

Multivariate exploration of the questionnaire and typology of the surveyed people

The results are provided by the
EnQuireR package

July 28, 2010

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1 Quick overview of the questionnaire

The analysis was performed on 212 individuals described by 45 variables:

- Dessert.favourite.part.of.meal (No , Yes)
- Frequency.eat.desserts (less.than.once.a.week , for.special.occasions , more.than.once.a.d
once.a.week , twice.or.four.times.a.week)
- When (At dinner , At lunch , Snack Tea time)
- Dessert.after.starter.and.meal (0 , 1 , 2 , 3)
- Dessert.at.home (0 , 1)
- Dessert.on.the.go (0 , 1)
- Dessert.at.restaurant (0 , 1)
- Dessert.at.canteen (0 , 1)
- Dessert.at.fastfood (0 , 1)
- Dessert.at.friends.home (0 , 1)
- With.whom (alone , family , friends , boyfriend/girlfriend)
- Size (Familial size , Individual)
- Purchase.place (home made , supermarket , specialized.stores)
- Dessert.bought (an assortment , greedy , the favourite , unknown or ex-
otic)
- buy.dessert.in.refrigerated.section (0 , 1)
- buy.dessert.in.frozen.food.section (0 , 1)
- buy.dessert.in.biscuits.section (0 , 1)
- buy.dessert.in.pastry.section (0 , 1)
- buy.dessert.in.exotic.section (0 , 1)
- Nutritional.information.matters (No , Yes)
- Budget.individual.dessert (1E or less , 1E to 2E , 2E to 4E , 4E to 6E ,
7E and more)
- Budget.familial.dessert (10E to 15E , 4E or less , 5E to 10E , 15E and more)
- Age.class (12 18 , 18 25 , 26 35 , Less than 12 , More than 35)
- Sex (Female , Man)
- Marital.status (Cohabitation , Divorced , Married , Single)
- SPC (Employee , Executive , Intermediate profession , Retired , Student ,
Superior intellectual profession , Technician , top executive , Unemployed)
- Dessert.associated.to.pleasure (0 , 1)
- Dessert.associated.to.greedy (0 , 1)
- Dessert.associated.to.health (0 , 1)
- Dessert.associated.to.tradition (0 , 1)
- Dessert.associated.to.natural (0 , 1)

- Dessert.associated.to.fat (0 , 1)
- Dessert.associated.to.sweet (0 , 1)
- Dessert.associated.to.conviviality (0 , 1)
- Dessert.associated.to.party (0 , 1)
- Dessert.associated.to.childhood (0 , 1)
- Dessert.associated.to.discovery (0 , 1)
- Dessert.associated.to.practical (0 , 1)
- Dessert.associated.to.excess (0 , 1)
- Dessert.associated.to.beauty (0 , 1)
- Dessert.associated.to.freshness (0 , 1)
- Dessert.associated.to.chocolate (0 , 1)
- Dessert.associated.to.birthday (0 , 1)
- Dessert.associated.to.calory (0 , 1)
- Dessert.associated.to.fruits (0 , 1)

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 45 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 9.67% of the information contained in the dataset (5.42% for the first factorial axis and 4.26% for the second one). In some cases the analyst may want to introduce supplementary quantitative variables.

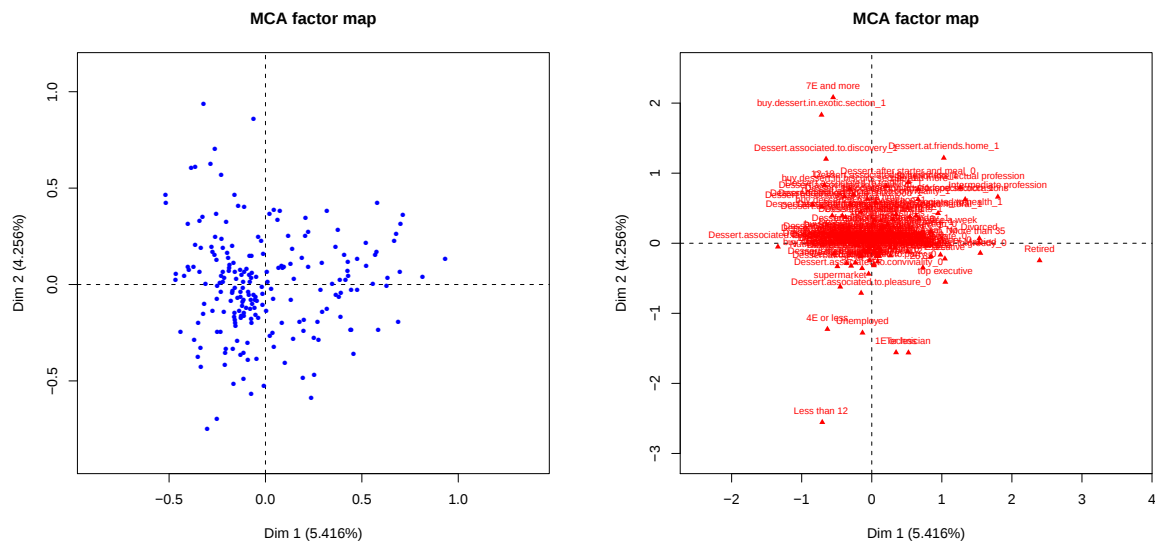


Figure 1: Representations of the individuals and of the categories on axes 1 and 2

