# Multivariate exploration of the questionnaire and typology of the surveyed people

The results are provided by the
EnQuireR package

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# 1 Quick overview of the questionnaire

The analysis was performed on 105 individuals described by 49 variables:

- consume.mostly.pasta ( no , yes )
- consume.mostly.rice ( no , yes )
- consume.mostly.potatoes ( no , yes )
- frequency.consume.starchyfood ( more.than.once.a.day , more.than.once.a.week , once.a.day , once.a.week )
- consume.mostly.milk ( no , yes )
- consume.mostly.cheese ( no , yes )
- consume.mostly.cream ( no , yes )
- consume.mostly.yoghurt ( no , yes )
- frequency.consume.dairy.products ( more.than.once.a.day , more.than.once.a.week , never , once.a.day , once.a.week )
- frequency.consume.eggs ( more.than.once.a.week , never , once.a.day , once.a.week )
- consume.mostly.pork ( no , yes )
- consume.mostly.beef ( no , yes )
- consume.mostly.poultry ( no , yes )
- consume.mostly.veal ( no , yes )
- frequency.consume.meat ( more.than.once.a.day , more.than.once.a.week , never , once.a.day , once.a.week )
- consume.mostly.steam.fish ( no , yes )
- consume.mostly.fried.fish ( no , yes )
- consume.mostly.pickled.in.brine.fish ( no , yes )
- frequency.consume.fish ( more.than.once.a.week , never , once.a.month , once.a.week , twice a month )
- Possess.cookbooks ( no , yes )
- Cooking.self.educated ( most , completely , slightly , medium , not.at.all )
- Watch.cooking.shows ( no , yes )
- recipes.from.Internet ( no , yes )
- recipes.from.books ( no , yes )
- recipes.from.newspapers ( no , yes )
- recipes.from.cooking.shows ( no , yes )
- parents.teach ( no , yes )
- friends.teach ( no , yes )
- grandparents.teach ( no , yes )
- myself.teach ( no , yes )
- cooker.teach ( no , yes )

- Possess.kitchenwares ( a.lot , little , average , minimum , quite.a.lot )
- Like.cooking ( no , yes )
- Purpose.cooking ( both.pleasure.and.feeding , feeding , more.feeding.than.pleasure , more.pleasure.than.feeding , pleasure )
- frequency.consume.vegetables ( more.than.once.a.day , more.than.once.week , once.a.day , once.a.week )
- consume.mostly.raw.vegetables ( no , yes )
- consume.mostly.cooked.vegetables ( no , yes )
- consume.mostly.green.vegetables ( no , yes )
- frequency.consume.fruits ( more.than.once.a.day , more.than.once.a.week , never , once.a.day , once.a.week )
- consume.mostly.season.fruits ( no , yes )
- consume.mostly.out.of.season.fruits ( no , yes )
- consume.mostly.exotic.fruits ( no , yes )
- Frequency.restaurants ( less.than.once.a.month , once.a.month , once.a.week , twice.a.month )
- Budget.Restaurants ( between.10.20euros , less.than.10euros , more.than.20euros )
- Frequency.fastfood ( less.than.once.a.month , once.a.month , once.a.week , twice.a.month )
- Budget.Fastfood ( between.10.20euros , less.than.10euros )
- Frequency.consume.delivered.food ( less.than.once.a.month , once.a.month , twice.a.month )
- Frequency.supermarket ( less.than.once.a.month , more.than.once.a.week , once.a.month , once.a.week , twice.a.month )
- Budget.Market ( between.20.40euros , less.than.20euros , more.than.40euros )

Moreover, the dataset contained 0% of missing values.

# 2 Multivariate exploration of the questionnaire

## 2.1 Graphical representations of the questionnaire

The following results are obtained by performing a Multiple Correspondence Analysis (MCA) on the previous 49 variables. This method provides two important graphical displays, a representation of the individuals (surveyed people) and a representation of the categories (answers given by the surveyed people). The first two main axes of variability explain 11.36% of the information contained in the dataset (6.11% for the first factorial axis and 5.25% for the second one). In some cases the analyst may want to introduce supplementary quantitative variables.

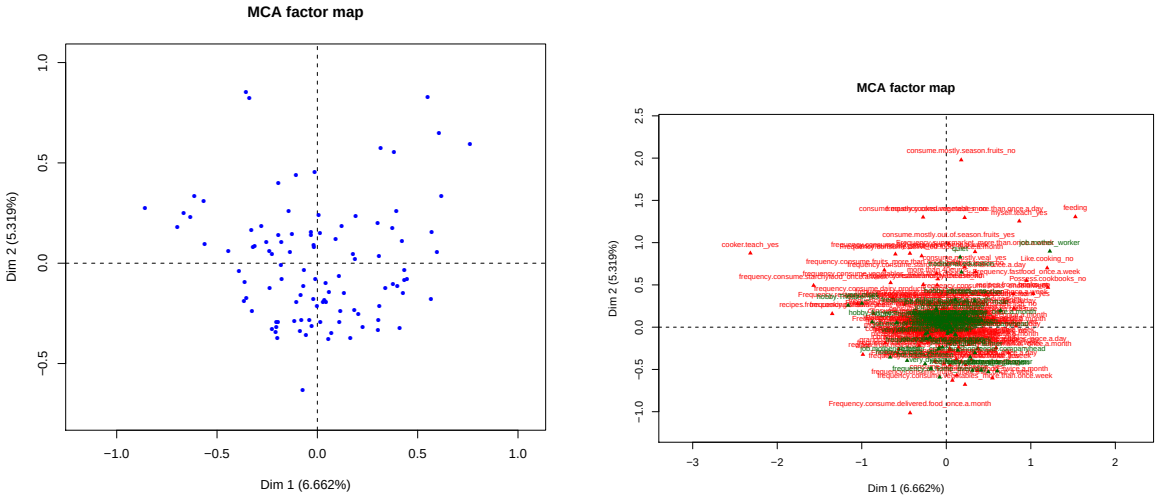



Figure 1: Representations of the individuals and of the categories on axes 1 and 2

