

This report was generated by the EnQuireR package

Cadoret M., Fournier O., Fournier G., Le Poder F., Bouche J., Lê S.

Agrocampus Ouest

July 28, 2010





# EnQuireR: Multivariate Exploratory Analysis of Questionnaires

## Multivariate exploration of the questionnaire

How is my dataset “structured”?

How does my dataset look like?

How can the main axes of variability be interpreted?

## Typology of the individuals

How many groups are there in my dataset?

How can the groups be displayed?

How different are the groups?

How can the groups be described?

# EnQuireR: Multivariate Exploratory Analysis of Questionnaires

## Multivariate exploration of the questionnaire

How is my dataset “structured”?

How does my dataset look like?

How can the main axes of variability be interpreted?

## Typology of the individuals

How many groups are there in my dataset?

How can the groups be displayed?

How different are the groups?

How can the groups be described?

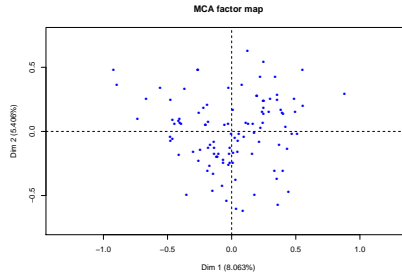
## Percentages of variance explained by the first five axes

Axis	Eigenvalue	Percentage of variance
1	0.10837	7.57%
2	0.07655	5.35%
3	0.06696	4.68%
4	0.06143	4.29%
5	0.06055	4.23%

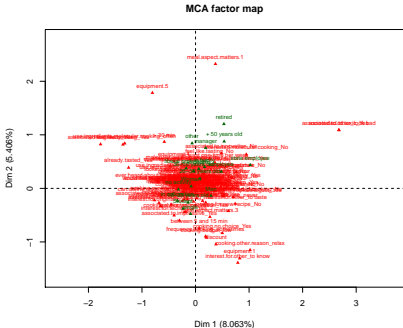
**Table:** Eigenvalues associated with the first five axes

How does my dataset look like?

## Representation of the individuals

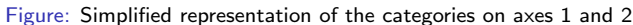


**Figure:** Raw representation of the individuals on axes 1 and 2



**Figure:** Raw representation of the categories on axes 1 and 2

## Simplified representation of the categories





How can the main axes of variability be interpreted?

## Description of the first axis: positive side ( 1 / 3 )

The following categories are meaningful for the first axis (positive side):

- interest.for.mixture\_Yes
- interested.molecular.cooking\_Yes
- feel.like.cooking\_Yes
- ever.heard.about.Hervhis\_Yes
- can.define.molecular.cooking\_Yes
- already.tasted\_Yes
- looking.for.new.recipe\_Yes
- associated.to.greedy\_Yes
- associated.to.gastronomy\_Yes
- interest.for.originality\_Yes



## Description of the first axis: positive side ( 2 / 3 )

The following categories are meaningful for the first axis (positive side):

- `know.reaction.of.beaten.egg.white_Yes`
- `would.like.to.receive.sth.related.to.cooking_Yes`
- `use.ingredients.molecular.cooking_often`
- `cooking.please.others_Yes`
- `molecular.cooking.fashion.effect_No`
- `associated.to.unknown_No`
- `cooking.synonym.meal.with.family_No`
- `associated.to.innovation_Yes`
- `> 30 min`
- `associated.to.other_No`



How can the main axes of variability be interpreted?

## Description of the first axis: positive side ( 3 / 3 )

The following categories are meaningful for the first axis (positive side):

- `associated.to.toxic_No`
- `cooking.no.choice_No`
- `frequency.restaurant_at least one time per month`
- `feel.like.tasting_Yes`
- `cooking.synonym.discovery_Yes`
- `associated.to.impressive_Yes`
- `interest.for.technique_Yes`



How can the main axes of variability be interpreted?

## Description of the first axis: negative side ( 1 / 3 )

The following categories are meaningful for the first axis (negative side):

- interest.for.mixture\_No
- interested.molecular.cooking\_No
- feel.like.cooking\_No
- ever.heard.about.Hervhis\_No
- can.define.molecular.cooking\_No
- already.tasted\_No
- looking.for.new.recipe\_No
- associated.to.greedy\_No
- associated.to.gastronomy\_No
- interest.for.originality\_No



How can the main axes of variability be interpreted?

