ 16.67 %	→ 100 %
4	4	10	17	10	41
	→ 9.76 %	→ 24.39 %	→ 41.46 %	→ 24.39 %	→ 100 %
5	2	1	7	6	16
	→ 12.5 %	→ 6.25 %	→ 43.75 %	→ 37.5 %	→ 100 %
6	0	1	3	4	8
	→ 0 %	→ 12.5 %	→ 37.5 %	→ 50 %	→ 100 %
7	1	1	0	1	3
	→ 33.33 %	→ 33.33 %	→ 0 %	→ 33.33 %	→ 100 %
8	0	1	2	0	3
	→ 0 %	→ 33.33 %	→ 66.67 %	→ 0 %	→ 100 %
Total	20	41	95	44	200
	→ 10 %	→ 20.5 %	→ 47.5 %	→ 22 %	→ 100 %

Summary - Mosaic

Modal. :	**A**	**B**	**C**	**D**
N :	20	41	95	44
NA :	0	0	0	0
Mean :	2.9	3	2.76	3.32
Var :	3.04	2.55	2.67	2.92
SD :	1.74	1.6	1.64	1.71
Min :	0	1	0	0
Q1 :	2	2	2	2
Median :	3	3	3	3
Q3 :	4	4	4	4.25
Max :	7	8	8	7



Barplot



Tests

χ^2 test	$\chi^2 = 20.4774$	p = 0.6693
Fisher's Exact Test		p = 0.5997
ANOVA	F = 1.1706	p = 0.3221
Kruskal-Wallis (y x)	K = 4.049	p = 0.2562

Mixed

Nominal(10) ~ Discrete(5)

Table

	A	B	C	D	E	F	H	M	St	Sttk
0	13 → 10.4 %	11 → 8.8 %	11 → 8.8 %	13 → 10.4 %	12 → 9.6 %	15 → 12 %	15 → 12 %	14 → 11.2 %	10 → 8 %	11 → 8.8 %
1	5 → 8.62 %	6 → 10.34 %	7 → 12.07 %	7 → 12.07 %	5 → 8.62 %	4 → 6.9 %	5 → 8.62 %	4 → 6.9 %	8 → 13.79 %	7 → 12.07 %
2	2 → 14.29 %	1 → 7.14 %	2 → 14.29 %	0 → 0 %	2 → 14.29 %	1 → 7.14 %	0 → 0 %	2 → 14.29 %	2 → 14.29 %	2 → 14.29 %
3	0 → 0 %	1 → 50 %	0 → 0 %	0 → 0 %	1 → 50 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %
4	0 → 0 %	1 → 100 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %
Total	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %

	Tests
χ^2 test	χ^2 = 26.88
Fisher's Exact Test	
ANOVA	F = 0.957
Kruskal-Wallis (y x)	K = 6.718

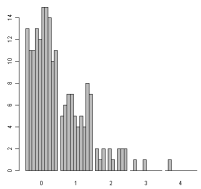
Long

Nominal(10) ~ Discrete(9)

Table

	A	B	C	D	E	F	H	M	St	Sttk
0	2 → 25 %	1 → 12.5 %	1 → 12.5 %	1 → 12.5 %	0 → 0 %	2 → 25 %	0 → 0 %	0 → 0 %	1 → 12.5 %	0 → 0 %
1	2 → 6.25 %	3 → 9.38 %	1 → 3.12 %	5 → 15.62 %	4 → 12.5 %	3 → 9.38 %	3 → 9.38 %	6 → 18.75 %	3 → 9.38 %	2 → 6.25
2	7 → 14.89 %	4 → 8.51 %	5 → 10.64 %	2 → 4.26 %	2 → 4.26 %	5 → 10.64 %	4 → 8.51 %	5 → 10.64 %	6 → 12.77 %	7 → 14.89
3	4 → 9.52 %	3 → 7.14 %	4 → 9.52 %	3 → 7.14 %	6 → 14.29 %	6 → 14.29 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52 %	4 → 9.52
4	5 → 12.2 %	3 → 7.32 %	5 → 12.2 %	7 → 17.07 %	4 → 9.76 %	1 → 2.44 %	6 → 14.63 %	3 → 7.32 %	2 → 4.88 %	5 → 12.2
5	0 → 0 %	1 → 6.25 %	3 → 18.75 %	2 → 12.5 %	2 → 12.5 %	2 → 12.5 %	1 → 6.25 %	2 → 12.5 %	2 → 12.5 %	1 → 6.25
6	0 → 0 %	1 → 12.5 %	1 → 12.5 %	0 → 0 %	1 → 12.5 %	1 → 12.5 %	1 → 12.5 %	0 → 0 %	2 → 25 %	1 → 12.5
7	0 → 0 %	1 → 33.33 %	0 → 0 %	0 → 0 %	1 → 33.33 %	0 → 0 %	1 → 33.33 %	0 → 0 %	0 → 0 %	0 → 0 %
8	0 → 0 %	3 → 100 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %
Total	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %	20 → 10 %

Barplot



	Tests	
χ^2 test	$\chi^2 = 71.426$	p = 0.4
Fisher's Exact Test		p = 0.8
ANOVA	F = 1.2284	p = 0.1
Kruskal-Wallis (y x)	K = 7.5987	p = 0.5

2.5 Factor ~ Continuous

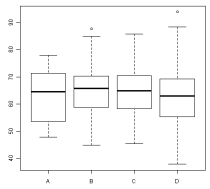
Wide

Nominal(4) ~ Continuous — **N=200 - NA=0 (0%)**

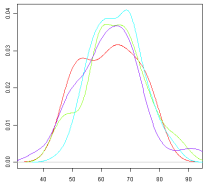
Summary

Modal. :	A	B	C	D
N :	20	41	95	44
NA :	0	0	0	0
Mean :	170.29	169.72	170.18	171.25
Var :	18.75	24.96	29.42	19.16
SD :	4.33	5	5.42	4.38
Min :	162.4	161.7	152.8	163.9
Q1 :	167.2	165.6	167.2	168
Median :	169.8	170.8	170	170.9
Q3 :	173.9	173	173.2	173.6
Max :	177	179.4	184.8	181.9

Boxplot



Density



Tests

ANOVA	F = 0.7205	p = 0.5408
Kruskal-Wallis (y x)	K = 1.6059	p = 0.658

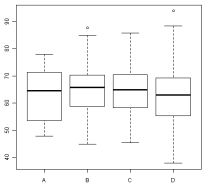
Wide

Nominal(4) ~ Continuous — **N=200 - NA=0 (0%)**

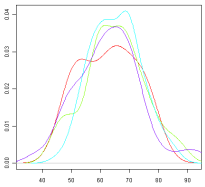
Summary

Modal. :	A	B	C	D
N :	20	41	95	44
NA :	0	0	0	0
Mean :	62.77	64.8	65.26	62.81
Var :	95.93	106.5	71.86	124.75
SD :	9.79	10.32	8.48	11.17
Min :	47.82	44.87	45.42	37.95
Q1 :	54.03	58.83	58.38	56.42
Median :	64.56	65.88	64.9	63.05
Q3 :	70.94	70.29	70.5	68.94
Max :	77.94	87.74	85.76	93.91