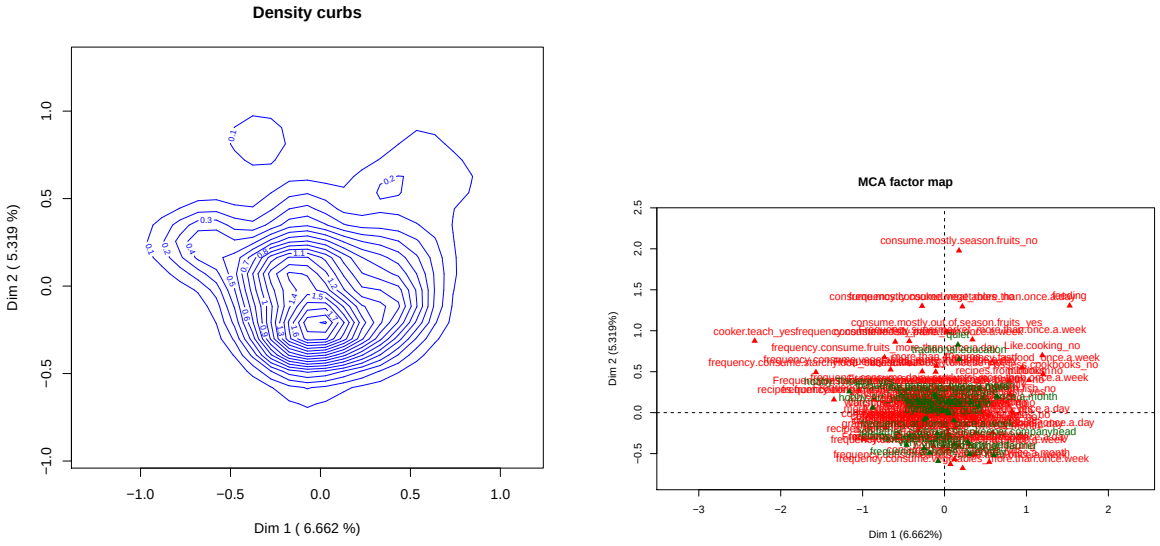
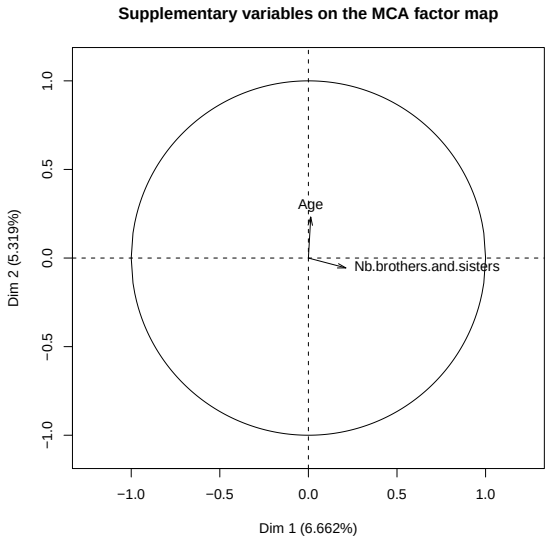



Figure 2: Representation of the individuals using density curbs and enhanced representation of the categories

Figure 3: Representation of the supplementary quantitative variable(s)



## 2.2 Highlights on the two principal axes of variability

### 2.2.1 Characterization of the first factorial axis

**The most meaningful variables characterizing the first factorial axis are:**

- Purpose.cooking
- Possess.cookbooks
- Like.cooking
- frequency.consume.vegetables
- Possess.kitchenwares
- recipes.from.books
- Frequency.fastfood
- frequency.consume.starchyfood
- frequency.consume.fruits
- consume.mostly.beef
- consume.mostly.steam.fish
- consume.mostly.poultry
- consume.mostly.raw.vegetables
- recipes.from.cooking.shows
- grandparents.teach
- Watch.cooking.shows
- Cooking.self.educated
- cooker.teach
- consume.mostly.pasta
- consume.mostly.fried.fish
- consume.mostly.milk
- Frequency.restaurants
- frequency.consume.meat
- frequency.consume.fish
- recipes.from.newspapers
- consume.mostly.cream

**The most meaningful categories characterizing the positive side of the first axis are:**

- Possess.cookbooks_no
  - Contribution: 6.28
  - V-Test: 6.71
  - Frequency in the population: 23.81 %
- Like.cooking_no

  - Contribution: 5.66
  - V-Test: 6.22
  - Frequency in the population: 20 %
- `feeding`
  - Contribution: 5.62
  - V-Test: 5.89
  - Frequency in the population: 11.43 %
- `frequency.consume.vegetables_once.a.week`
  - Contribution: 2.37
  - V-Test: 3.69
  - Frequency in the population: 4.76 %
- `recipes.from.books_no`
  - Contribution: 2.95
  - V-Test: 4.66
  - Frequency in the population: 25.71 %
- `consume.mostly.beef_yes`
  - Contribution: 1.43
  - V-Test: 4.27
  - Frequency in the population: 57.14 %
- `minimum`
  - Contribution: 2.23
  - V-Test: 3.75
  - Frequency in the population: 13.33 %
- `consume.mostly.steam.fish_no`
  - Contribution: 1.61
  - V-Test: 3.89
  - Frequency in the population: 41.9 %
- `frequency.consume.starchyfood_once.a.day`
  - Contribution: 0.56
  - V-Test: 2.68
  - Frequency in the population: 57.14 %
- `consume.mostly.poultry_no`
  - Contribution: 1.49
  - V-Test: 3.78
  - Frequency in the population: 42.86 %

**The most meaningful categories characterizing the negative side of the first axis are:**

- `Possess.cookbooks_yes`
  - Contribution: 1.96
  - V-Test: -6.71

  - Frequency in the population: 76.19 %

- `frequency.consume.vegetables_more.than.once.a.day`
  - Contribution: 3.91
  - V-Test: -5.97
  - Frequency in the population: 40 %
- `Like.cooking_yes`
  - Contribution: 1.41
  - V-Test: -6.22
  - Frequency in the population: 80 %
- `more.pleasure.than.feeding`
  - Contribution: 2.03
  - V-Test: -4.52
  - Frequency in the population: 45.71 %
- `pleasure`
  - Contribution: 1.24
  - V-Test: -2.8
  - Frequency in the population: 13.33 %
- `frequency.consume.starchyfood_once.a.week`
  - Contribution: 4.07
  - V-Test: -4.96
  - Frequency in the population: 9.52 %
- `recipes.from.books_yes`
  - Contribution: 1.02
  - V-Test: -4.66
  - Frequency in the population: 74.29 %
- `Frequency.fastfood_less.than.once.a.month`
  - Contribution: 1.41
  - V-Test: -3.98
  - Frequency in the population: 51.43 %
- `a.lot`
  - Contribution: 1.97
  - V-Test: -3.49
  - Frequency in the population: 11.43 %
- `consume.mostly.beef_no`
  - Contribution: 1.91
  - V-Test: -4.27
  - Frequency in the population: 42.86 %