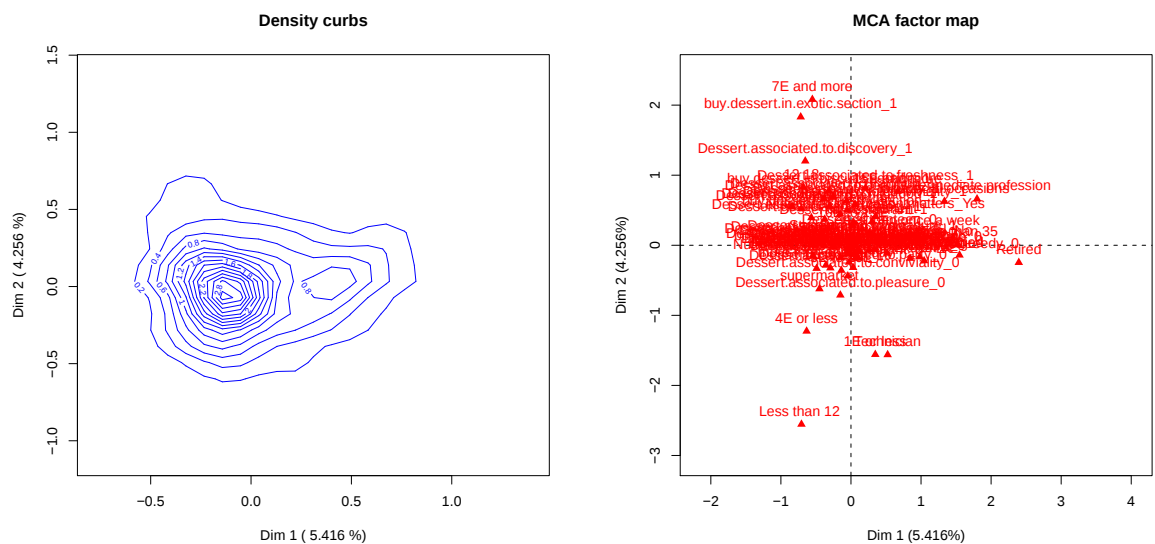


Figure 2: Representation of the individuals using density curbs and enhanced representation of the categories

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:

- Age.class
- SPC
- Marital.status
- Dessert.associated.to.sweet
- Dessert.associated.to.greedy
- Frequency.eat.desserts
- Dessert.at.canteen
- Dessert.associated.to.chocolate
- Dessert.on.the.go
- With.whom
- Dessert.associated.to.excess
- Dessert.associated.to.fat
- Dessert.bought
- Dessert.associated.to.discovery
- Purchase.place
- Budget.individual.dessert
- Budget.familial.dessert
- Dessert.favourite.part.of.meal
- Dessert.associated.to.calory
- Nutritional.information.matters
- Dessert.associated.to.health
- Dessert.associated.to.beauty
- buy.dessert.in.frozen.food.section
- Dessert.associated.to.natural
- Dessert.associated.to.childhood
- Dessert.after.starter.and.meal
- Dessert.associated.to.practical
- Dessert.at.friends.home
- buy.dessert.in.refrigerated.section

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

- More than 35

- Contribution: 12.03
 - V-Test: 11.22
 - Frequency in the population: 20.28 %
- Married
 - Contribution: 10.31
 - V-Test: 10.18
 - Frequency in the population: 16.98 %
- Dessert.associated.to.sweet_0
 - Contribution: 2.67
 - V-Test: 6.1
 - Frequency in the population: 40.09 %
- Dessert.associated.to.greedy_0
 - Contribution: 3.67
 - V-Test: 6.01
 - Frequency in the population: 15.09 %
- Dessert.at.canteen_0
 - Contribution: 1.14
 - V-Test: 5.22
 - Frequency in the population: 65.09 %
- Retired
 - Contribution: 2.74
 - V-Test: 4.83
 - Frequency in the population: 1.89 %
- Dessert.associated.to.chocolate_0
 - Contribution: 1.22
 - V-Test: 4.28
 - Frequency in the population: 44.34 %
- Intermediate profession
 - Contribution: 3.09
 - V-Test: 5.18
 - Frequency in the population: 3.77 %
- Dessert.on.the.go_0
 - Contribution: 0.22
 - V-Test: 4.17
 - Frequency in the population: 89.62 %
- Dessert.associated.to.excess_0
 - Contribution: 0.33
 - V-Test: 3.89
 - Frequency in the population: 81.6 %

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

- **Student**
 - Contribution: 4.8
 - V-Test: -10.94
 - Frequency in the population: 66.51 %
- **Single**
 - Contribution: 3.5
 - V-Test: -8.97
 - Frequency in the population: 63.68 %
- **Dessert.associated.to.sweet_1**
 - Contribution: 1.79
 - V-Test: -6.1
 - Frequency in the population: 59.91 %
- **Dessert.associated.to.greedy_1**
 - Contribution: 0.65
 - V-Test: -6.01
 - Frequency in the population: 84.91 %
- **more.than.once.a.day**
 - Contribution: 1.32
 - V-Test: -4.3
 - Frequency in the population: 40.57 %
- **Dessert.at.canteen_1**
 - Contribution: 2.13
 - V-Test: -5.22
 - Frequency in the population: 34.91 %
- **18 25**
 - Contribution: 3.37
 - V-Test: -9.51
 - Frequency in the population: 68.87 %
- **Cohabitation**
 - Contribution: 0
 - V-Test: 0.19
 - Frequency in the population: 17.45 %
- **12 18**
 - Contribution: 0.55
 - V-Test: -2.19
 - Frequency in the population: 4.72 %
- **Dessert.associated.to.chocolate_1**
 - Contribution: 0.97
 - V-Test: -4.28
 - Frequency in the population: 55.66 %

2.2.2 Characterization on the second factorial axis

The most meaningful variables characterizing the second factorial axis are:

- Dessert.associated.to.conviviality
- Budget.individual.dessert
- Dessert.associated.to.discovery
- Dessert.associated.to.party
- Budget.familial.dessert
- Purchase.place
- Dessert.associated.to.beauty
- Age.class
- Dessert.associated.to.tradition
- Dessert.associated.to.childhood
- buy.dessert.in.biscuits.section
- buy.dessert.in.pastry.section
- buy.dessert.in.exotic.section
- Dessert.at.restaurant
- Dessert.associated.to.freshness
- Dessert.associated.to.pleasure
- SPC
- Nutritional.information.matters
- Dessert.at.canteen
- When
- Dessert.bought
- Dessert.associated.to.calory
- Dessert.associated.to.fruits
- Frequency.eat.desserts
- Dessert.associated.to.fat
- Dessert.at.friends.home
- Dessert.after.starter.and.meal
- Dessert.on.the.go
- Dessert.associated.to.excess
- buy.dessert.in.frozen.food.section