Boxplot



Density



Tests

ANOVA	F = 0.8671	p = 0.4591
Kruskal-Wallis (y x)	K = 2.3645	p = 0.5003

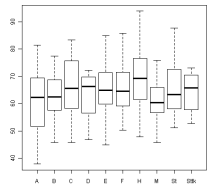
Long

Nominal(10) ~ Continuous — **N=200 - NA=0 (0%)**

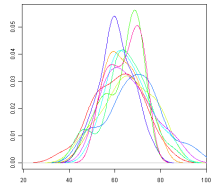
Summary

Modal. :	A	B	C	D	E	F	H	M	St	Sttk
N :	20	20	20	20	20	20	20	20	20	20
NA :	0	0	0	0	0	0	0	0	0	0
Mean :	169.16	172.37	169.26	170.94	170.88	170.44	169.62	171.01	168.84	170.77
Var :	17.11	33.58	45.26	16.43	20.52	22.44	14.12	40.05	18.51	23.72
SD :	4.14	5.8	6.73	4.05	4.53	4.74	3.76	6.33	4.3	4.87
Min :	161.7	163.3	152.8	164.5	162.9	159.6	162.4	156.3	162.9	163.7
Q1 :	167	168.4	165.5	167.7	167.7	167.5	166.9	167.6	165.4	166.2
Median :	169.1	173	170.6	170.5	170.7	171	169.7	171.1	168.3	170.9
Q3 :	170.8	175.5	173.6	173.7	172.4	174.3	171.5	173.4	172.3	174.2
Max :	177.2	183.6	181.7	177.7	179.4	177.2	179.3	184.8	177	180.5

Boxplot



Densities



Tests

ANOVA	F = 0.9498	p = 0.4832
Kruskal-Wallis (y x)	K = 8.0364	p = 0.5305

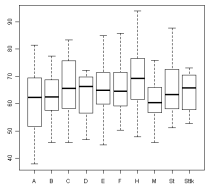
Long

Nominal(10) ~ Continuous — **N=200 - NA=0 (0%)**

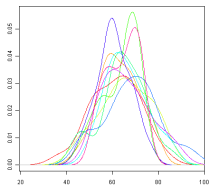
Summary

Modal. :	A	B	C	D	E	F	H	M	St	Sttk
N :	20	20	20	20	20	20	20	20	20	20
NA :	0	0	0	0	0	0	0	0	0	0
Mean :	61.36	63.17	65.64	63.56	64.47	66.11	68.38	60.71	66.07	64.34
Var :	112.21	74.61	119.62	61.67	102.77	85.79	150.94	56.03	107.85	48.46
SD :	10.59	8.64	10.94	7.85	10.14	9.26	12.29	7.49	10.38	6.96
Min :	37.95	45.83	45.79	46.79	44.87	50.33	47.82	45.84	51.21	52.74
Q1 :	52.19	57.63	58.79	57.07	59.91	59.79	62.39	56.79	58.3	58.06
Median :	62.31	62.51	65.69	66.38	65.02	64.52	69.28	60.35	63.31	65.81
Q3 :	69.38	68.68	75.49	69.8	71.07	70.74	76.5	65.57	71.79	70.14
Max :	81.44	77.4	83.3	72.32	84.95	85.76	93.91	75.82	87.74	73.14

Boxplot



Densities



Tests

ANOVA	F = 1.165	p = 0.3197
Kruskal-Wallis (y x)	K = 8.8454	p = 0.4517

3 Ordered

3.1 Ordered ∼ Logical

Ordered(4) ∼ Nominal(2) **N=100 - NA=0 (0**

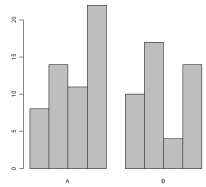
Table

	A	B	C	D	Total
A	8	14	11	22	55
	→ 14.55 %	→ 25.45 %	→ 20 %	→ 40 %	→ 100 %
B	10	17	4	14	45
	→ 22.22 %	→ 37.78 %	→ 8.89 %	→ 31.11 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

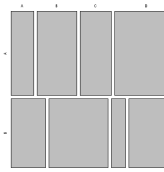
Quartiles

Modal.	:	**A**	**B**
Q1	:	A	A
Q2	:	B	B
Q3	:	C	B
Q4	:	D	D
Q5	:	D	D

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 4.603$	p = 0.2033
ANOVA	F = 2.5722	p = 0.112

Ordered(4) ∼ Nominal(4) **N=100 - NA=0 (0%)**

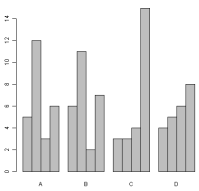
Table

	A	B	C	D	Total
A	5	12	3	6	26
	→ 19.23 %	→ 46.15 %	→ 11.54 %	→ 23.08 %	→ 100 %
B	6	11	2	7	26
	→ 23.08 %	→ 42.31 %	→ 7.69 %	→ 26.92 %	→ 100 %
C	3	3	4	15	25
	→ 12 %	→ 12 %	→ 16 %	→ 60 %	→ 100 %
D	4	5	6	8	23
	→ 17.39 %	→ 21.74 %	→ 26.09 %	→ 34.78 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

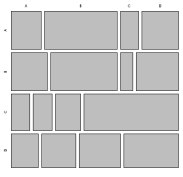
Quartiles

Modal.	:	**A**	**B**	**C**	**D**
Q1	:	A	A	A	A
Q2	:	B	B	C	B
Q3	:	B	B	D	C
Q4	:	C	C	D	D
Q5	:	D	D	D	D

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 16.2904$	p = 0.0611	.
ANOVA	F = 3.4552	p = 0.0195	∗

