

Does environmental impact vary widely within the same food category? A case study on industrial pizzas from the French retail market <https://doi.org/10.1016/j.jclepro.2021.130128>

Appendix A

In total, 80 of 392 pizzas from the French retail market available in the OQALI database (Données Oqali – extraction du 02-07-2015) were selected for this study. The product label on the front of the packaging was used to calculate the recipe of each pizza. From the list of ingredients and the table of the nutritional data (energy, protein, fat, saturated fatty acids, carbohydrates, sugar, and salt), it was possible to estimate the missing proportion of the main ingredients (representing more than 95%, by mass, of the recipe) for each pizza. This was accomplished using the CIQUAL data base (ANSES - Table de composition nutritionnelle des aliments Ciqua) to obtain the nutritional value for each ingredient of the ingredients list and the mass balance of the nutrients was calculated to determine the quantity of each ingredient. The resulting estimated recipes were then used to calculate the ratio between vegetal and animal content of the pizzas (in total mass, protein mass, and kcal) and the ratio between the filling and dough. From the recipe and nutritional data, it was possible to calculate the nutritional indices, such as the French nutritional indicator “NutriScore”, which is calculated using the FSA (FSA-NPS DI: British Food Standards Agency-Nutrient Profiling System Dietary Index) (Julia et al., 2014). This indicator takes into account nutrients to promote the consumption of protein, fiber, fruits, vegetables, and legumes and to avoid the overconsumption of calories, saturated fatty acids, sugar, and sodium.

Then, a number of variables (composition (different ratios), nutritional content, nutritional index, and economic value) were used to multi-dimensionally characterize the pizzas of the French retail market. Hierarchical cluster analysis was used to categorize the 392 pizzas into 16 groups according to their differences and similarities for the selected variables (composition, nutritional content, nutritional index, and economic value) using XLStat software. Hierarchical cluster analysis is a statistical method that allows the grouping of several individuals of the same sample according to different characteristics chosen by the user.

Within the 16 clusters, we applied various rules to choose five products per cluster to have the eight families represented in proportions close to the reality of the market, as well as that of both fresh and frozen pizzas, and pizzas still on the market that could be bought easily (a sensory study was conducted in parallel). This selection resulted in our current sample of 80 pizzas (Figure A.1).

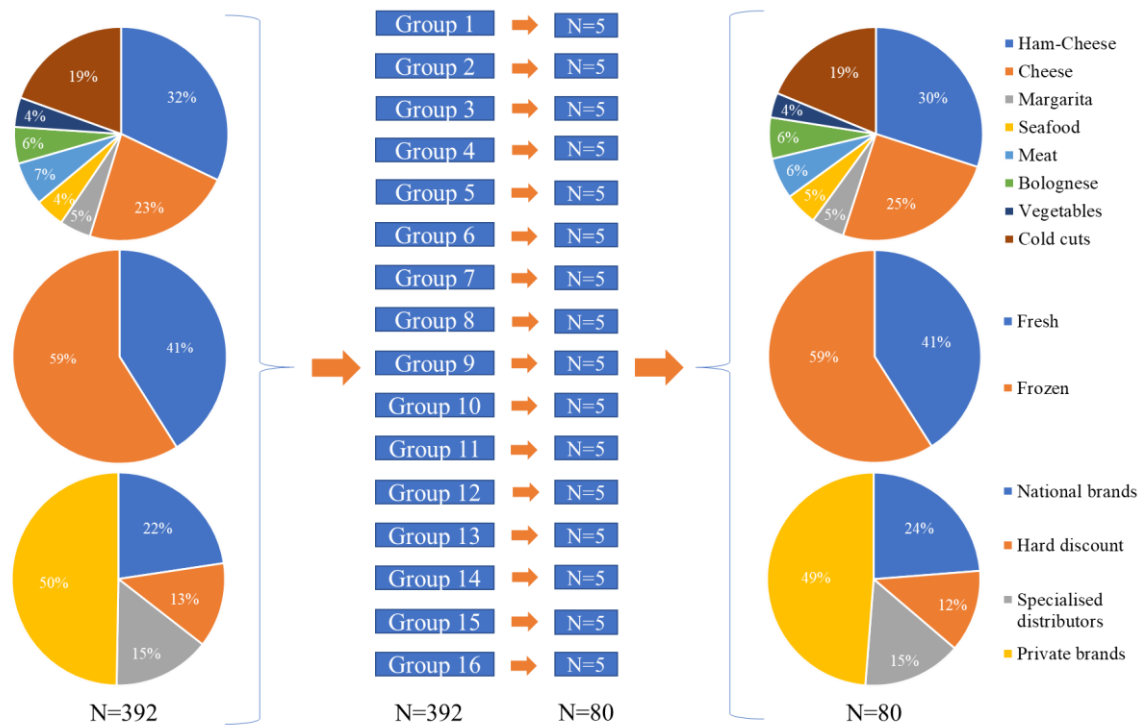


Figure A.1. Selection of the sample of 80 pizzas from the 392 available on the French retail market

The selected sample ($n = 80$) is representative of the French retail market ($n = 392$) in terms of families, sectors, and distributors (Figure A.1).

Reference

Julia, C., Kesse-Guyot, E., Touvier, M., Méjean, C., Fezeu, L., Hercberg, S., 2014. Application of the British Food Standards Agency nutrient profiling system in a French food composition database. *Br. J. Nutr.* 112, 1699–1705. <https://doi.org/10.1017/S0007114514002761>