### 2.2.2 Characterization on the second factorial axis

**The most meaningful variables characterizing the second factorial axis are:**

- frequency.consume.vegetables
- consume.mostly.cheese
- consume.mostly.season.fruits
- consume.mostly.cooked.vegetables
- frequency.consume.fruits
- frequency.consume.eggs
- frequency.consume.meat
- frequency.consume.fish
- consume.mostly.out.of.season.fruits
- Frequency.supermarket
- consume.mostly.pasta
- Frequency.fastfood
- Purpose.cooking
- Cooking.self.educated
- frequency.consume.dairy.products
- Like.cooking
- Frequency.restaurants
- consume.mostly.milk
- Budget.Restaurants
- consume.mostly.raw.vegetables
- myself.teach
- consume.mostly.poultry
- consume.mostly.rice
- frequency.consume.starchyfood
- Budget.Fastfood
- consume.mostly.potatoes

**The most meaningful categories characterizing the positive side of the second axis are:**

- consume.mostly.cheese_no
  - Contribution: 2.91
  - V-Test: 5.41
  - Frequency in the population: 53.33 %
- consume.mostly.season.fruits_no

  - Contribution: 5.49
  - V-Test: 5.25
  - Frequency in the population: 6.67 %
- `consume.mostly.cooked.vegetables_no`
  - Contribution: 5
  - V-Test: 5.2
  - Frequency in the population: 13.33 %
- `frequency.consume.vegetables_once.a.week`
  - Contribution: 3.11
  - V-Test: 3.92
  - Frequency in the population: 4.76 %
- `frequency.consume.eggs_never`
  - Contribution: 4.67
  - V-Test: 4.73
  - Frequency in the population: 1.9 %
- `feeding`
  - Contribution: 3.26
  - V-Test: 4.16
  - Frequency in the population: 11.43 %
- `consume.mostly.out.of.season.fruits_yes`
  - Contribution: 2.99
  - V-Test: 4.05
  - Frequency in the population: 14.29 %
- `frequency.consume.fish_more.than.once.a.week`
  - Contribution: 3.94
  - V-Test: 4.73
  - Frequency in the population: 17.14 %
- `consume.mostly.pasta_no`
  - Contribution: 2.2
  - V-Test: 3.53
  - Frequency in the population: 17.14 %
- `not.at.all`
  - Contribution: 2.97
  - V-Test: 3.82
  - Frequency in the population: 4.76 %

**The most meaningful categories characterizing the negative side of the second axis are:**

- `consume.mostly.cheese_yes`
  - Contribution: 3.32

  - V-Test: -5.41
  - Frequency in the population: 46.67 %
- `consume.mostly.season.fruits_yes`
  - Contribution: 0.39
  - V-Test: -5.25
  - Frequency in the population: 93.33 %
- `consume.mostly.cooked.vegetables_yes`
  - Contribution: 0.77
  - V-Test: -5.2
  - Frequency in the population: 86.67 %
- `frequency.consume.vegetables_more.than.once.week`
  - Contribution: 1.9
  - V-Test: -3.28
  - Frequency in the population: 17.14 %
- `frequency.consume.eggs_more.than.once.a.week`
  - Contribution: 0.62
  - V-Test: -2.52
  - Frequency in the population: 54.29 %
- `frequency.consume.meat_more.than.once.a.week`
  - Contribution: 1.37
  - V-Test: -3.04
  - Frequency in the population: 30.48 %
- `frequency.consume.fruits_more.than.once.a.week`
  - Contribution: 1.86
  - V-Test: -3.34
  - Frequency in the population: 21.9 %
- `frequency.consume.vegetables_once.a.day`
  - Contribution: 1.28
  - V-Test: -3.11
  - Frequency in the population: 38.1 %
- `consume.mostly.out.of.season.fruits_no`
  - Contribution: 0.5
  - V-Test: -4.05
  - Frequency in the population: 85.71 %
- `frequency.consume.eggs_once.a.day`
  - Contribution: 0.19
  - V-Test: -0.99
  - Frequency in the population: 10.48 %

# 3 Typology on the individuals

## 3.1 Choice of the number of clusters

The ascendant hierarchical clustering (AHC) lead to a partition made of 3 clusters. Those clusters are displayed in the following representations: a graphical representation of the individuals according to the cluster they belong to, a representation of the center of gravity of each group enhanced by a confidence ellipse, a representation of the individuals according to the cluster they belong to by the use of density curbs.

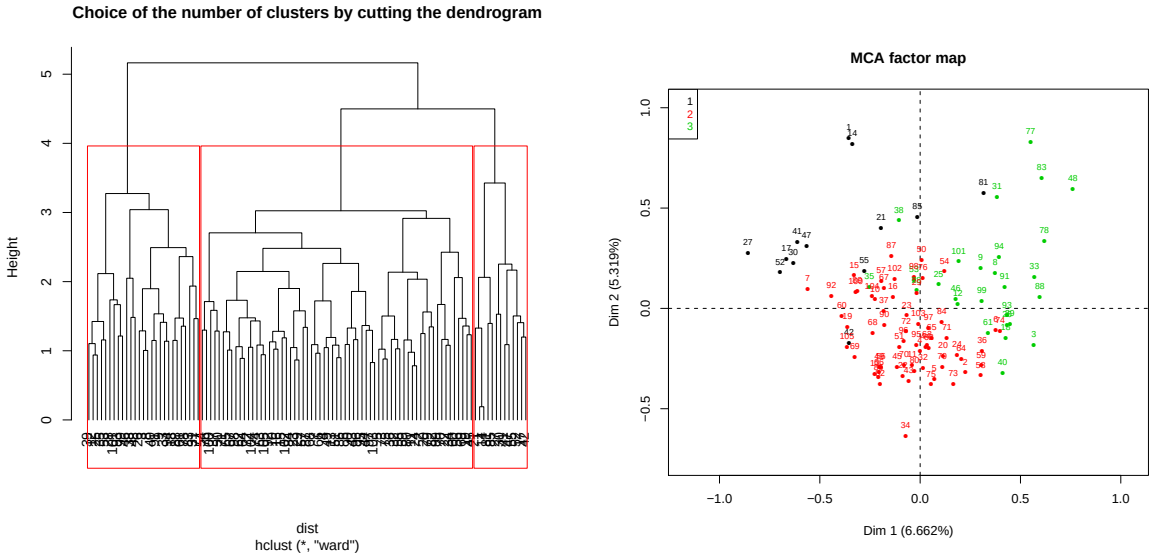



Figure 4: Number of clusters chosen by the analyst; representation of the individuals according to their cluster