Ordered(9) ~ Nominal(9) **N=100 - NA=0 (0**

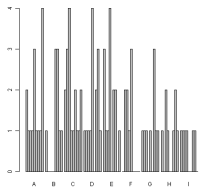
Table

	A	B	C	D	E	F	G	H	I	Total
A	2 → 13.33 %	1 → 6.67 %	1 → 6.67 %	1 → 6.67 %	3 → 20 %	1 → 6.67 %	1 → 6.67 %	1 → 6.67 %	4 → 26.67 %	15 → 100 %
B	1 → 11.11 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	3 → 33.33 %	3 → 33.33 %	1 → 11.11 %	1 → 11.11 %	9 → 100 %
C	2 → 11.76 %	3 → 17.65 %	4 → 23.53 %	1 → 5.88 %	1 → 5.88 %	2 → 11.76 %	1 → 5.88 %	1 → 5.88 %	2 → 11.76 %	17 → 100 %
D	1 → 7.14 %	1 → 7.14 %	1 → 7.14 %	1 → 7.14 %	4 → 28.57 %	0 → 0 %	2 → 14.29 %	3 → 21.43 %	1 → 7.14 %	14 → 100 %
E	3 → 21.43 %	1 → 7.14 %	1 → 7.14 %	4 → 28.57 %	0 → 0 %	2 → 14.29 %	2 → 14.29 %	0 → 0 %	1 → 7.14 %	14 → 100 %
F	0 → 0 %	2 → 25 %	2 → 25 %	1 → 12.5 %	3 → 37.5 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	8 → 100 %
G	1 → 11.11 %	1 → 11.11 %	1 → 11.11 %	0 → 0 %	1 → 11.11 %	0 → 0 %	3 → 33.33 %	1 → 11.11 %	1 → 11.11 %	9 → 100 %
H	1 → 12.5 %	0 → 0 %	2 → 25 %	1 → 12.5 %	0 → 0 %	0 → 0 %	1 → 12.5 %	2 → 25 %	1 → 12.5 %	8 → 100 %
I	1 → 16.67 %	1 → 16.67 %	1 → 16.67 %	1 → 16.67 %	0 → 0 %	0 → 0 %	1 → 16.67 %	1 → 16.67 %	0 → 0 %	6 → 100 %
Total	12 → 12 %	10 → 10 %	13 → 13 %	10 → 10 %	12 → 12 %	8 → 8 %	14 → 14 %	10 → 10 %	11 → 11 %	100 → 100 %

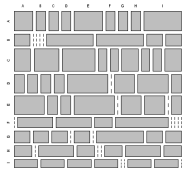
Quartiles

Modal.	**: A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Q1	: A	A	A	A	A	B	A	A	A
Q2	: C	F	B	D	B	B	C	C	B
Q3	: E	G	C	E	D	C	G	E	C
Q4	: H	G	F	G	F	E	G	H	F
Q5	: I	I	I	I	I	E	I	I	H

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 65.2015$	p = 0.4347
ANOVA	F = 1.1437	p = 0.3422

3.2 Ordered ∼ Factor

Ordered(4) ∼ Nominal(2) **N=100 - NA=0 (0**

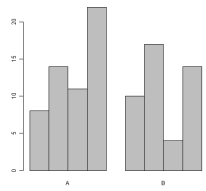
Table

	A	B	C	D	Total
A	8	14	11	22	55
	→ 14.55 %	→ 25.45 %	→ 20 %	→ 40 %	→ 100 %
B	10	17	4	14	45
	→ 22.22 %	→ 37.78 %	→ 8.89 %	→ 31.11 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

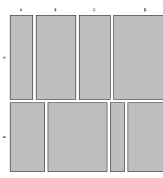
Quartiles

Modal.	:	**A**	**B**
Q1	:	A	A
Q2	:	B	B
Q3	:	C	B
Q4	:	D	D
Q5	:	D	D

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 4.603$	p = 0.2033
ANOVA	F = 2.5722	p = 0.112

Ordered(4) ∼ Nominal(4) **N=100 - NA=0 (0%)**

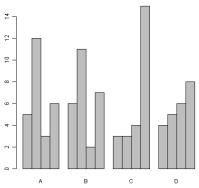
Table

	A	B	C	D	Total
A	5	12	3	6	26
	→ 19.23 %	→ 46.15 %	→ 11.54 %	→ 23.08 %	→ 100 %
B	6	11	2	7	26
	→ 23.08 %	→ 42.31 %	→ 7.69 %	→ 26.92 %	→ 100 %
C	3	3	4	15	25
	→ 12 %	→ 12 %	→ 16 %	→ 60 %	→ 100 %
D	4	5	6	8	23
	→ 17.39 %	→ 21.74 %	→ 26.09 %	→ 34.78 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

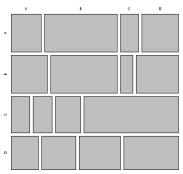
Quartiles

Modal.	:	**A**	**B**	**C**	**D**
Q1	:	A	A	A	A
Q2	:	B	B	C	B
Q3	:	B	B	D	C
Q4	:	C	C	D	D
Q5	:	D	D	D	D

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 16.2904$	p = 0.0611	.
ANOVA	F = 3.4552	p = 0.0195	∗

Ordered(9) ~ Nominal(9) **N=100 - NA=0 (0**

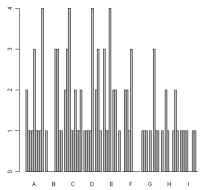
Table

	A	B	C	D	E	F	G	H	I	Total
A	2 → 13.33 %	1 → 6.67 %	1 → 6.67 %	1 → 6.67 %	3 → 20 %	1 → 6.67 %	1 → 6.67 %	1 → 6.67 %	4 → 26.67 %	15 → 100 %
B	1 → 11.11 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	3 → 33.33 %	3 → 33.33 %	1 → 11.11 %	1 → 11.11 %	9 → 100 %
C	2 → 11.76 %	3 → 17.65 %	4 → 23.53 %	1 → 5.88 %	1 → 5.88 %	2 → 11.76 %	1 → 5.88 %	1 → 5.88 %	2 → 11.76 %	17 → 100 %
D	1 → 7.14 %	1 → 7.14 %	1 → 7.14 %	1 → 7.14 %	4 → 28.57 %	0 → 0 %	2 → 14.29 %	3 → 21.43 %	1 → 7.14 %	14 → 100 %
E	3 → 21.43 %	1 → 7.14 %	1 → 7.14 %	4 → 28.57 %	0 → 0 %	2 → 14.29 %	2 → 14.29 %	0 → 0 %	1 → 7.14 %	14 → 100 %
F	0 → 0 %	2 → 25 %	2 → 25 %	1 → 12.5 %	3 → 37.5 %	0 → 0 %	0 → 0 %	0 → 0 %	0 → 0 %	8 → 100 %
G	1 → 11.11 %	1 → 11.11 %	1 → 11.11 %	0 → 0 %	1 → 11.11 %	0 → 0 %	3 → 33.33 %	1 → 11.11 %	1 → 11.11 %	9 → 100 %
H	1 → 12.5 %	0 → 0 %	2 → 25 %	1 → 12.5 %	0 → 0 %	0 → 0 %	1 → 12.5 %	2 → 25 %	1 → 12.5 %	8 → 100 %
I	1 → 16.67 %	1 → 16.67 %	1 → 16.67 %	1 → 16.67 %	0 → 0 %	0 → 0 %	1 → 16.67 %	1 → 16.67 %	0 → 0 %	6 → 100 %
Total	12 → 12 %	10 → 10 %	13 → 13 %	10 → 10 %	12 → 12 %	8 → 8 %	14 → 14 %	10 → 10 %	11 → 11 %	100 → 100 %

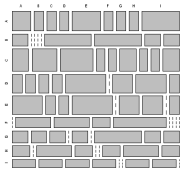
Quartiles

Modal.	**: A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Q1	: A	A	A	A	A	B	A	A	A
Q2	: C	F	B	D	B	B	C	C	B
Q3	: E	G	C	E	D	C	G	E	C
Q4	: H	G	F	G	F	E	G	H	F
Q5	: I	I	I	I	I	E	I	I	H