## Description of the first axis: negative side ( 2 / 3 )

The following categories are meaningful for the first axis (negative side):

- `know.reaction.of.beaten.egg.white_No`
- `would.like.to.receive.sth.related.to.cooking_No`
- `cooking.please.others_No`
- `molecular.cooking.fashion.effect_Yes`
- `associated.to.unknown_Yes`
- `cooking.synonym.meal.with.family_Yes`
- `use.ingredients.molecular.cooking_never`
- `associated.to.innovation_No`
- `associated.to.other_look bad`
- `associated.to.toxic_Yes`



How can the main axes of variability be interpreted?

## Description of the first axis: negative side ( 3 / 3 )

The following categories are meaningful for the first axis (negative side):

- `cooking.no.choice_Yes`
- `feel.like.tasting_No`
- `cooking.synonym.discovery_No`
- `between 15 and 30 min`
- `associated.to.impressive_No`
- `interest.for.technique_No`



How can the main axes of variability be interpreted?

## Description of the second axis: positive side ( 1 / 3 )

The following categories are meaningful for the second axis (positive side):

- safe bet
- feel.like.tasting\_No
- interested.molecular.cooking\_No
- associated.to.impressive\_No
- > 30 min
- cooking.no.choice\_No
- frequency.cooking\_everyday
- frequency.restaurant\_at least one time per week
- interest.for.mixture\_No
- molecular.cooking.fashion.effect\_Yes



How can the main axes of variability be interpreted?

## Description of the second axis: positive side ( 2 / 3 )

The following categories are meaningful for the second axis (positive side):

- specialty food store brand
- molecular.cooking.weird\_No
- associated.to.innovation\_No
- interest.for.technique\_No
- cooking.synonym.innovation\_No
- looking.for.new.recipe\_Yes
- feel.like.cooking\_Yes
- cooking.budget\_high
- use.ingredients.molecular.cooking\_often
- associated.to.chemistry\_No



How can the main axes of variability be interpreted?

## Description of the second axis: positive side ( 3 / 3 )

The following categories are meaningful for the second axis (positive side):

- `interest.for.originality_No`
- `interest.for.other_No`



## Description of the second axis: negative side ( 1 / 3 )

The following categories are meaningful for the second axis (negative side):

- `feel.like.tasting_Yes`
- `between 5 and 15 min`
- `interested.molecular.cooking_Yes`
- `frequency.cooking_sometimes`
- `associated.to.impressive_Yes`
- `cooking.no.choice_Yes`
- `new flavour`
- `discount`
- `classic flavour`
- `interest.for.mixture_Yes`



How can the main axes of variability be interpreted?

## Description of the second axis: negative side ( 2 / 3 )

The following categories are meaningful for the second axis (negative side):

- `molecular.cooking.fashion.effect_No`
- `frequency.restaurant_never`
- `molecular.cooking.weird_Yes`
- `associated.to.innovation_Yes`
- `interest.for.technique_Yes`
- `cooking.synonym.innovation_Yes`
- `looking.for.new.recipe_No`
- `feel.like.cooking_No`
- `interest.for.other_to know`
- `use.ingredients.molecular.cooking_never`



How can the main axes of variability be interpreted?

## Description of the second axis: negative side ( 3 / 3 )

The following categories are meaningful for the second axis (negative side):

- `associated.to.chemistry_Yes`
- `interest.for.originality_Yes`



# EnQuireR: Multivariate Exploratory Analysis of Questionnaires

## Multivariate exploration of the questionnaire

How is my dataset "structured"?

How does my dataset look like?

How can the main axes of variability be interpreted?

## Typology of the individuals

How many groups are there in my dataset?

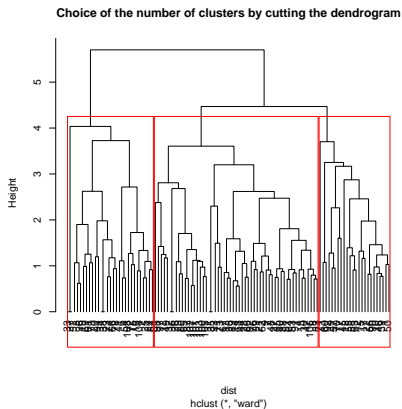
How can the groups be displayed?