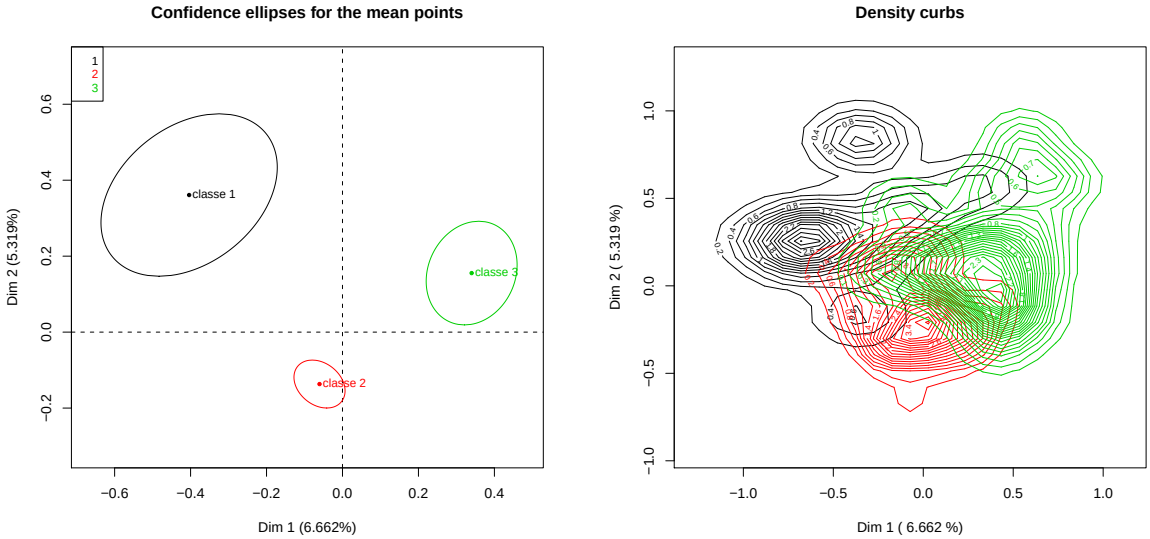



Figure 5: Centers of gravity with confidence ellipses; representation of the individuals according to their cluster with density curbs