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 65.2015$	p = 0.4347
ANOVA	F = 1.1437	p = 0.3422

3.3 Ordered ~ Ordered

Ordered(4) ~ Ordered(2) **N=100 - NA=0 (**

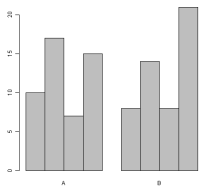
Table

	A	B	C	D	Total
A	10	17	7	15	49
	→ 20.41 %	→ 34.69 %	→ 14.29 %	→ 30.61 %	→ 100 %
B	8	14	8	21	51
	→ 15.69 %	→ 27.45 %	→ 15.69 %	→ 41.18 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

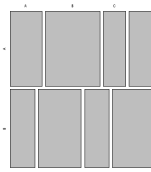
Quartiles

Modal.	:	**A**	**B**
Q1	:	A	A
Q2	:	B	B
Q3	:	B	C
Q4	:	D	D
Q5	:	D	D

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 1.5398$	p = 0.6731
Fisher's Exact Test		p = 0.6877
Cor Pearson	$\rho_P = 0.1198$	p = 0.2353
Kruskal-Wallis (y x)	K = 1.4155	p = 0.2341
Kruskal-Wallis (x y)	K = 1.5244	p = 0.6766

Ordered(9) ~ Ordered(4) **N=100 - NA=0 (0**

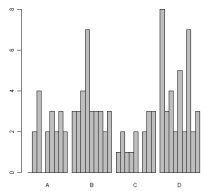
Table

	A	B	C	D	E	F	G	H	I	Total
A	0	2	4	0	2	3	2	3	2	18
	→ 0 %	→ 11.11 %	→ 22.22 %	→ 0 %	→ 11.11 %	→ 16.67 %	→ 11.11 %	→ 16.67 %	→ 11.11 %	→ 100
B	3	3	4	7	3	3	3	2	3	31
	→ 9.68 %	→ 9.68 %	→ 12.9 %	→ 22.58 %	→ 9.68 %	→ 9.68 %	→ 9.68 %	→ 6.45 %	→ 9.68 %	→ 100
C	1	2	1	1	2	0	2	3	3	15
	→ 6.67 %	→ 13.33 %	→ 6.67 %	→ 6.67 %	→ 13.33 %	→ 0 %	→ 13.33 %	→ 20 %	→ 20 %	→ 100
D	8	3	4	2	5	2	7	2	3	36
	→ 22.22 %	→ 8.33 %	→ 11.11 %	→ 5.56 %	→ 13.89 %	→ 5.56 %	→ 19.44 %	→ 5.56 %	→ 8.33 %	→ 100
Total	12	10	13	10	12	8	14	10	11	100
	→ 12 %	→ 10 %	→ 13 %	→ 10 %	→ 12 %	→ 8 %	→ 14 %	→ 10 %	→ 11 %	→ 100

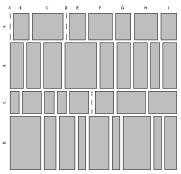
Quartiles

Modal.	:	**A**	**B**	**C**	**D**
Q1	:	B	A	A	A
Q2	:	C	C	C	B
Q3	:	F	D	G	E
Q4	:	G	F	H	G
Q5	:	I	I	I	I

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 25.0301$	p = 0.4041
Fisher's Exact Test		p = 0.4943
Cor Pearson	ρ_P = -0.099	p = 0.327
Kruskal-Wallis (y x)	K = 3.7936	p = 0.2846
Kruskal-Wallis (x y)	K = 9.9973	p = 0.2652

Ordered(4) ~ Ordered(9) **N=100 - NA=0 (0%)**

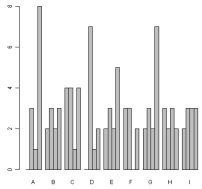
Table

	A	B	C	D	Total
A	0	3	1	8	12
	→ 0 %	→ 25 %	→ 8.33 %	→ 66.67 %	→ 100 %
B	2	3	2	3	10
	→ 20 %	→ 30 %	→ 20 %	→ 30 %	→ 100 %
C	4	4	1	4	13
	→ 30.77 %	→ 30.77 %	→ 7.69 %	→ 30.77 %	→ 100 %
D	0	7	1	2	10
	→ 0 %	→ 70 %	→ 10 %	→ 20 %	→ 100 %
E	2	3	2	5	12
	→ 16.67 %	→ 25 %	→ 16.67 %	→ 41.67 %	→ 100 %
F	3	3	0	2	8
	→ 37.5 %	→ 37.5 %	→ 0 %	→ 25 %	→ 100 %
G	2	3	2	7	14
	→ 14.29 %	→ 21.43 %	→ 14.29 %	→ 50 %	→ 100 %
H	3	2	3	2	10
	→ 30 %	→ 20 %	→ 30 %	→ 20 %	→ 100 %
I	2	3	3	3	11
	→ 18.18 %	→ 27.27 %	→ 27.27 %	→ 27.27 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

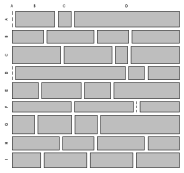
Quartiles

Modal.	: **A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
Q1	: B	A	A	B	A	A	A	A	A
Q2	: B	B	A	B	B	A	B	A	B
Q3	: D	B	B	B	C	B	C	B	C
Q4	: D	C	D	B	D	B	D	C	C
Q5	: D	D	D	D	D	D	D	D	D

Barplot



Mosaic



Tests

χ^2 test	χ^2 = 25.0301	p = 0.4041
Fisher's Exact Test		p = 0.4928
Cor Pearson	ρ_P = -0.099	p = 0.327
Kruskal-Wallis (y x)	K = 9.9973	p = 0.2652
Kruskal-Wallis (x y)	K = 3.7936	p = 0.2846

3.4 Ordered ∼ Discrete

Ordered(4) ∼ Discrete(2) **N=100 - NA=0 (0**

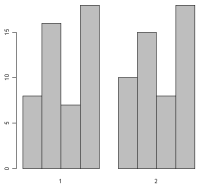
Table

	A	B	C	D	Total
1	8	16	7	18	49
	→ 16.33 %	→ 32.65 %	→ 14.29 %	→ 36.73 %	→ 100 %
2	10	15	8	18	51
	→ 19.61 %	→ 32.65 %	→ 15.69 %	→ 35.29 %	→ 100 %
Total	18	31	15	36	100
	→ 18 %	→ 31 %	→ 15 %	→ 36 %	→ 100 %