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

- Dessert.associated.to.conviviality_1

- Contribution: 4.69
 - V-Test: 7.34
 - Frequency in the population: 42.92 %
- `Dessert.associated.to.discovery_1`
 - Contribution: 6.14
 - V-Test: 6.81
 - Frequency in the population: 13.21 %
- `Dessert.associated.to.party_1`
 - Contribution: 4.28
 - V-Test: 6.5
 - Frequency in the population: 33.49 %
- `7E and more`
 - Contribution: 3.95
 - V-Test: 5.16
 - Frequency in the population: 2.83 %
- `15E and more`
 - Contribution: 2.16
 - V-Test: 3.99
 - Frequency in the population: 11.32 %
- `Dessert.associated.to.beauty_1`
 - Contribution: 2.76
 - V-Test: 4.74
 - Frequency in the population: 19.34 %
- `Dessert.associated.to.tradition_1`
 - Contribution: 2.45
 - V-Test: 4.37
 - Frequency in the population: 16.04 %
- `12 18`
 - Contribution: 1.04
 - V-Test: 2.68
 - Frequency in the population: 4.72 %
- `Dessert.associated.to.childhood_1`
 - Contribution: 2.2
 - V-Test: 4.31
 - Frequency in the population: 22.17 %
- `buy.dessert.in.biscuits.section_1`
 - Contribution: 2.36
 - V-Test: 4.2
 - Frequency in the population: 12.26 %

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

- `Dessert.associated.to.conviviality_0`
 - Contribution: 3.53
 - V-Test: -7.34
 - Frequency in the population: 57.08 %
- `Dessert.associated.to.discovery_0`
 - Contribution: 0.93
 - V-Test: -6.81
 - Frequency in the population: 86.79 %
- `Dessert.associated.to.party_0`
 - Contribution: 2.16
 - V-Test: -6.5
 - Frequency in the population: 66.51 %
- `1E or less`
 - Contribution: 2.95
 - V-Test: -4.48
 - Frequency in the population: 3.77 %
- `supermarket`
 - Contribution: 3.34
 - V-Test: -5.48
 - Frequency in the population: 26.89 %
- `Dessert.associated.to.beauty_0`
 - Contribution: 0.66
 - V-Test: -4.74
 - Frequency in the population: 80.66 %
- `Less than 12`
 - Contribution: 2.97
 - V-Test: -4.45
 - Frequency in the population: 1.42 %
- `Dessert.associated.to.tradition_0`
 - Contribution: 0.47
 - V-Test: -4.37
 - Frequency in the population: 83.96 %
- `Dessert.associated.to.childhood_0`
 - Contribution: 0.63
 - V-Test: -4.31
 - Frequency in the population: 77.83 %
- `buy.dessert.in.biscuits.section_0`
 - Contribution: 0.33
 - V-Test: -4.2
 - Frequency in the population: 87.74 %

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.

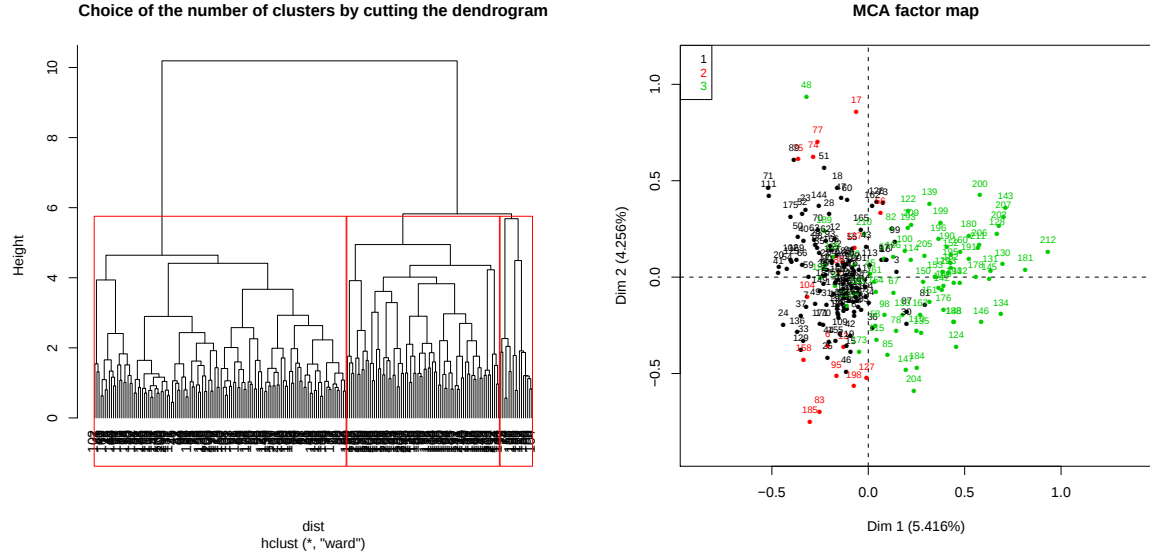


Figure 3: Number of clusters chosen by the analyst; representation of the individuals according to their cluster

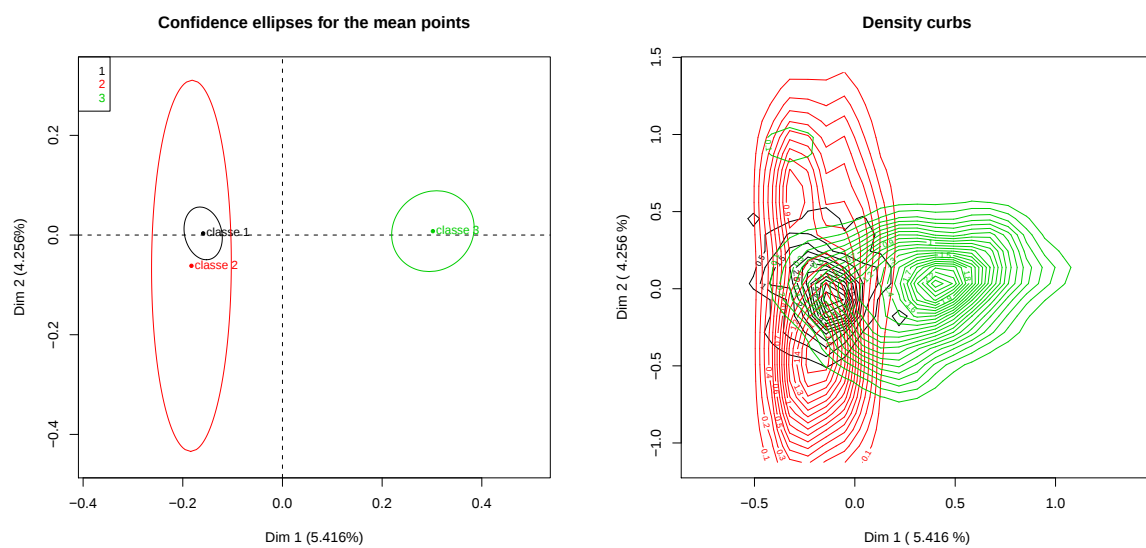


Figure 4: Centers of gravity with confidence ellipses; representation of the individuals according to their cluster with density curbs