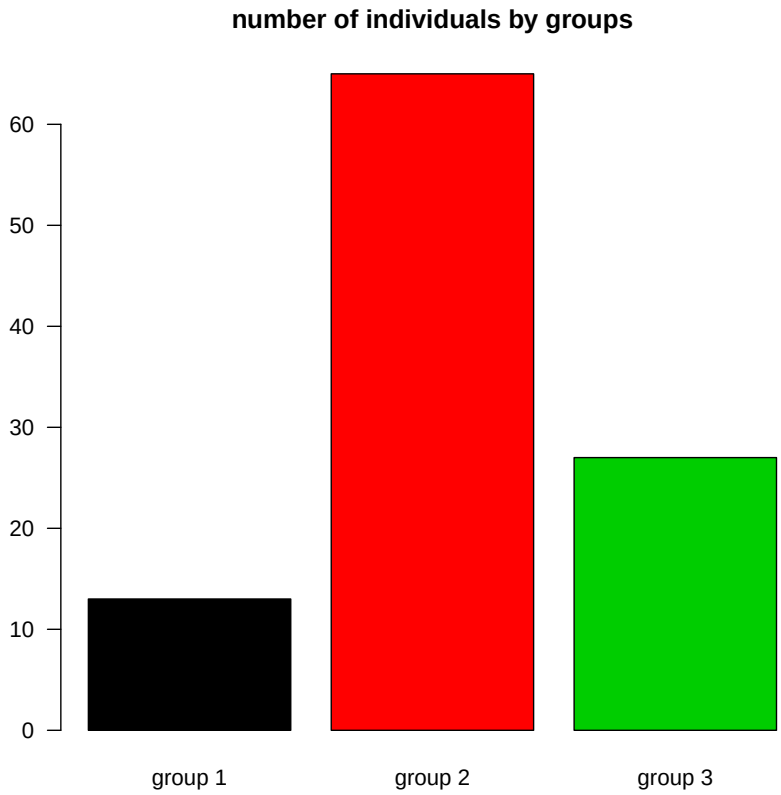



Figure 6: Number of individuals per cluster

## 3.2 Simultaneous comparison of the clusters with respect with the most relevant variables

### 3.2.1 Number of individuals by cluster for the variable Purpose.cooking

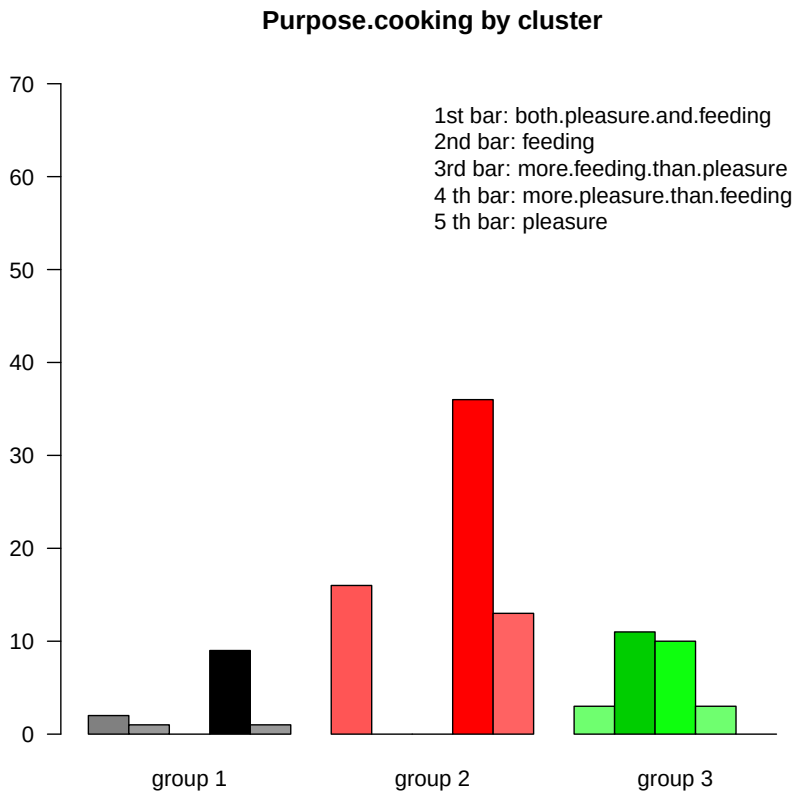



Figure 7: Variable Purpose.cooking

### 3.2.2 Number of individuals by cluster for the variable Possess.cookbooks

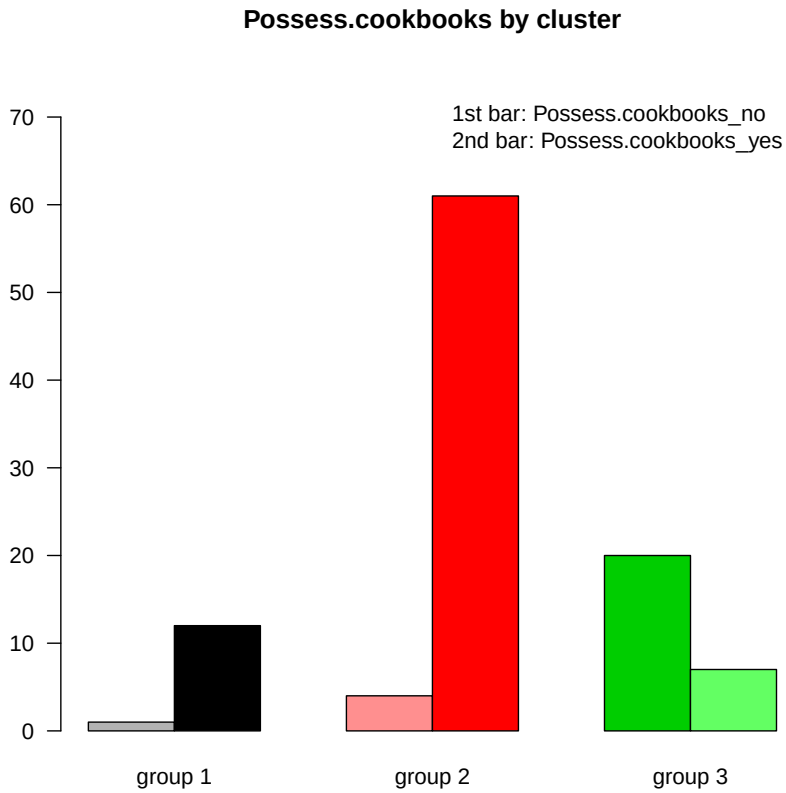



Figure 8: Variable Possess.cookbooks

### 3.2.3 Number of individuals by cluster for the variable Like.cooking

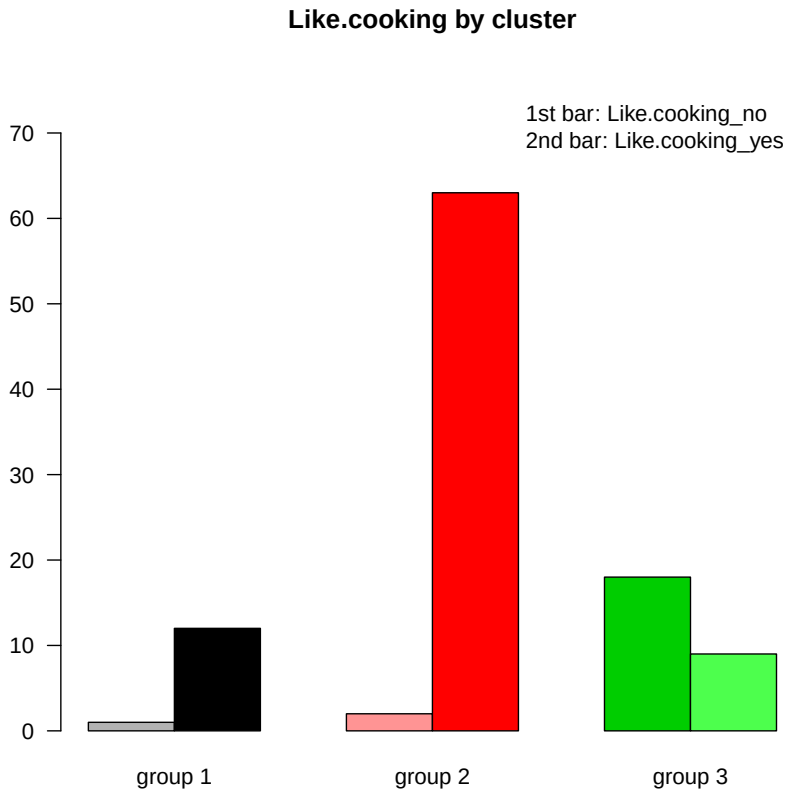



Figure 9: Variable Like.cooking

### 3.2.4 Number of individuals by cluster for the variable recipes.from.books

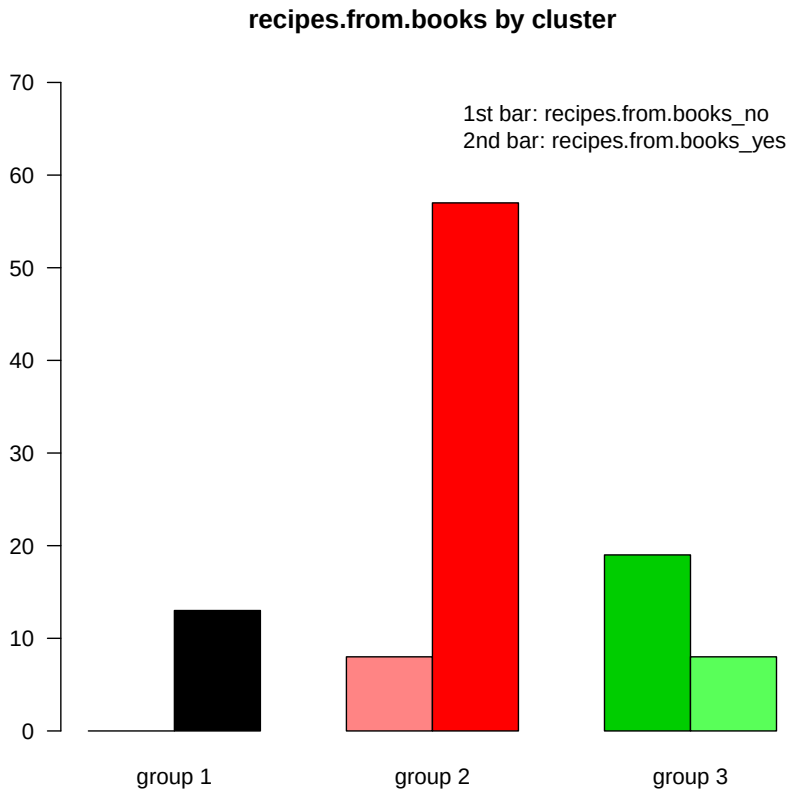



Figure 10: Variable recipes.from.books