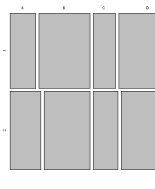
Quartiles

Modal.	: **1**	**2**
Q1	: A	A
Q2	: B	B
Q3	: C	C
Q4	: D	D
Q5	: D	D

Barplot



Mosaic



Tests

χ^2 test	χ^2 = 0.2813	p = 0.9635
Fisher's Exact Test		p = 0.974
ANOVA	F = 0.0903	p = 0.9652
Kruskal-Wallis (y x)	K = 0.2784	p = 0.964
Kruskal-Wallis (x y)	K = 0.0452	p = 0.8316
Cor Pearson	ρ_P = -0.0209	p = 0.8363
Cor Spearman	ρ_S = -0.0214	p = 0.8328
NA		

Ordered(9) ~ Discrete(4) **N=100 - NA=0 (0%**

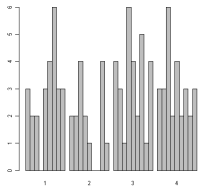
Table

	A	B	C	D	E	F	G	H	I	Total
1	3	2	2	0	3	4	6	3	3	26
	→ 11.54 %	→ 7.69 %	→ 7.69 %	→ 0 %	→ 11.54 %	→ 15.38 %	→ 23.08 %	→ 11.54 %	→ 11.54 %	→ 100 %
2	2	2	4	2	1	0	0	4	1	16
	→ 12.5 %	→ 12.5 %	→ 25 %	→ 12.5 %	→ 6.25 %	→ 0 %	→ 0 %	→ 25 %	→ 6.25 %	→ 100 %
3	4	3	1	6	4	2	5	1	4	30
	→ 13.33 %	→ 10 %	→ 3.33 %	→ 20 %	→ 13.33 %	→ 6.67 %	→ 16.67 %	→ 3.33 %	→ 13.33 %	→ 100 %
4	3	3	6	2	4	2	3	2	3	28
	→ 10.71 %	→ 10.71 %	→ 21.43 %	→ 7.14 %	→ 14.29 %	→ 7.14 %	→ 10.71 %	→ 7.14 %	→ 10.71 %	→ 100 %
Total	12	10	13	10	12	8	14	10	11	100
	→ 12 %	→ 10 %	→ 13 %	→ 10 %	→ 12 %	→ 8 %	→ 14 %	→ 10 %	→ 11 %	→ 100 %

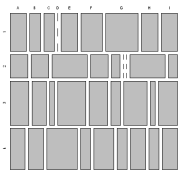
Quartiles

Modal.	: **1**	**2**	**3**	**4**
Q1	: A	A	A	A
Q2	: C	B	C	C
Q3	: F	C	E	D
Q4	: G	H	G	G
Q5	: I	I	I	I

Barplot



Mosaic



Tests

χ^2 test	χ^2 = 25.8985	p = 0.3583
Fisher's Exact Test		p = 0.3613
ANOVA	F = 0.5588	p = 0.8088
Kruskal-Wallis (y x)	K = 4.23	p = 0.8358
Kruskal-Wallis (x y)	K = 2.1822	p = 0.5355
Cor Pearson	ρ_P = -0.1093	p = 0.279
Cor Spearman	ρ_S = -0.1045	p = 0.301
NA		

Ordered(9) ~ Discrete(9) **N=100 - NA=0 (0**

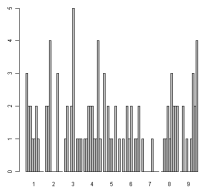
Table

	A	B	C	D	E	F	G	H	I	Total
1	3	2	2	1	1	2	1	0	0	12
	→ 25 %	→ 16.67 %	→ 16.67 %	→ 8.33 %	→ 8.33 %	→ 16.67 %	→ 8.33 %	→ 0 %	→ 0 %	→ 100
2	2	2	4	0	0	0	3	0	0	11
	→ 18.18 %	→ 18.18 %	→ 36.36 %	→ 0 %	→ 0 %	→ 0 %	→ 27.27 %	→ 0 %	→ 0 %	→ 100
3	1	2	0	2	5	0	1	1	1	13
	→ 7.69 %	→ 15.38 %	→ 0 %	→ 15.38 %	→ 38.46 %	→ 0 %	→ 7.69 %	→ 7.69 %	→ 7.69 %	→ 100
4	1	1	2	2	2	1	1	4	1	15
	→ 6.67 %	→ 6.67 %	→ 13.33 %	→ 13.33 %	→ 13.33 %	→ 6.67 %	→ 6.67 %	→ 26.67 %	→ 6.67 %	→ 100
5	3	0	2	1	1	0	2	0	1	10
	→ 30 %	→ 0 %	→ 20 %	→ 10 %	→ 10 %	→ 0 %	→ 20 %	→ 0 %	→ 10 %	→ 100
6	1	0	2	1	2	0	1	1	2	10
	→ 10 %	→ 0 %	→ 20 %	→ 10 %	→ 20 %	→ 0 %	→ 10 %	→ 10 %	→ 20 %	→ 100
7	1	0	0	0	0	1	0	0	0	2
	→ 50 %	→ 0 %	→ 0 %	→ 0 %	→ 0 %	→ 50 %	→ 0 %	→ 0 %	→ 0 %	→ 100
8	0	1	1	2	1	3	2	2	2	14
	→ 0 %	→ 7.14 %	→ 7.14 %	→ 14.29 %	→ 7.14 %	→ 21.43 %	→ 14.29 %	→ 14.29 %	→ 14.29 %	→ 100
9	0	2	0	1	0	1	3	2	4	13
	→ 0 %	→ 15.38 %	→ 0 %	→ 7.69 %	→ 0 %	→ 7.69 %	→ 23.08 %	→ 15.38 %	→ 30.77 %	→ 100
Total	12	10	13	10	12	8	14	10	11	100
	→ 12 %	→ 10 %	→ 13 %	→ 10 %	→ 12 %	→ 8 %	→ 14 %	→ 10 %	→ 11 %	→ 100

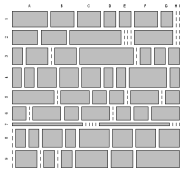
Quartiles

Modal.	: **1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Q1	: A	A	A	A	A	A	A	B	B
Q2	: A	B	D	C	A	C	B	D	F
Q3	: C	C	E	E	C	E	C	F	G
Q4	: E	E	E	H	F	G	D	G	I
Q5	: G	G	I	I	I	I	F	I	I

Barplot



Mosaic



Tests

χ^2 test	$\chi^2 = 72.173$	p = 0.226	
Fisher's Exact Test		p = 0.2434	
ANOVA	F = 2.2561	p = 0.0302	*
Kruskal-Wallis (y x)	K = 15.9013	p = 0.0438	*
Kruskal-Wallis (x y)	K = 18.0042	p = 0.0212	*
Cor Pearson	$\rho_P = 0.364$	p = 2e-04	***
Cor Spearman	$\rho_S = 0.3627$	p = 2e-04	
NA			

