

Correspondence Analysis (CA)

Run Correspondence Analysis

```
> library(ca)
```

```
> ca_res <- ca(tab)
```

```
> summary(ca_res)
```

Principal inertias (eigenvalues):

dim	value	%	cum%	scree plot
1	0.543087	98.8	98.8	*****
2	0.006344	1.2	100.0	

Total: 0.549432 100.0

Interpretation:

Dimension 1 explains 98.8% of the variance (inertia) in the data. Dimension 2 adds only 1.2%, so most of the structure in the data is captured in just one dimension. This suggests the relationships among the categories are primarily aligned along one dominant axis.

Rows:

	name	mass	qlt	inr	k=1 cor	ctr	k=2 cor	ctr
1	Low	440	1000	524	-809	999 530	21	1 30
2	Medm	340	1000	132	451	953 127	-100	47 533
3	High	220	1000	344	920	985 343	112	15 437

Interpretation:

All rows have high quality (qlt = 1000), meaning their positions in the 2D space reflect the data well. Low and High rows are on opposite sides of Dimension 1 (-809 vs. +920), indicating strong contrast. Medium is in between, but slightly leaning towards Low in terms of contribution and position. Medm contributes heavily to Dimension 2 (53.3% of axis 2), suggesting it has unique characteristics not fully captured in the primary contrast.

Columns:

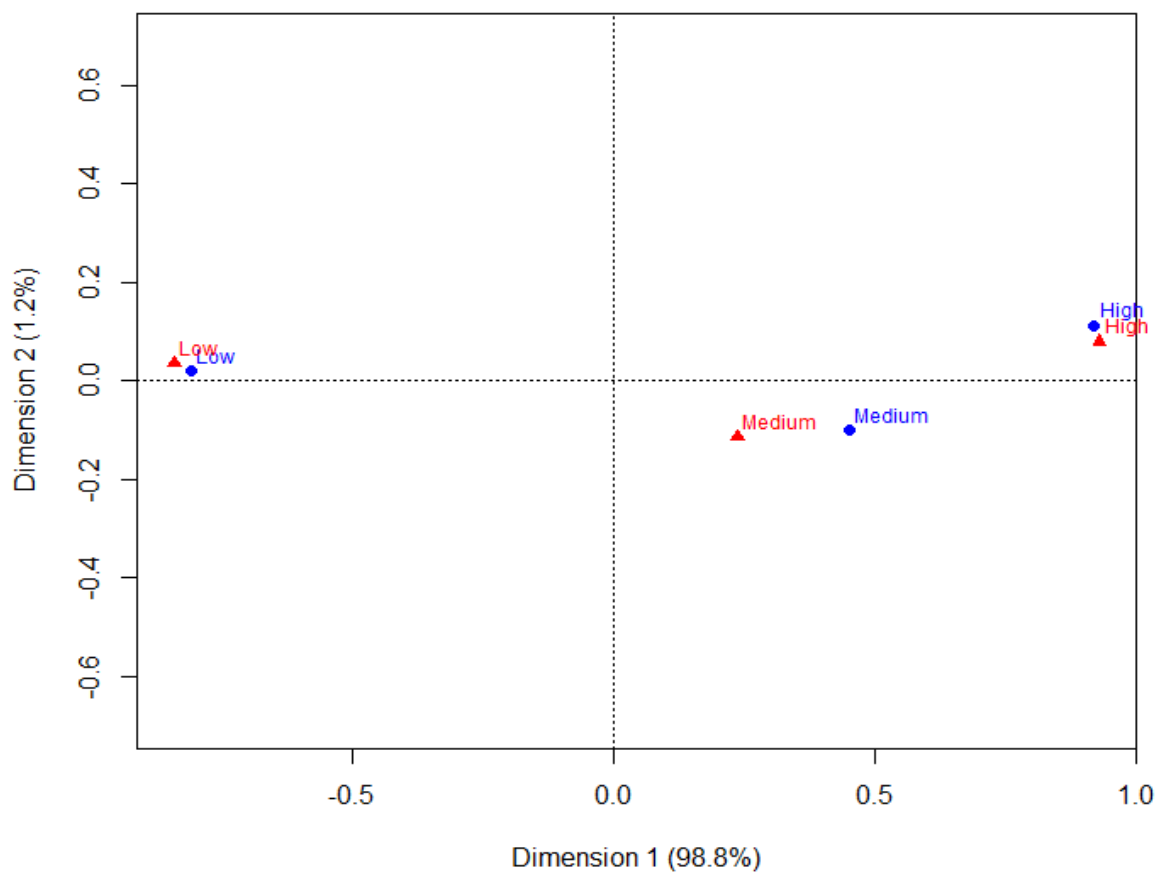
	name	mass	qlt	inr	k=1 cor	ctr	k=2 cor	ctr
1	Low	400	1000	516	-841	998 521	35	2 79
2	Medm	320	1000	40	237	814 33	-113	186 647
3	High	280	1000	444	930	993 446	79	7 274

Interpretation:

Column Low is associated with row Low (both negative on Dim1), and column High with row High. Column Medm is again contributing more to Dimension 2 — just like row Medm. The positions confirm strong association patterns:

- Row Low ↔ Column Low
- Row High ↔ Column High
- Medium categories have mixed, unique positions — more variation.

```
> plot(ca_res)
```



Interpretation:

The plot shows that "Low" and "High" row and column categories are closely aligned, indicating strong associations between them. The "Medium" categories are centrally located, suggesting a weaker or more neutral relationship.