How different are the groups?

How can the groups be described?

How many groups are there in my dataset?

## Number of clusters chosen by the analyst



**Figure:** A number of clusters is chosen

How can the groups be displayed?

## Representation of the individuals according to the group they belong to

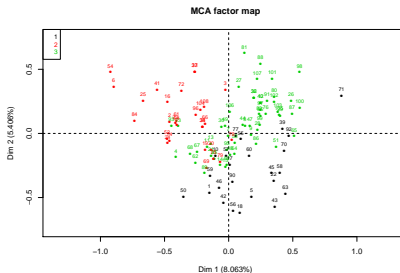


Figure: Correspondence map displaying clusters

How can the groups be displayed?

Simplified representation of the individuals according to the group they belong to

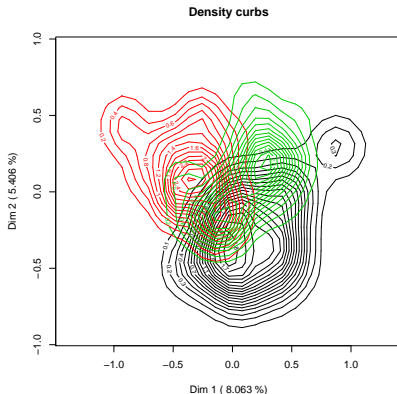


Figure: Levelling curves around each cluster

How can the groups be displayed?

## Representation of the barycenter of each group enhanced with confidence ellipses

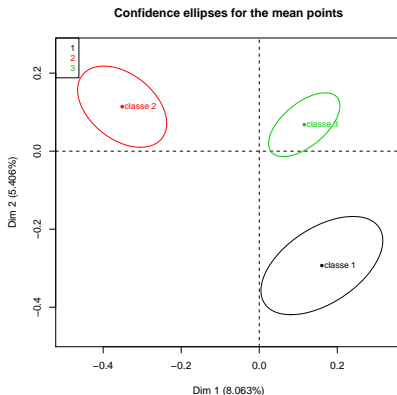


Figure: Confidence ellipses around each cluster



How different are the groups?

## Number of individuals per cluster

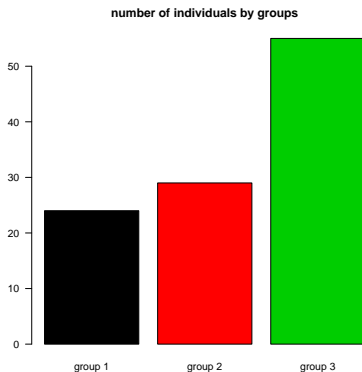
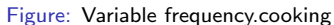


Figure: Number of individuals by cluster

### Distribution of the individuals per cluster for the variable frequency.cooking



### Distribution of the individuals per cluster for the variable feel.like.cooking

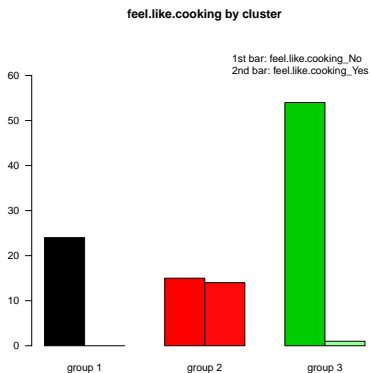


Figure: Variable feel.like.cooking

How different are the groups?

## Distribution of the individuals per cluster for the variable interested.molecular.cooking

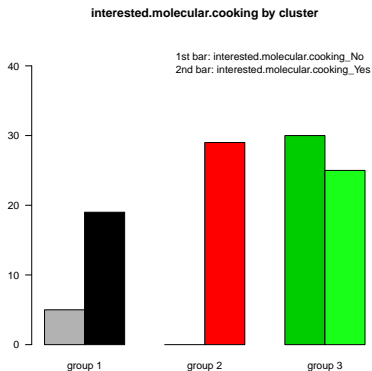


Figure: Variable interested molecular cooking

How different are the groups?