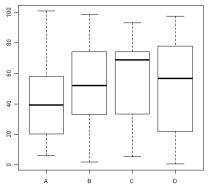
3.5 Ordered ~ Continuous

Ordered(4) ~ Continuous — **N=100 - NA=0 (0%)**

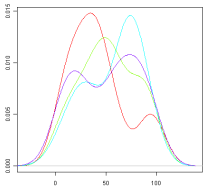
Summary

Modal. :	A	B	C	D
N :	18	31	15	36
NA :	0	0	0	0
Mean :	42.19	52.09	56.7	51.27
Var :	826.89	777.95	748.86	955.52
SD :	28.76	27.89	27.37	30.91
Min :	6.22	1.76	5.38	0.53
Q1 :	21.11	33	33.35	22.4
Median :	39.13	51.91	68.86	56.78
Q3 :	54.73	74.11	74.34	77.89
Max :	100.9	98.53	93.23	97.57

Boxplot



Density



Tests

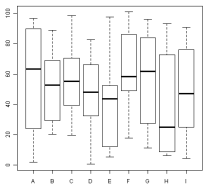
ANOVA	F = 0.7535	p = 0.523
Kruskal-Wallis (y x)	K = 2.2367	p = 0.5248
Cor Pearson	ρ_P = 0.0865	p = 0.3921
Cor Spearman	ρ_S = 0.0868	p = 0.3903

Ordered(9) ~ Continuous — **N=10**

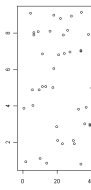
Summary

Modal. :	A	B	C	D	E	F	G	H	I
N :	12	10	13	10	12	8	14	10	11
NA :	0	0	0	0	0	0	0	0	0
Mean :	57.97	50.21	56.1	45.37	40.05	63.2	55.34	37.16	50.65
Var :	1248.98	581.45	458.34	780.74	913.91	720.48	860.82	1082.45	966.21
SD :	35.34	24.11	21.41	27.94	30.23	26.84	29.34	32.9	31.08
Min :	1.76	20.29	19.56	0.53	5.38	17.89	11.3	6.22	4.45
Q1 :	28.79	29.51	39.2	33.48	12.76	51.23	29.02	10.55	25.08
Median :	63.19	52.58	55.08	47.85	43.58	58.44	61.7	24.83	47.03
Q3 :	87.24	68.12	70.44	62.49	50.48	84.17	81.29	64.08	76.15
Max :	96.78	88.77	98.53	82.56	97.57	100.9	95.91	93.23	90.63

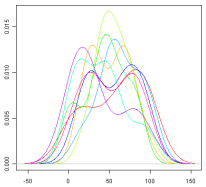
Boxplot



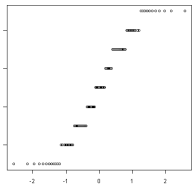
Scatt



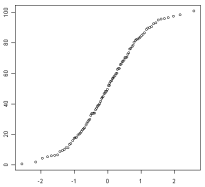
Density



QQplot (Ord.)



QQplot (Cont.)



Tests

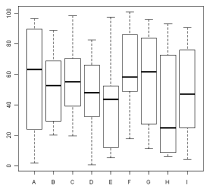
ANOVA	F = 0.8913
Kruskal-Wallis (y x)	K = 7.2685
Cor Pearson	ρ_P = -0.0801
Cor Spearman	ρ_S = -0.0828

Ordered(9) ~ Continuous **N=100 - NA=0 (0%)**

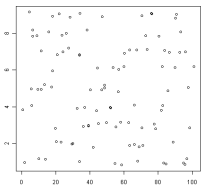
Summary

Modal.	:	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**
N	:	12	10	13	10	12	8	14	10	11
NA	:	0	0	0	0	0	0	0	0	0
Mean	:	57.97	50.21	56.1	45.37	40.05	63.2	55.34	37.16	50.65
Var	:	1248.98	581.45	458.34	780.74	913.91	720.48	860.82	1082.45	966.21
SD	:	35.34	24.11	21.41	27.94	30.23	26.84	29.34	32.9	31.08
Min	:	1.76	20.29	19.56	0.53	5.38	17.89	11.3	6.22	4.45
Q1	:	28.79	29.51	39.2	33.48	12.76	51.23	29.02	10.55	25.08
Median	:	63.19	52.58	55.08	47.85	43.58	58.44	61.7	24.83	47.03
Q3	:	87.24	68.12	70.44	62.49	50.48	84.17	81.29	64.08	76.15
Max	:	96.78	88.77	98.53	82.56	97.57	100.9	95.91	93.23	90.63

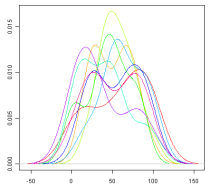
Boxplot



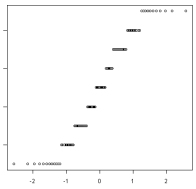
Scatter plot



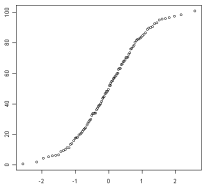
Density



QQplot (Ord.)



QQplot (Cont.)



Tests

ANOVA	F = 0.8913	p = 0.5272
Kruskal-Wallis (y x)	K = 7.2685	p = 0.508
Cor Pearson	ρ_P = -0.0801	p = 0.4283
Cor Spearman	ρ_S = -0.0828	p = 0.4128

4 Continuous

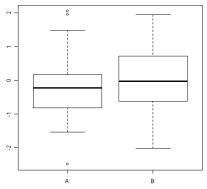
4.1 Continuous ~ Logical

Continuous ~ Nominal(2) — **N=100 - NA=0 (0%)**

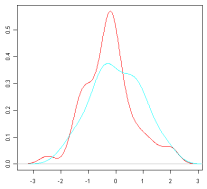
Summary

Modal.	A	B
N	48	52
NA	0	0
Mean	-0.23	0.04
Var	0.81	0.89
SD	0.9	0.94
Min	-2.49	-2.02
Q1	-0.78	-0.61
Median	-0.23	-0.04
Q3	0.14	0.7
Max	2.05	1.94

Boxplot



Density



Tests

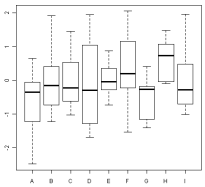
ANOVA	F = 2.0863	p = 0.1518
Kruskal-Wallis	K = 2.0004	p = 0.1573

Continuous ~ Nominal(9) — **N=100 - NA=0 (0%)**

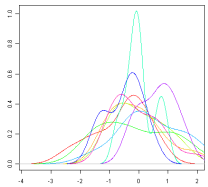
Summary

Modal.	A	B	C	D	E	F	G	H	I
N	15	12	9	14	8	11	10	6	15
NA	0	0	0	0	0	0	0	0	0
Mean	-0.59	-0.07	0	-0.13	0.02	0.36	-0.49	0.64	-0.05
Var	0.85	0.86	0.72	1.42	0.27	1.12	0.38	0.39	0.72
SD	0.92	0.93	0.85	1.19	0.52	1.06	0.62	0.62	0.85
Min	-2.49	-1.23	-1.03	-1.69	-0.73	-1.54	-1.41	-0.11	-1.02
Q1	-1.24	-0.74	-0.63	-1.23	-0.24	-0.23	-1.02	0.13	-0.71
Median	-0.35	-0.16	-0.22	-0.3	-0.04	0.2	-0.27	0.73	-0.29
Q3	-0.06	0.35	0.52	0.99	0.2	1.15	-0.2	0.99	0.47
Max	0.64	1.92	1.45	1.94	0.87	2.05	0.4	1.48	1.96