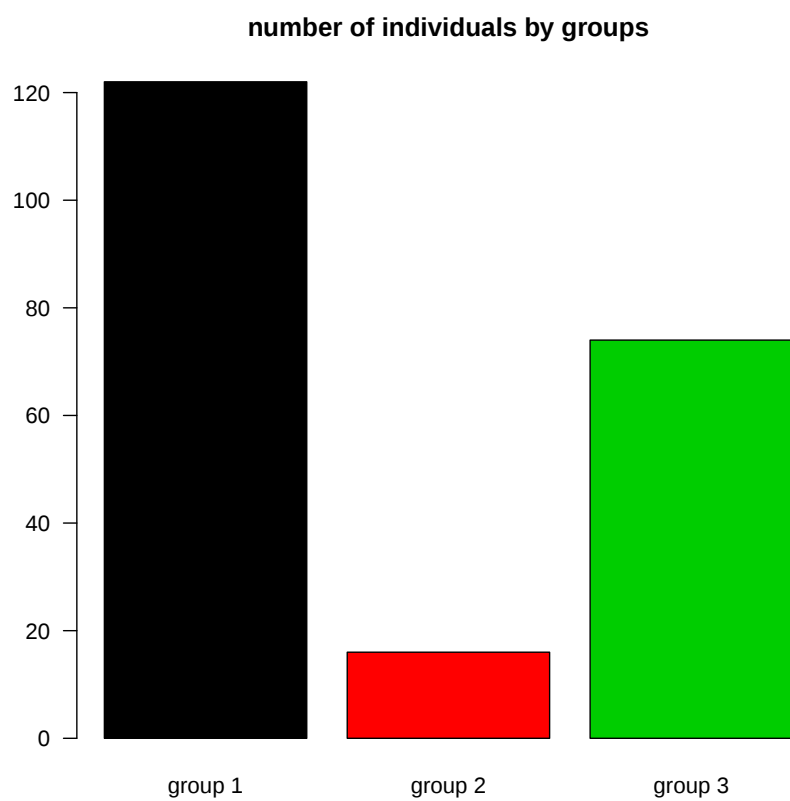


Figure 5: Number of individuals per cluster

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 Age.class

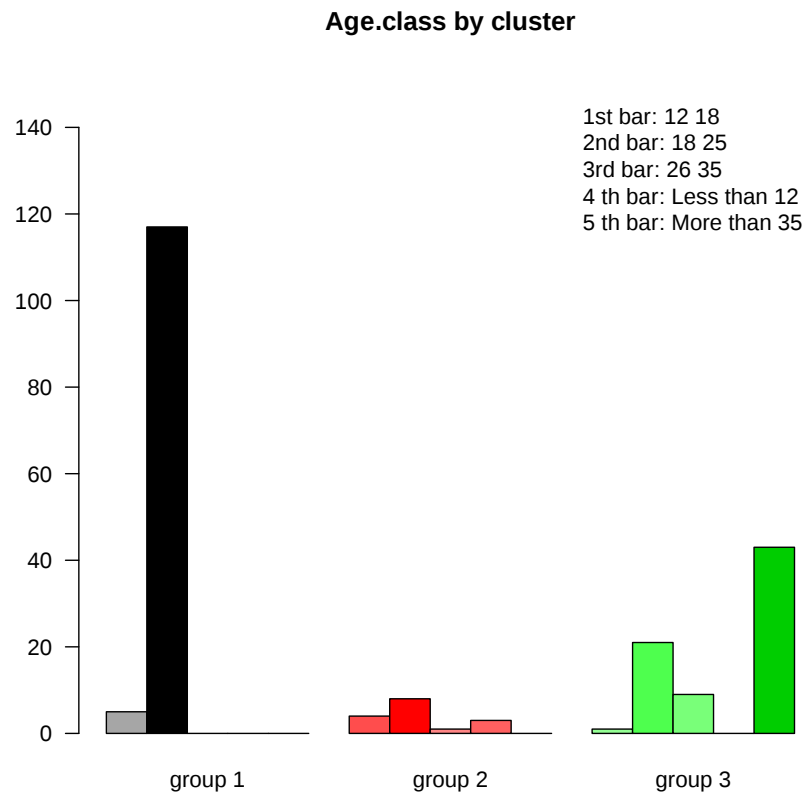


Figure 6: Variable Age.class

3.2.2 Number of individuals by cluster for the variable Budget.familial.dessert

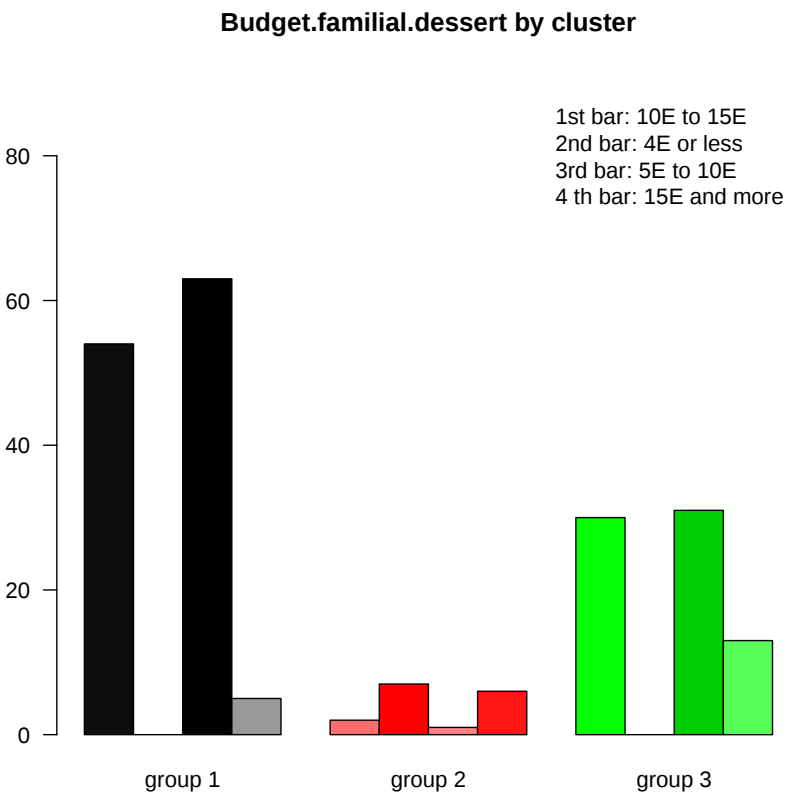


Figure 7: Variable Budget.familial.dessert

3.2.3 Number of individuals by cluster for the variable SPC