### 3.2.5 Number of individuals by cluster for the variable frequency.consume.starchyfood

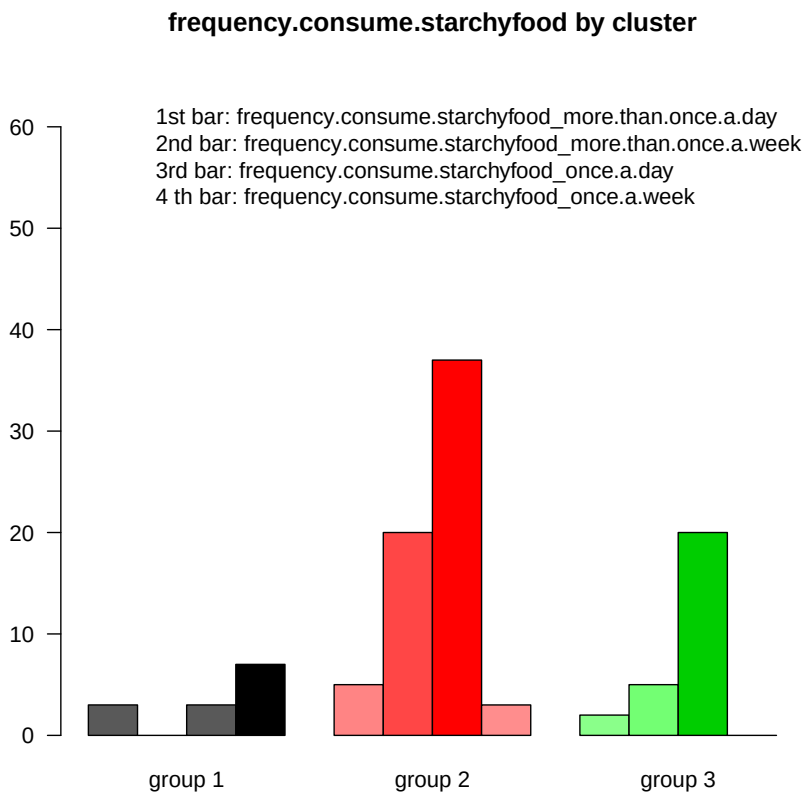



Figure 11: Variable frequency.consume.starchyfood

### 3.2.6 Number of individuals by cluster for the variable consume.mostly.pasta

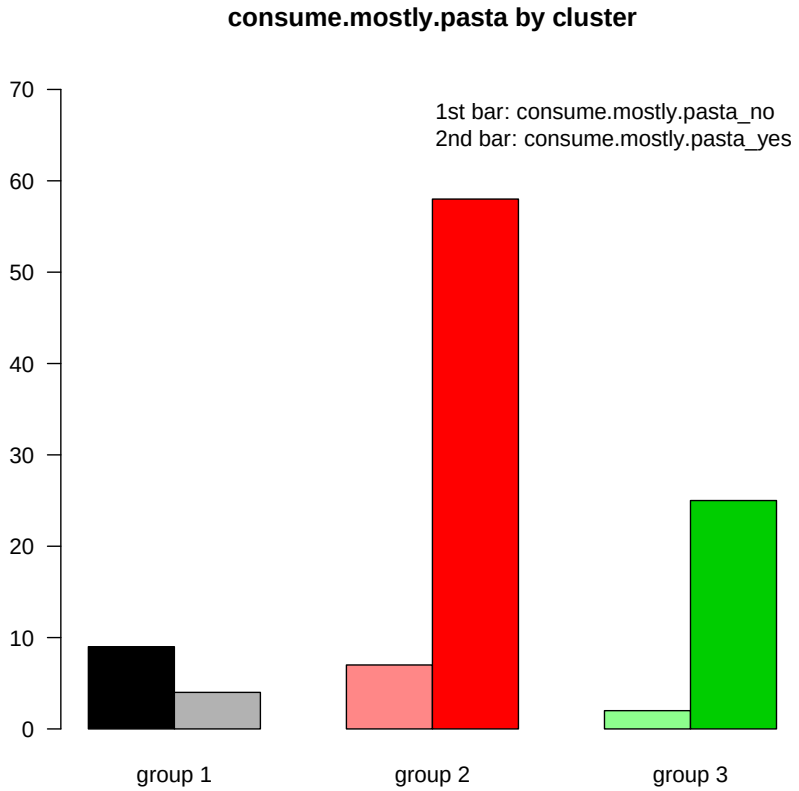



Figure 12: Variable consume.mostly.pasta

### 3.2.7 Number of individuals by cluster for the variable Possess.kitchenwares

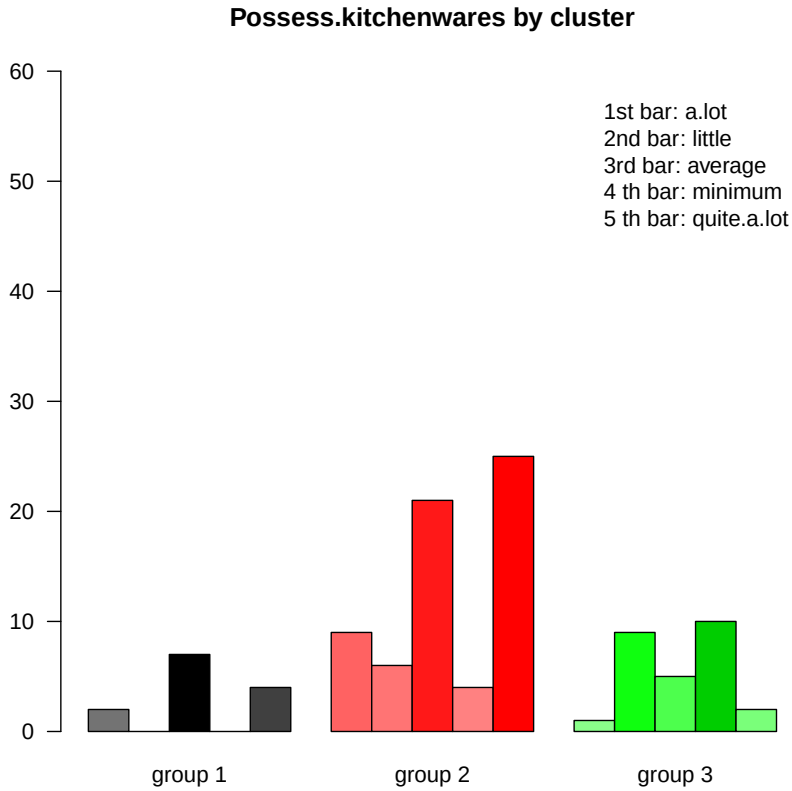



Figure 13: Variable Possess.kitchenwares

### 3.2.8 Number of individuals by cluster for the variable recipes.from.cooking.shows

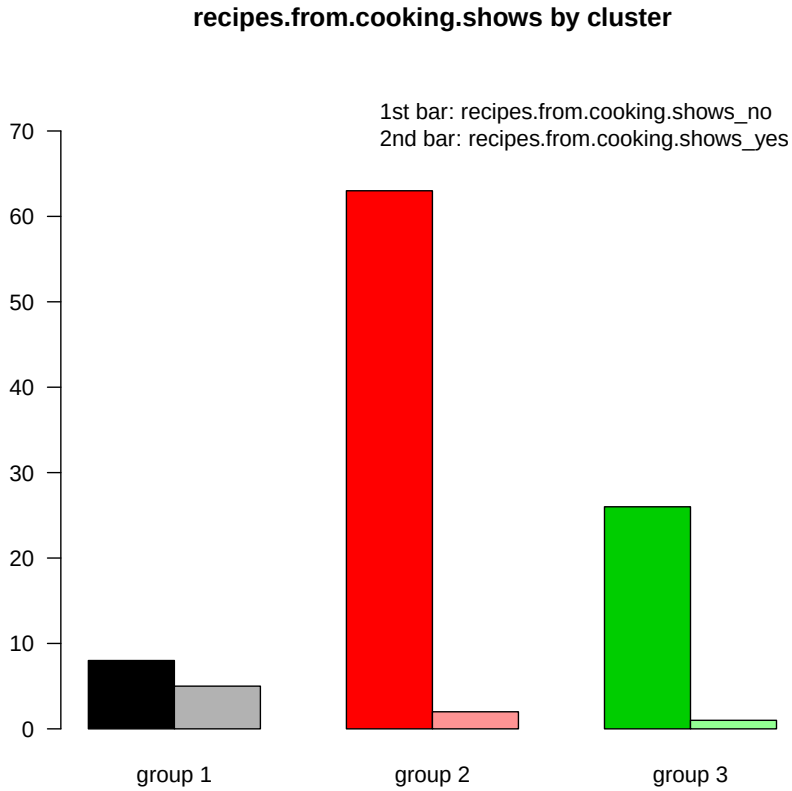



Figure 14: Variable recipes.from.cooking.shows

### 3.2.9 Number of individuals by cluster for the variable consume.mostly.cooked.vegetables

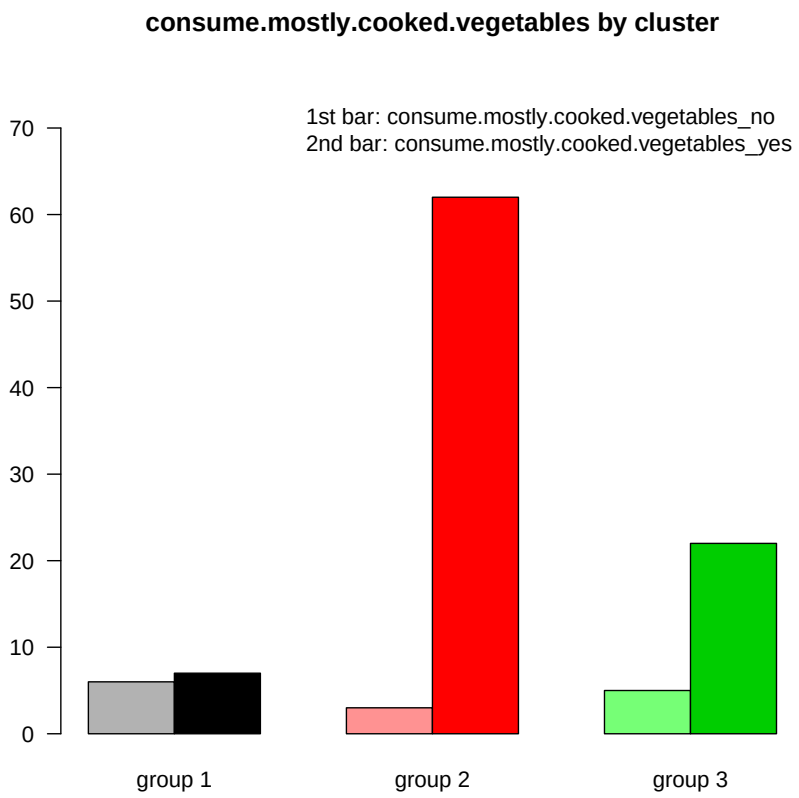