Boxplot



Density



Tests

ANOVA	F = 1.689	p = 0.1117
Kruskal-Wallis	K = 12.3651	p = 0.1356

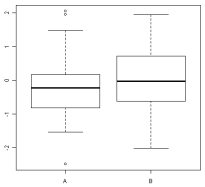
4.2 Continuous ~ Factor

Continuous ~ Nominal(2) — **N=100 - NA=0 (0%)**

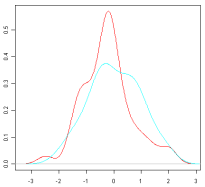
Summary

Modal.	A	B
N	48	52
NA	0	0
Mean	-0.23	0.04
Var	0.81	0.89
SD	0.9	0.94
Min	-2.49	-2.02
Q1	-0.78	-0.61
Median	-0.23	-0.04
Q3	0.14	0.7
Max	2.05	1.94

Boxplot



Density



Tests

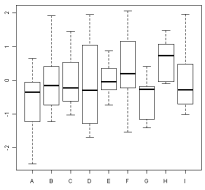
ANOVA	F = 2.0863	p = 0.1518
Kruskal-Wallis	K = 2.0004	p = 0.1573

Continuous ~ Nominal(9) — **N=100 - NA=0 (0%)**

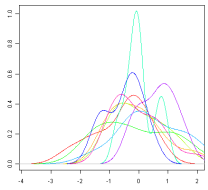
Summary

Modal.	A	B	C	D	E	F	G	H	I
N	15	12	9	14	8	11	10	6	15
NA	0	0	0	0	0	0	0	0	0
Mean	-0.59	-0.07	0	-0.13	0.02	0.36	-0.49	0.64	-0.05
Var	0.85	0.86	0.72	1.42	0.27	1.12	0.38	0.39	0.72
SD	0.92	0.93	0.85	1.19	0.52	1.06	0.62	0.62	0.85
Min	-2.49	-1.23	-1.03	-1.69	-0.73	-1.54	-1.41	-0.11	-1.02
Q1	-1.24	-0.74	-0.63	-1.23	-0.24	-0.23	-1.02	0.13	-0.71
Median	-0.35	-0.16	-0.22	-0.3	-0.04	0.2	-0.27	0.73	-0.29
Q3	-0.06	0.35	0.52	0.99	0.2	1.15	-0.2	0.99	0.47
Max	0.64	1.92	1.45	1.94	0.87	2.05	0.4	1.48	1.96

Boxplot



Density



Tests

ANOVA	F = 1.689	p = 0.1117
Kruskal-Wallis	K = 12.3651	p = 0.1356

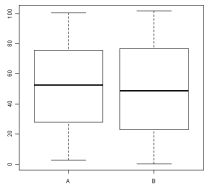
4.3 Continuous ~ Ordered

Continuous ~ Ordered(2) — **N=100 - NA=0 (0%)**

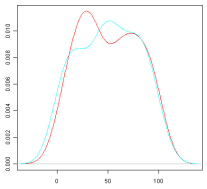
Summary

Modal.	A	B
N	50	50
NA	0	0
Mean	51.01	50.1
Var	835.07	874.1
SD	28.9	29.57
Min	2.93	0.2
Q1	28.11	23.09
Median	52.67	48.87
Q3	75.15	75.95
Max	100.5	101.6

Boxplot



Density



Tests

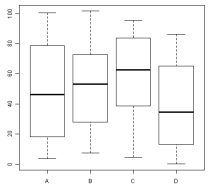
T test	T = 0.156	p = 0.8764
Wilcoxon	W = 1270	p = 0.8931

Continuous ~ Ordered(4) — **N=100 - NA=0 (0%)**

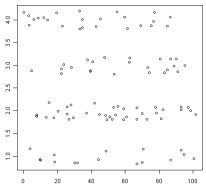
Summary

Modal.	A	B	C	D
N	16	37	23	24
NA	0	0	0	0
Mean	49.83	53.11	57.97	39.99
Var	1133.16	749.97	758.58	821.3
SD	33.66	27.39	27.54	28.66
Min	3.79	7.63	4.57	0.2
Q1	18.31	28.09	38.6	13.63
Median	46.34	53.1	62.57	34.59
Q3	74.61	72.91	83.92	63.35
Max	100.5	101.6	95.31	86.47

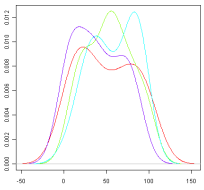
Boxplot



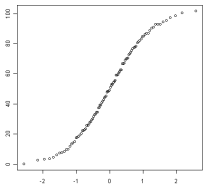
Scatter plot



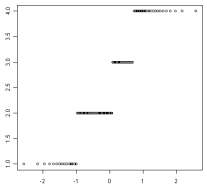
Density



QQplot (Cont.)



QQplot (Ord.)



Tests

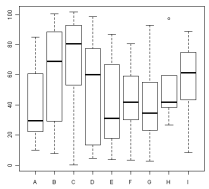
ANOVA	F = 1.6871	p = 0.1749
Kruskal-Wallis	K = 4.9222	p = 0.1776
Cor Pearson	ρ_P = -0.1097	p = 0.2772
Cor Spearman	ρ_S = -0.0997	p = 0.3239

Continuous ~ Ordered(9) — **N=100 - NA=0 (0%)**

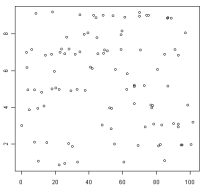
Summary

Modal. :	A	B	C	D	E	F	G	H	I
N :	6	11	10	10	14	7	19	8	15
NA :	0	0	0	0	0	0	0	0	0
Mean :	39.52	59.95	71.4	53.1	38.6	43.55	42.12	50.45	57.64
Var :	782.64	1178.69	927.51	1093	746.32	682	756.27	481.07	610.6
SD :	27.98	34.33	30.46	33.06	27.32	26.12	27.5	21.93	24.71
Min :	9.89	7.83	0.2	4.57	3.79	3.29	2.93	26.83	8.61
Q1 :	23.25	29.13	58.14	23.12	18.63	30.23	23.29	38.83	43.42
Median :	29.54	69.09	80.75	60.16	31.18	42.01	34.61	42.02	61.44
Q3 :	53.89	88.46	92.33	77.24	65.76	59.24	54.99	59.29	74.84
Max :	84.97	100.5	101.6	98.73	86.97	80.58	92.98	97.33	88.73

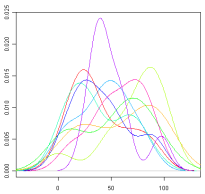
Boxplot



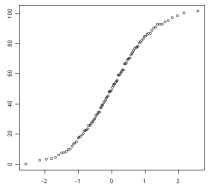
Scatter plot



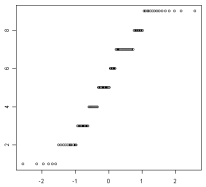
Density



QQplot (Cont.)



