

NOURISHING SCHOOL: A STATISTICAL PERSPECTIVE

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Research project

On 4 August 2020, the new minimum environmental criteria came into force for the collective catering service and the supply of foodstuffs.

Importance is attributed by the legislator to children who attend the school canteen, for which very challenging minimum standards are envisaged.

Covid 19 pandemic requested the adoption of preventive measures still in force.

- Do these interventions affect children's enjoyment of meals and their eating behaviours?
- How do food changes at school integrate with the food context in the family?
- What are the choices that a catering company should place at the centre of its strategy to be sustainable and at the same time respectful of the freedom of choice of citizens?
- What challenges face local decision-makers and their administrations, and what solutions have they prepared?

Our research project starts from the survey on the emotional response of children to the new consumption situation induced by the Covid-19 emergency, to arrive at considerations that translate in:

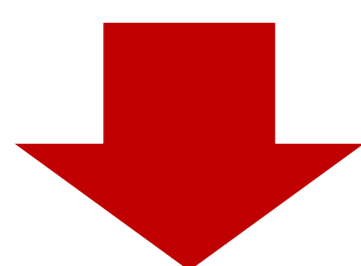
- guidelines for local administrations involved in the management of the canteen service
- business strategy of the managers;
- design of catering systems;
- optimization of the supply chain;
- family awareness of the food needs of minors;
- proposal to the legislator.



Statistical Analysis.

□ **Projection pursuit** is a multivariate statistical technique aimed at finding interesting low-dimensional data projections. It addresses three major challenges of multivariate analysis: the curse of dimensionality, the presence of irrelevant features and the limitations of visual perception, Sun, J. (2006).

□ **Invariant coordinate selection (ICS)** is a multivariate statistical method aimed at detecting data structures by means of the simultaneous diagonalization of two scatter matrices. Statistical applications of ICS include cluster analysis, independent component analysis, outlier detection and regression analysis, D. Tyler, F. Critchley, L. Dümbgen, H. Oja (2009).



Data

Data are collected from questionnaires administered to children, parents and teachers involved in the project: 8 schools from all over Italy, for which two surveys are planned six months apart, involving 500-1000 children, as many parents, and 80-100 teachers.

Three types of questionnaires have already been administered:

- Questionnaires administered to children of the first two years of the primary school.
- Questionnaires administered to children of the last three years of the primary school.
- Questionnaires administered to parents.

Each questionnaire has quantitative and categorical variables, ordinal and dichotomic ones.



Expected results.

- Periodic reports throughout the research for the benefit of funders and technical partners (managers, municipalities, schools).
- Report of the data relating to each school, not intended for publication but reserved for the local administrative entity, the school involved and the canteen manager.
- Guidelines published signed by the research group but published by the future supply chain, intended to be disseminated to local administrations that oversee school meals.



References

- Sun, J. (2006). Projection Pursuit. Encyclopedia of Statistical Sciences. 10.
D. Tyler, F. Critchley, L. Dümbgen, H. Oja, Invariant co-ordinate selection (with discussion), J. R. Statist. Soc. B 71 (2009) 549-592.