## Distribution of the individuals per cluster for the variable looking.for.new.recipe

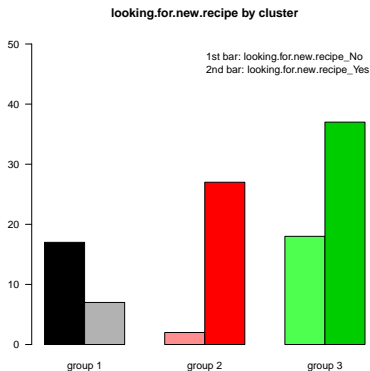


Figure: Variable looking for new recipe

How different are the groups?

## Distribution of the individuals per cluster for the variable interest.for.mixture

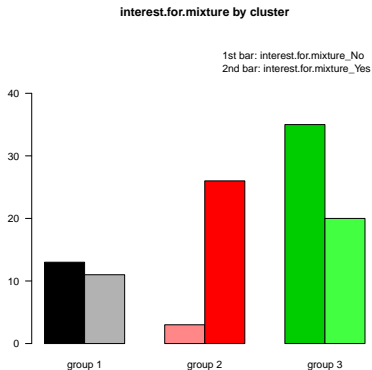


Figure: Variable interest for mixture

How different are the groups?

## Distribution of the individuals per cluster for the variable interest.for.originality

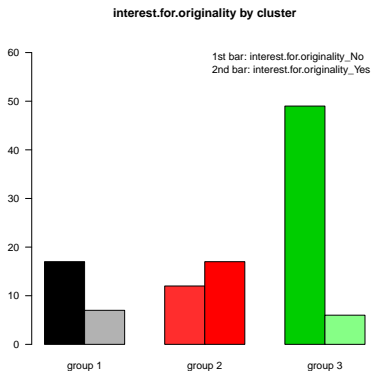


Figure: Variable interest for originality

100

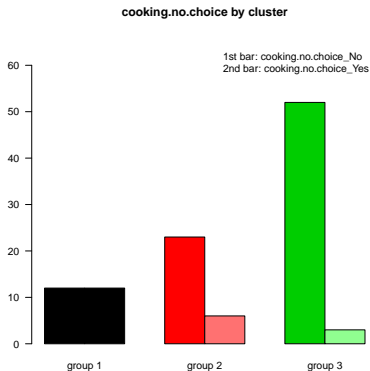


Figure: Variable cooking.no.choice



100

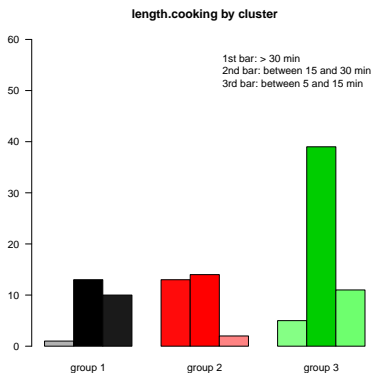
[illegible]

Figure: Variable length.cooking

How different are the groups?

## Distribution of the individuals per cluster for the variable ever.heard.about.Hervhis

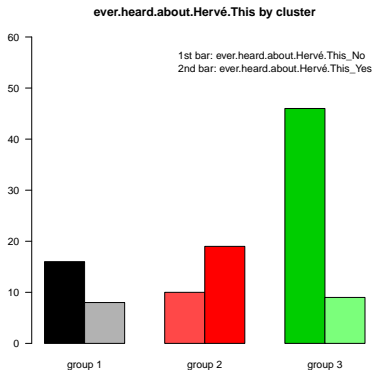


Figure: Variable ever heard about Hervhis



How different are the groups?

## Distribution of the individuals per cluster for the variable cooking.budget

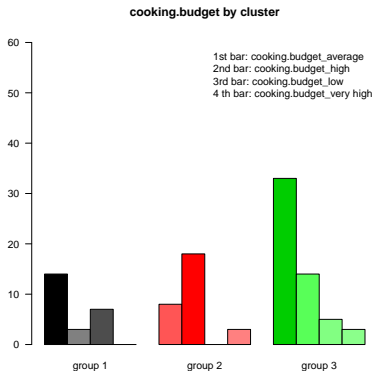


Figure: Variable cooking.budget



How can the groups be described?