QQplot (Ord.)



Tests

ANOVA	F = 1.6413	p = 0.124
Kruskal-Wallis	K = 12.562	p = 0.1278
Cor Pearson	ρ_P = -0.0602	p = 0.5521
Cor Spearman	ρ_S = -0.0564	p = 0.5775

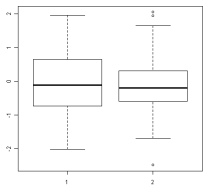
4.4 Continuous ~ Discrete

Continuous ~ Nominal(2) — **N=100 - NA=0 (0%)**

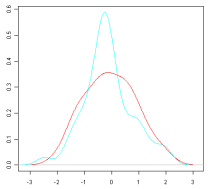
Summary

Modal. :	1	2
N :	49	51
NA :	0	0
Mean :	-0.05	-0.13
Var :	0.91	0.83
SD :	0.95	0.91
Min :	-2.02	-2.49
Q1 :	-0.74	-0.6
Median :	-0.12	-0.21
Q3 :	0.64	0.3
Max :	1.96	2.05

Boxplot



Density



Tests

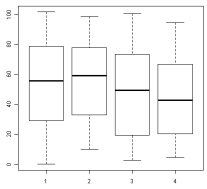
T test	T = 0.3856	p = 0.7006
Wilcoxon	W = 1313	p = 0.664

Continuous ~ Discrete(4) — **N=100 - NA=0 (0%)**

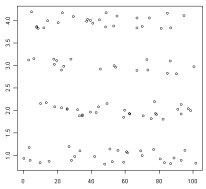
Summary

Modal.	**1**	**2**	**3**	**4**
N	27	29	18	26
NA	0	0	0	0
Mean	52.83	55.31	48.16	44.56
Var	941.73	760.6	1007.73	761.01
SD	30.69	27.58	31.74	27.59
Min	0.2	9.89	2.93	4.57
Q1	29.16	32.93	20.24	21
Median	55.84	59.21	49.3	42.78
Q3	78.71	77.73	73.18	66.84
Max	101.6	98.73	100.5	94.64

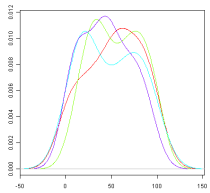
Boxplot



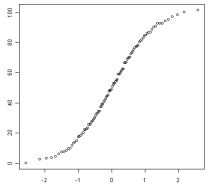
Scatter plot



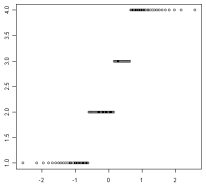
Density



QQplot (Cont.)



QQplot (Disc.)



Tests

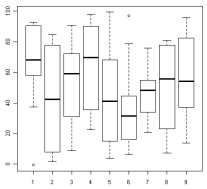
ANOVA	F = 0.7154	p = 0.5452
Kruskal-Wallis	K = 2.2744	p = 0.5174
Cor Pearson	ρ_P = -0.1259	p = 0.212
Cor Spearman	ρ_S = -0.1243	p = 0.218

Continuous ~ Discrete(9) **N=100 - NA=0 (0%)**

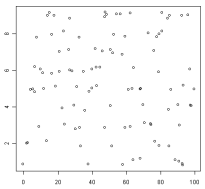
Summary

Modal. :	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
N :	9	8	11	9	16	14	8	10	15
NA :	0	0	0	0	0	0	0	0	0
Mean :	65.64	42.69	52.11	64.11	45.97	37.14	46.26	50.02	55.13
Var :	979.43	1226.8	654.91	914.04	1029.63	724.54	305.89	794.55	799.59
SD :	31.3	35.03	25.59	30.23	32.09	26.92	17.49	28.19	28.28
Min :	-0.59	1.5	8.66	22.41	3.95	6.19	20.74	7.36	13.78
Q1 :	57.85	10.55	31.32	35.65	16.66	17.41	37.72	25.37	36.95
Median :	68.04	42.19	59.11	69.57	41.14	31.48	48.11	55.69	54.16
Q3 :	90.53	77.04	72.24	90.15	68.07	43.91	53.26	76.38	82.38
Max :	92.7	84.73	90.96	97.9	99.39	96.91	76.05	80.74	95.78

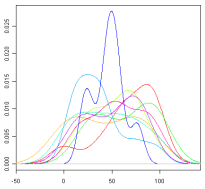
Boxplot



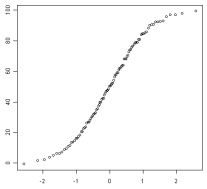
Scatter plot



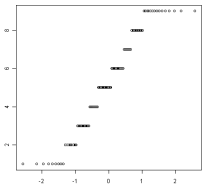
Density



QQplot (Cont.)



QQplot (Disc.)



Tests

ANOVA	F = 1.1339	p = 0.3485
Kruskal-Wallis	K = 9.0345	p = 0.3394
Cor Pearson	ρ_P = -0.0691	p = 0.4945
Cor Spearman	ρ_S = -0.0745	p = 0.4615

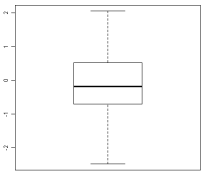
4.5 Continuous ~ Continuous

Continuous ~ Continuous — **N=100 - NA=0 (0%)**

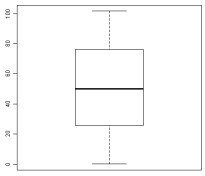
Summary

Modal.	y	x
N	100	100
NA	0	0
Mean	-0.09	50.56
Var	0.86	846.16
SD	0.93	29.09
Min	-2.49	0.2
Q1	-0.69	25.77
Median	-0.19	50.02
Q3	0.52	75.8
Max	2.05	101.6

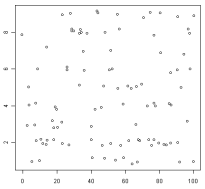
Boxplot



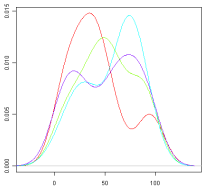
Boxplot



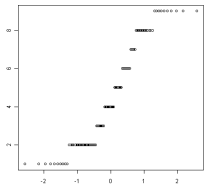
Scatter plot



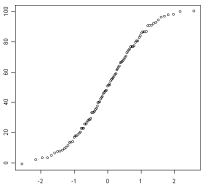
Density



QQplot (y)



QQplot (x)



Tests

Cor Pearson	ρ_P = -0.0779	p = 0.4413
Cor Spearman	ρ_S = -0.0675	p = 0.5047