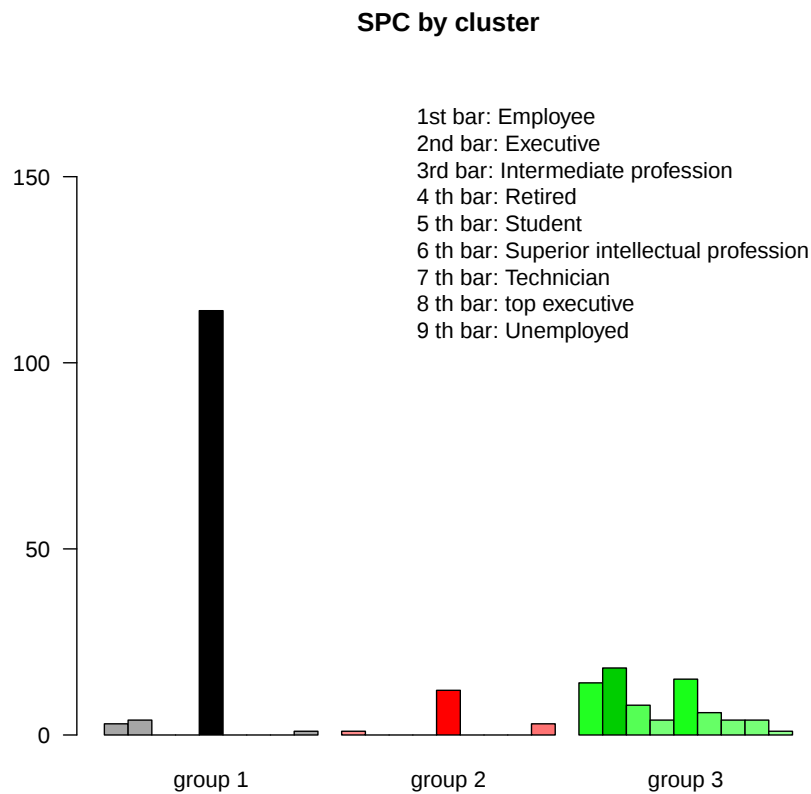


Figure 8: Variable SPC

3.2.4 Number of individuals by cluster for the variable Marital.status

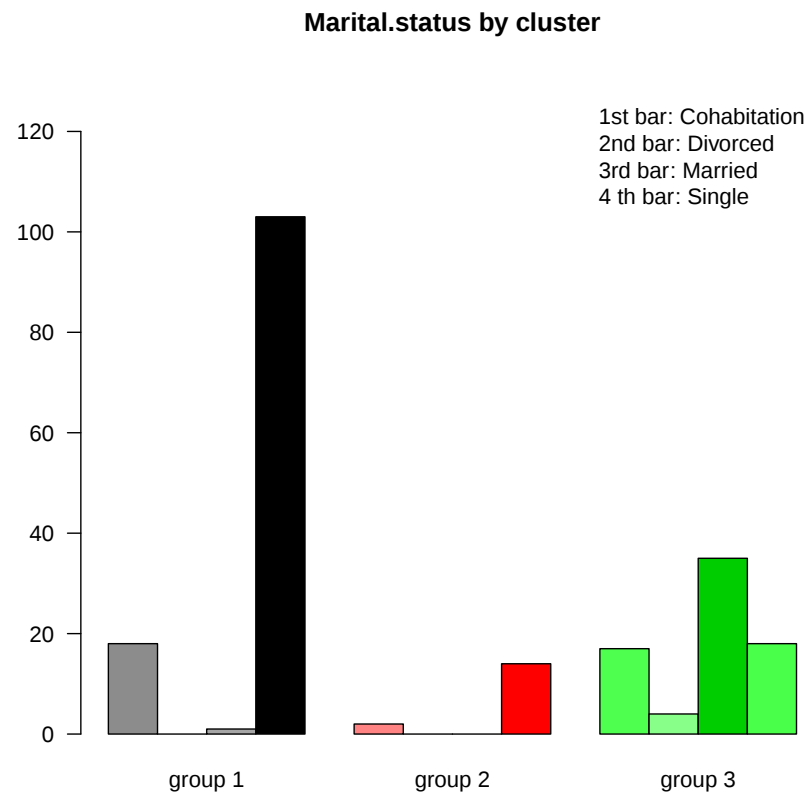


Figure 9: Variable Marital.status

3.2.5 Number of individuals by cluster for the variable Budget.individual.dessert

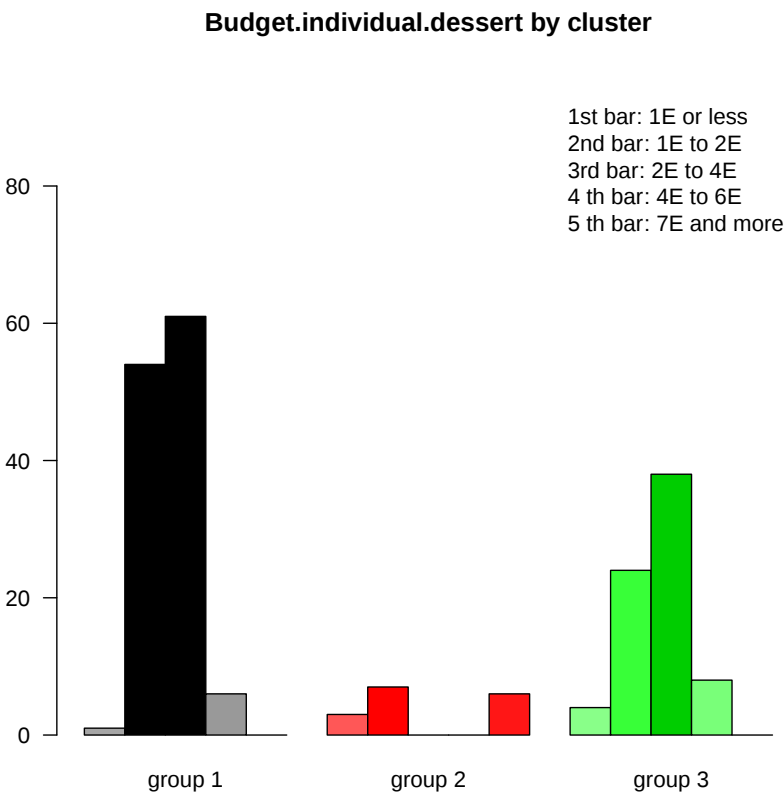


Figure 10: Variable Budget.individual.dessert

3.2.6 Number of individuals by cluster for the variable Dessert.associated.to.natural