## Description of cluster 1 ( 1 / 3 )

The following modalities are meaningful for cluster 1 :

- **frequency.cooking=frequency.cooking\_sometimes**

21.3 % of the individuals possess this category in the global population versus 70.83% of the individuals within cluster 1;

73.91 % individuals possessing this category belong to cluster 1

- **looking.for.new.recipe=looking.for.new.recipe\_No**

34.26 % of the individuals possess this category in the global population versus 70.83% of the individuals within cluster 1;

45.95 % individuals possessing this category belong to cluster 1

- **cooking.no.choice=cooking.no.choice\_Yes**

19.44 % of the individuals possess this category in the global population versus 50% of the individuals within cluster 1;

57.14 % individuals possessing this category belong to cluster 1

- **molecu-**

**lar.cooking.inspires.digust=molecular.cooking.inspires.digust\_Yes**

3.7 % of the individuals possess this category in the global population versus 16.67% of the individuals within cluster 1;

100 % individuals possessing this category belong to cluster 1

- 

**would.like.to.receive.sth.related.to.cooking=would.like.to.receive**

32.41 % of the individuals possess this category in the global population versus 58.33% of the individuals within cluster 1;

40 % individuals possessing this category belong to cluster 1

## Description of cluster 1 ( 2 / 3 )

The following modalities are meaningful for cluster 1 :

- **Age=18-25 years old**  
68.52 % of the individuals possess this category in the global population versus 91.67% of the individuals within cluster 1;  
29.73 % individuals possessing this category belong to cluster 1
- **cooking.budget=cooking.budget\_low**  
11.11 % of the individuals possess this category in the global population versus 29.17% of the individuals within cluster 1;  
58.33 % individuals possessing this category belong to cluster 1
- **length.cooking=between 5 and 15 min**  
21.3 % of the individuals possess this category in the global population versus 41.67% of the individuals within cluster 1;  
43.48 % individuals possessing this category belong to cluster 1
- **SPC=Student**  
58.33 % of the individuals possess this category in the global population versus 79.17% of the individuals within cluster 1;  
30.16 % individuals possessing this category belong to cluster 1
- **feel.like.cooking=feel.like.cooking\_No**  
86.11 % of the individuals possess this category in the global population versus 100% of the individuals within cluster 1;  
25.81 % individuals possessing this category belong to cluster 1

How can the groups be described?

## Description of cluster 1 ( 3 / 3 )

The following modalities are meaningful for cluster 1 :

- **frequency.restaurant=some times per year**

54.63 % of the individuals possess this category in the global population versus 75% of the individuals within cluster 1;

30.51 % individuals possessing this category belong to cluster 1

## Description of cluster 2 ( 1 / 3 )

The following modalities are meaningful for cluster 2 :

- `feel.like.cooking=feel.like.cooking_Yes`**  
 13.89 % of the individuals possess this category in the global population versus 48.28% of the individuals within cluster 2;  
 93.33 % individuals possessing this category belong to cluster 2
- `interested.molecular.cooking=interested.molecular.cooking_Yes`**  
 67.59 % of the individuals possess this category in the global population versus 100% of the individuals within cluster 2;  
 39.73 % individuals possessing this category belong to cluster 2
- `interest.for.mixture=interest.for.mixture_Yes`**  
 52.78 % of the individuals possess this category in the global population versus 89.66% of the individuals within cluster 2;  
 45.61 % individuals possessing this category belong to cluster 2
- `length.cooking=> 30 min`**  
 17.59 % of the individuals possess this category in the global population versus 44.83% of the individuals within cluster 2;  
 68.42 % individuals possessing this category belong to cluster 2
- `ever.heard.about.Hervhis=ever.heard.about.Hervhis_Yes`**  
 33.33 % of the individuals possess this category in the global population versus 65.52% of the individuals within cluster 2;  
 52.78 % individuals possessing this category belong to cluster 2



How can the groups be described?

## Description of cluster 2 ( 2 / 3 )

The following modalities are meaningful for cluster 2 :

- **interest.for.originality=interest.for.originality\_Yes**  
27.78 % of the individuals possess this category in the global population versus 58.62% of the individuals within cluster 2;  
56.67 % individuals possessing this category belong to cluster 2
- **cooking.budget=cooking.budget\_high**  
32.41 % of the individuals possess this category in the global population versus 62.07% of the individuals within cluster 2;  
51.43 % individuals possessing this category belong to cluster 2
- **looking.for.new.recipe=looking.for.new.recipe\_Yes**  
65.74 % of the individuals possess this category in the global population versus 93.1% of the individuals within cluster 2;  
38.03 % individuals possessing this category belong to cluster 2
- **shopping.brand=well-known brand**  
19.44 % of the individuals possess this category in the global population versus 41.38% of the individuals within cluster 2;  
57.14 % individuals possessing this category belong to cluster 2
- **can.define.molecular.cooking=can.define.molecular.cooking\_Yes**  
37.04 % of the individuals possess this category in the global population versus 62.07% of the individuals within cluster 2;  
45 % individuals possessing this category belong to cluster 2