Figure 15: Variable consume.mostly.cooked.vegetables

### 3.2.10 Number of individuals by cluster for the variable consume.mostly.raw.vegetables

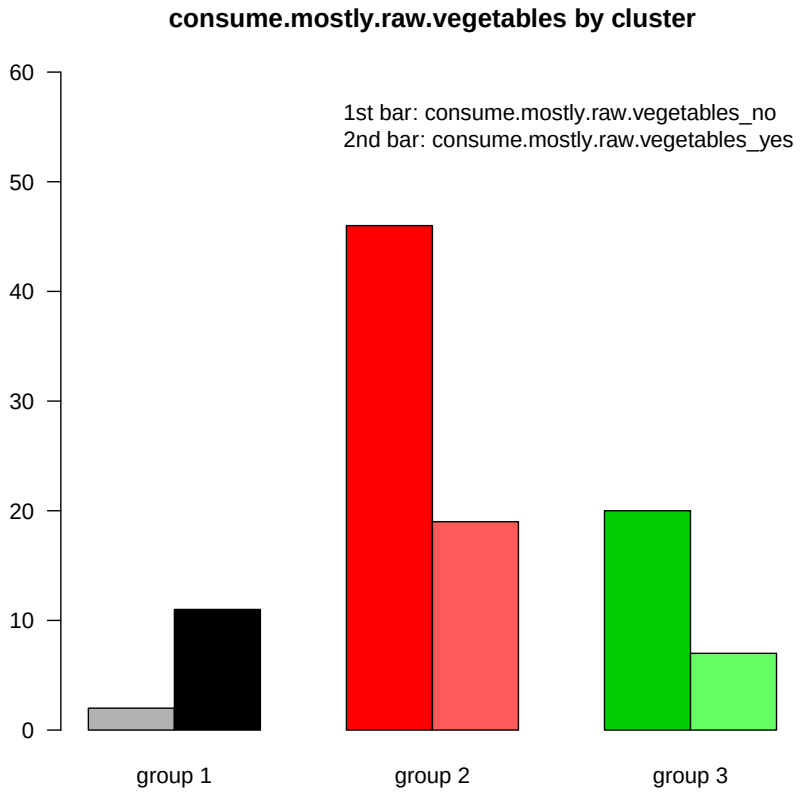



Figure 16: Variable consume.mostly.raw.vegetables

## 3.3 Automatic description of each cluster

**The cluster 1 (13 individuals) includes the individuals possessing the following categories:**

- `frequency.consume.starchyfood=frequency.consume.starchyfood_once.a.week`

  9.52 % of the individuals possess this category in the global population versus 53.85 % in the cluster 1 .

  Moreover, 70 % of the individuals possessing this category belong to the cluster 1 .

- `consume.mostly.pasta=consume.mostly.pasta_no`

  17.14 % of the individuals possess this category in the global population versus 69.23 % in the cluster 1 .