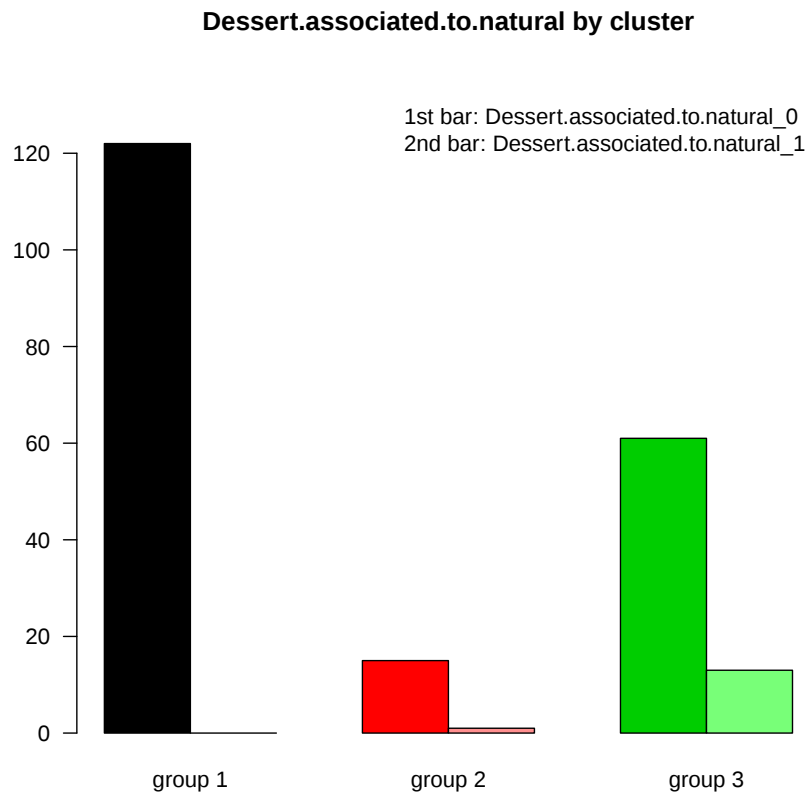


Figure 11: Variable Dessert.associated.to.natural

3.2.7 Number of individuals by cluster for the variable With.whom

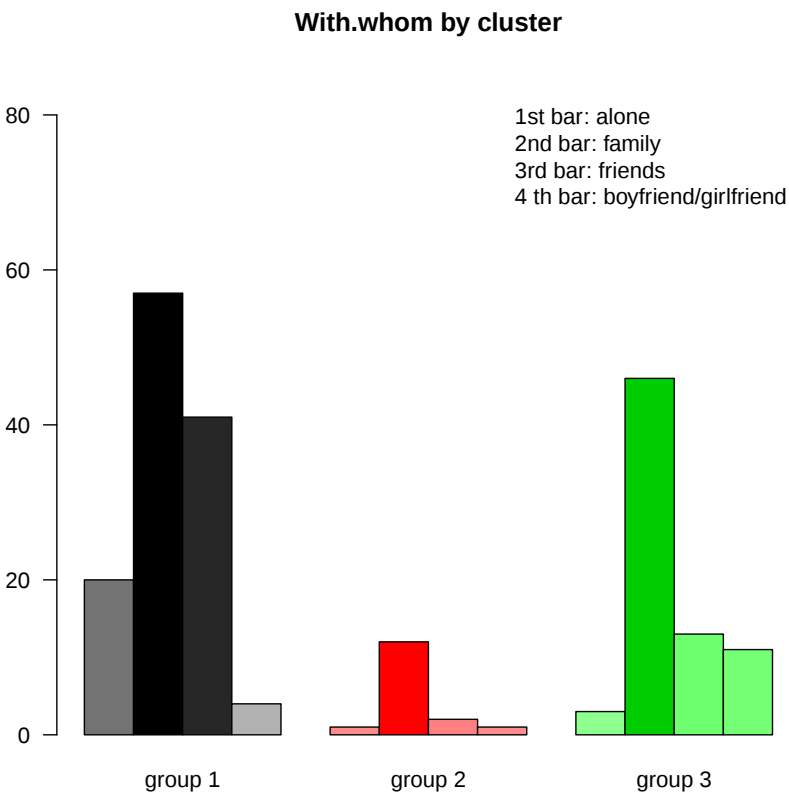


Figure 12: Variable With.whom

3.2.8 Number of individuals by cluster for the variable Dessert.associated.to.health

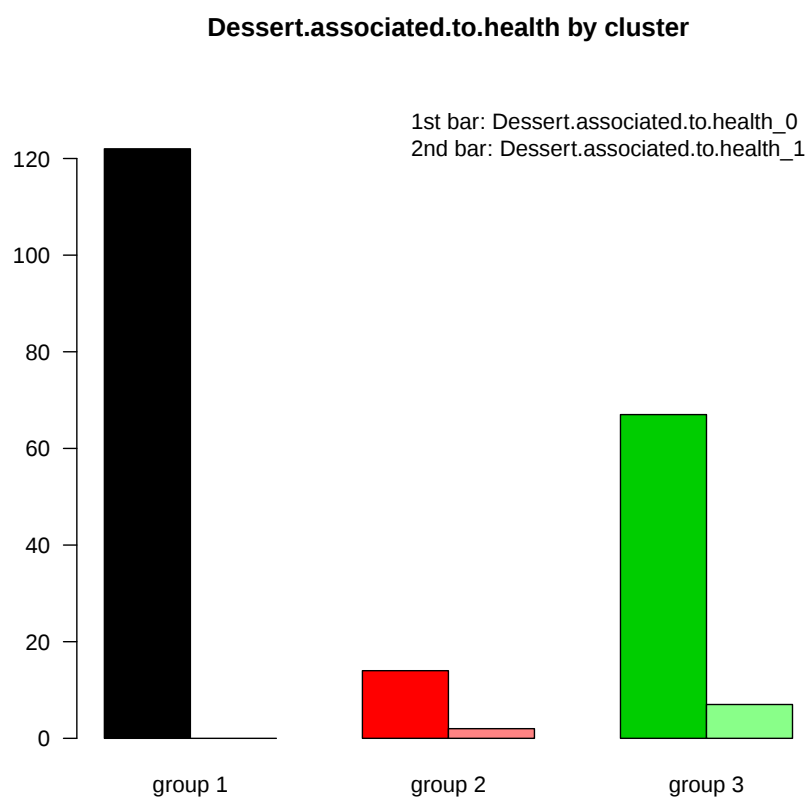


Figure 13: Variable Dessert.associated.to.health