## Description of cluster 2 ( 3 / 3 )

The following modalities are meaningful for cluster 2 :



**`use.ingredients.molecular.cooking=use.ingredients.molecular.cooking`**

6.48 % of the individuals possess this category in the global population versus 20.69% of the individuals within cluster 2;

85.71 % individuals possessing this category belong to cluster 2



**`associated.to.gastronomy=associated.to.gastronomy_Yes`**

23.15 % of the individuals possess this category in the global population versus 44.83% of the individuals within cluster 2;

52 % individuals possessing this category belong to cluster 2



**`type.command.restaurant=new flavour`**

75 % of the individuals possess this category in the global population versus 93.1% of the individuals within cluster 2;

32.33 % individuals possessing this category belong to cluster 2



**`know.reaction.of.beaten.egg.white=know.reaction.of.beaten.egg.white`**

48.15 % of the individuals possess this category in the global population versus 65.52% of the individuals within cluster 2;

36.54 % individuals possessing this category belong to cluster 2

## Description of cluster 3 ( 1 / 3 )

The following modalities are meaningful for cluster 3 :

- **inter-  
ested.molecular.cooking=interested.molecular.cooking\_No**  
32.41 % of the individuals possess this category in the global population versus 54.55% of the individuals within cluster 3;  
85.71 % individuals possessing this category belong to cluster 3
- **interest.for.originality=interest.for.originality\_No**  
72.22 % of the individuals possess this category in the global population versus 89.09% of the individuals within cluster 3;  
62.82 % individuals possessing this category belong to cluster 3
- **ever.heard.about.Hervhis=ever.heard.about.Hervhis\_No**  
66.67 % of the individuals possess this category in the global population versus 83.64% of the individuals within cluster 3;  
63.89 % individuals possessing this category belong to cluster 3
- **cooking.no.choice=cooking.no.choice\_No**  
80.56 % of the individuals possess this category in the global population versus 94.55% of the individuals within cluster 3;  
59.77 % individuals possessing this category belong to cluster 3
- **feel.like.cooking=feel.like.cooking\_No**  
86.11 % of the individuals possess this category in the global population versus 98.18% of the individuals within cluster 3;  
58.06 % individuals possessing this category belong to cluster 3



How can the groups be described?

## Description of cluster 3 ( 2 / 3 )

The following modalities are meaningful for cluster 3 :

- **`interest.for.mixture=interest.for.mixture_No`**  
 47.22 % of the individuals possess this category in the global population versus 63.64% of the individuals within cluster 3;  
 68.63 % individuals possessing this category belong to cluster 3
- **`cooking.habit=cooking.habit_Yes`**  
 25.93 % of the individuals possess this category in the global population versus 38.18% of the individuals within cluster 3;  
 75 % individuals possessing this category belong to cluster 3
- **`associated.to.gastronomy=associated.to.gastronomy_No`**  
 76.85 % of the individuals possess this category in the global population versus 87.27% of the individuals within cluster 3;  
 57.83 % individuals possessing this category belong to cluster 3
- **`associated.to.innovation=associated.to.innovation_No`**  
 24.07 % of the individuals possess this category in the global population versus 34.55% of the individuals within cluster 3;  
 73.08 % individuals possessing this category belong to cluster 3
- **`can.define.molecular.cooking=can.define.molecular.cooking_No`**  
 62.96 % of the individuals possess this category in the global population versus 74.55% of the individuals within cluster 3;  
 60.29 % individuals possessing this category belong to cluster 3

How can the groups be described?

## Description of cluster 3 ( 3 / 3 )

The following modalities are meaningful for cluster 3 :

- **associated.to.impressive=associated.to.impressive\_No**  
68.52 % of the individuals possess this category in the global population versus 78.18% of the individuals within cluster 3;  
58.11 % individuals possessing this category belong to cluster 3