  Moreover, 50 % of the individuals possessing this category belong to the cluster 1 .

- `consume.mostly.raw.vegetables=consume.mostly.raw.vegetables_yes`

  35.24 % of the individuals possess this category in the global population versus 84.62 % in the cluster 1 .

  Moreover, 29.73 % of the individuals possessing this category belong to the cluster 1 .

- `recipes.from.cooking.shows=recipes.from.cooking.shows_yes`

  7.62 % of the individuals possess this category in the global population versus 38.46 % in the cluster 1 .

  Moreover, 62.5 % of the individuals possessing this category belong to the cluster 1 .

- `frequency.consume.fruits=frequency.consume.fruits_more.than.once.a.day`

  28.57 % of the individuals possess this category in the global population versus 69.23 % in the cluster 1 .

  Moreover, 30 % of the individuals possessing this category belong to the cluster 1 .

- `consume.mostly.pork=consume.mostly.pork_yes`

  43.81 % of the individuals possess this category in the global population versus 84.62 % in the cluster 1 .

  Moreover, 23.91 % of the individuals possessing this category belong to the cluster 1 .

- `frequency.consume.fish=frequency.consume.fish_more.than.once.a.week`

  18.1 % of the individuals possess this category in the global population versus 53.85 % in the cluster 1 .

  Moreover, 36.84 % of the individuals possessing this category belong to the cluster 1 .

- `consume.mostly.cooked.vegetables=consume.mostly.cooked.vegetables_no`

  13.33 % of the individuals possess this category in the global population versus 46.15 % in the cluster 1 .

  Moreover, 42.86 % of the individuals possessing this category belong to the cluster 1 .

- `consume.mostly.rice=consume.mostly.rice_no`

  67.62 % of the individuals possess this category in the global population versus 100 % in the cluster 1 .

  Moreover, 18.31 % of the individuals possessing this category belong to the cluster 1 .

- `consume.mostly.milk=consume.mostly.milk_no`

  59.05 % of the individuals possess this category in the global population versus 92.31 % in the cluster 1 .

  Moreover, 19.35 % of the individuals possessing this category belong to the cluster 1 .

**The cluster 2 (65 individuals) includes the individuals possessing the following categories:**

- `Like.cooking=Like.cooking_yes`

  80 % of the individuals possess this category in the global population versus 96.92 % in the cluster 2 .

  Moreover, 75 % of the individuals possessing this category belong to the cluster 2 .

- `Possess.cookbooks=Possess.cookbooks_yes`

  76.19 % of the individuals possess this category in the global population versus 93.85 % in the cluster 2 .

  Moreover, 76.25 % of the individuals possessing this category belong to the cluster 2 .

- `recipes.from.books=recipes.from.books_yes`

  74.29 % of the individuals possess this category in the global population versus 87.69 % in the cluster 2 .

  Moreover, 73.08 % of the individuals possessing this category belong to the cluster 2 .

- `consume.mostly.cooked.vegetables=consume.mostly.cooked.vegetables_yes`

  86.67 % of the individuals possess this category in the global population versus 95.38 % in the cluster 2 .

  Moreover, 68.13 % of the individuals possessing this category belong to the cluster 2 .

- `Frequency.supermarket=Frequency.supermarket_twice.a.month`

  42.86 % of the individuals possess this category in the global population versus 53.85 % in the cluster 2 .

  Moreover, 77.78 % of the individuals possessing this category belong to the cluster 2 .

- `Purpose.cooking=pleasure`

  13.33 % of the individuals possess this category in the global population versus 20 % in the cluster 2 .

  Moreover, 92.86 % of the individuals possessing this category belong to the cluster 2 .

- `Possess.kitchenwares=quite.a.lot`

  29.52 % of the individuals possess this category in the global population versus 38.46 % in the cluster 2 .

  Moreover, 80.65 % of the individuals possessing this category belong to the cluster 2 .

- `Purpose.cooking=more.pleasure.than.feeding`

  45.71 % of the individuals possess this category in the global population versus 55.38 % in the cluster 2 .

  Moreover, 75 % of the individuals possessing this category belong to the cluster 2 .

- `consume.mostly.milk=consume.mostly.milk_yes`

  40.95 % of the individuals possess this category in the global population versus 49.23 % in the cluster 2 .

  Moreover, 74.42 % of the individuals possessing this category belong to the cluster 2 .

**The cluster 3 (27 individuals) includes the individuals possessing the following categories:**

- `Possess.cookbooks=Possess.cookbooks_no`

  23.81 % of the individuals possess this category in the global population versus 74.07 % in the cluster 3 .

  Moreover, 80 % of the individuals possessing this category belong to the cluster 3 .

- `Like.cooking=Like.cooking_no`

  20 % of the individuals possess this category in the global population versus 66.67 % in the cluster 3 .

  Moreover, 85.71 % of the individuals possessing this category belong to the cluster 3 .

- `recipes.from.books=recipes.from.books_no`

  25.71 % of the individuals possess this category in the global population versus 70.37 % in the cluster 3 .

  Moreover, 70.37 % of the individuals possessing this category belong to the cluster 3 .

- `Purpose.cooking=more.feeding.than.pleasure`

  9.52 % of the individuals possess this category in the global population versus 37.04 % in the cluster 3 .

  Moreover, 100 % of the individuals possessing this category belong to the cluster 3 .

- `Purpose.cooking=feeding`

  11.43 % of the individuals possess this category in the global population versus 40.74 % in the cluster 3 .

  Moreover, 91.67 % of the individuals possessing this category belong to the cluster 3 .

- `Possess.kitchenwares=minimum`

  13.33 % of the individuals possess this category in the global population versus 37.04 % in the cluster 3 .

  Moreover, 71.43 % of the individuals possessing this category belong to the cluster 3 .

- `Possess.kitchenwares=little`

  14.29 % of the individuals possess this category in the global population versus 33.33 % in the cluster 3 .

  Moreover, 60 % of the individuals possessing this category belong to the cluster 3 .

- `Sex=male`

  25.71 % of the individuals possess this category in the global population versus 48.15 % in the cluster 3 .

  Moreover, 48.15 % of the individuals possessing this category belong to the cluster 3 .

- `Frequency.fastfood=Frequency.fastfood_once.a.week`

  10.48 % of the individuals possess this category in the global population versus 25.93 % in the cluster 3 .

  Moreover, 63.64 % of the individuals possessing this category belong to the cluster 3 .

- `consume.mostly.steam.fish=consume.mostly.steam.fish_no`

  41.9 % of the individuals possess this category in the global population versus 62.96 % in the cluster 3 .

  Moreover, 38.64 % of the individuals possessing this category belong to the cluster 3 .