3.2.9 Number of individuals by cluster for the variable Dessert.associated.to.greedy

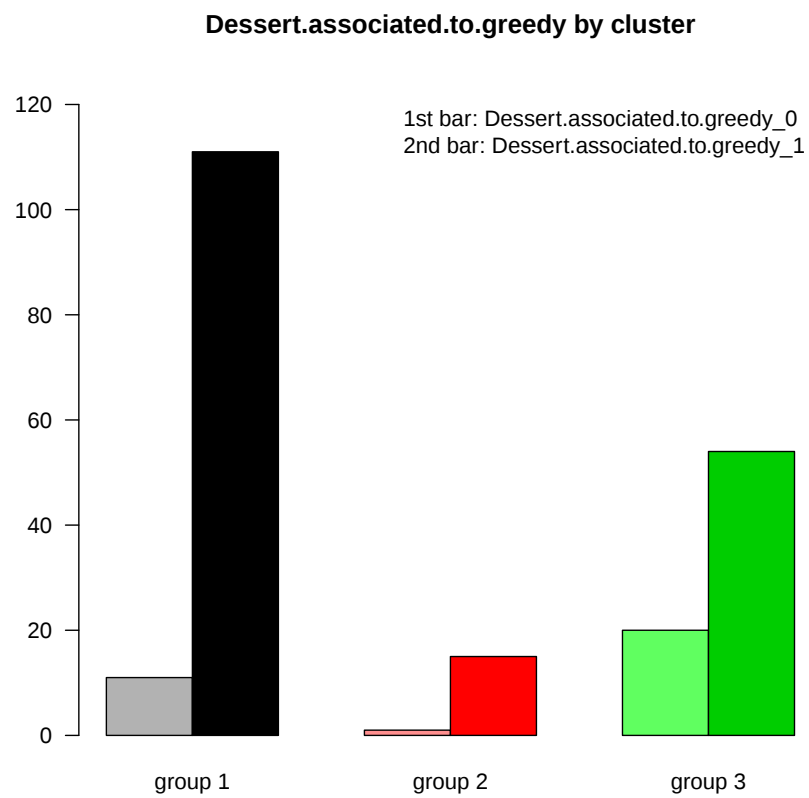


Figure 14: Variable Dessert.associated.to.greedy

3.2.10 Number of individuals by cluster for the variable Frequency.eat.desserts

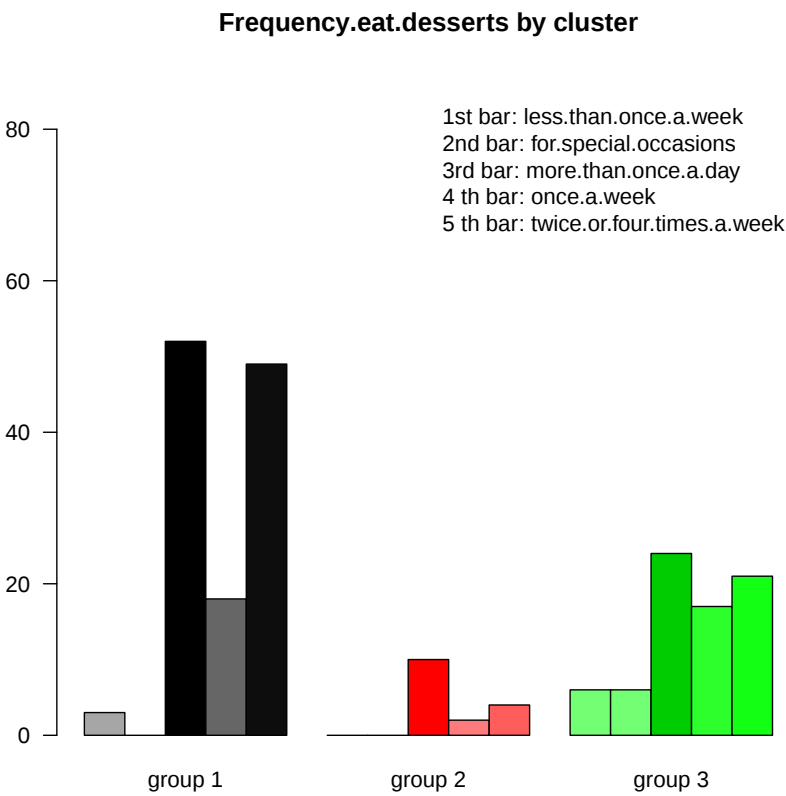


Figure 15: Variable Frequency.eat.desserts

3.3 Automatic description of each cluster

The cluster 1 (122 individuals) includes the individuals possessing the following categories:

- **Age.class=18 25**
68.87 % of the individuals possess this category in the global population versus 95.9 % in the cluster 1 .
Moreover, 80.14 % of the individuals possessing this category belong to the cluster 1 .
- **SPC=Student**
66.51 % of the individuals possess this category in the global population versus 93.44 % in the cluster 1 .
Moreover, 80.85 % of the individuals possessing this category belong to the cluster 1 .
- **Marital.status=Single**
63.68 % of the individuals possess this category in the global population versus 84.43 % in the cluster 1 .
Moreover, 76.3 % of the individuals possessing this category belong to the cluster 1 .
- **Dessert.associated.to.natural=Dessert.associated.to.natural_0**
93.4 % of the individuals possess this category in the global population versus 100 % in the cluster 1 .
Moreover, 61.62 % of the individuals possessing this category belong to the cluster 1 .
- **Dessert.associated.to.health=Dessert.associated.to.health_0**
95.75 % of the individuals possess this category in the global population versus 100 % in the cluster 1 .
Moreover, 60.1 % of the individuals possessing this category belong to the cluster 1 .
- **Dessert.at.canteen=Dessert.at.canteen_1**
34.91 % of the individuals possess this category in the global population versus 43.44 % in the cluster 1 .
Moreover, 71.62 % of the individuals possessing this category belong to the cluster 1 .
- **Dessert.on.the.go=Dessert.on.the.go_1**
10.38 % of the individuals possess this category in the global population versus 15.57 % in the cluster 1 .
Moreover, 86.36 % of the individuals possessing this category belong to the cluster 1 .
- **Dessert.associated.to.greedy=Dessert.associated.to.greedy_1**
84.91 % of the individuals possess this category in the global population versus 90.98 % in the cluster 1 .
Moreover, 61.67 % of the individuals possessing this category belong to the cluster 1 .
- **With.whom=friends**
26.42 % of the individuals possess this category in the global population versus 33.61 % in the cluster 1 .
Moreover, 73.21 % of the individuals possessing this category belong to the cluster 1 .
- **With.whom=alone**
11.32 % of the individuals possess this category in the global population versus 16.39 % in the cluster 1 .
Moreover, 83.33 % of the individuals possessing this category belong to the cluster 1 .

The cluster 2 (16 individuals) includes the individuals possessing the following categories:

- **Budget.familial.dessert=4E or less**
3.3 % of the individuals possess this category in the global population versus 43.75 % in the cluster 2 .
Moreover, 100 % of the individuals possessing this category belong to the cluster 2 .
- **Budget.individual.dessert=7E and more**
2.83 % of the individuals possess this category in the global population versus 37.5 % in the cluster 2 .
Moreover, 100 % of the individuals possessing this category belong to the cluster 2 .
- **Age.class=Less than 12**
1.42 % of the individuals possess this category in the global population versus 18.75 % in the cluster 2 .
Moreover, 100 % of the individuals possessing this category belong to the cluster 2 .
- **Purchase.place=supermarket**
26.89 % of the individuals possess this category in the global population versus 62.5 % in the cluster 2 .
Moreover, 17.54 % of the individuals possessing this category belong to the cluster 2 .
- **SPC=Unemployed**
2.36 % of the individuals possess this category in the global population versus 18.75 % in the cluster 2 .
Moreover, 60 % of the individuals possessing this category belong to the cluster 2 .
- **Age.class=12 18**
4.72 % of the individuals possess this category in the global population versus 25 % in the cluster 2 .
Moreover, 40 % of the individuals possessing this category belong to the cluster 2 .
- **Budget.familial.dessert=15E and more**
11.32 % of the individuals possess this category in the global population versus 37.5 % in the cluster 2 .
Moreover, 25 % of the individuals possessing this category belong to the cluster 2 .
- **Dessert.after.starter.and.meal=Dessert.after.starter.and.meal_3**
16.04 % of the individuals possess this category in the global population versus 43.75 % in the cluster 2 .
Moreover, 20.59 % of the individuals possessing this category belong to the cluster 2 .
- **Budget.individual.dessert=1E or less**
3.77 % of the individuals possess this category in the global population versus 18.75 % in the cluster 2 .
Moreover, 37.5 % of the individuals possessing this category belong to the cluster 2 .

The cluster 3 (74 individuals) includes the individuals possessing the following categories:

- **Age.class=More than 35**
20.28 % of the individuals possess this category in the global population versus 58.11 % in the cluster 3 .
Moreover, 100 % of the individuals possessing this category belong to the cluster 3 .

- **Marital.status=Married**
16.98 % of the individuals possess this category in the global population versus 47.3 % in the cluster 3 .
Moreover, 97.22 % of the individuals possessing this category belong to the cluster 3 .
- **SPC=Executive**
10.38 % of the individuals possess this category in the global population versus 24.32 % in the cluster 3 .
Moreover, 81.82 % of the individuals possessing this category belong to the cluster 3 .
- **Dessert.associated.to.natural=Dessert.associated.to.natural_1**
6.6 % of the individuals possess this category in the global population versus 17.57 % in the cluster 3 .
Moreover, 92.86 % of the individuals possessing this category belong to the cluster 3 .
- **SPC=Employee**
8.49 % of the individuals possess this category in the global population versus 18.92 % in the cluster 3 .
Moreover, 77.78 % of the individuals possessing this category belong to the cluster 3 .
- **SPC=Intermediate profession**
3.77 % of the individuals possess this category in the global population versus 10.81 % in the cluster 3 .
Moreover, 100 % of the individuals possessing this category belong to the cluster 3 .
- **Age.class=26 35**
4.72 % of the individuals possess this category in the global population versus 12.16 % in the cluster 3 .
Moreover, 90 % of the individuals possessing this category belong to the cluster 3 .
- **Dessert.associated.to.greedy=Dessert.associated.to.greedy_0**
15.09 % of the individuals possess this category in the global population versus 27.03 % in the cluster 3 .
Moreover, 62.5 % of the individuals possessing this category belong to the cluster 3 .
- **Dessert.at.canteen=Dessert.at.canteen_0**
65.09 % of the individuals possess this category in the global population versus 79.73 % in the cluster 3 .
Moreover, 42.75 % of the individuals possessing this category belong to the cluster 3 .
- **SPC=Superior intellectual profession**
2.83 % of the individuals possess this category in the global population versus 8.11 % in the cluster 3 .
Moreover, 100 % of the individuals possessing this category belong to the cluster 3 .