

Purpose of Research

In the observation of social or natural phenomena, it is not uncommon for the data obtained to be categorical measured on nominal or ordinal scales. For example, survey responses such as “yes/no” or “satisfied/neutral/dissatisfied,” and medical records indicating the “presence or absence of treatment” and “presence or absence of recovery” often involve the need to clarify relationships between two or more categorical variables. Such data are typically organized using contingency tables, and a statistical framework has been developed to test and estimate inter-variable relationships—such as independence, association, and symmetry.

Summary of Research

Real-world data often present the following challenges: the presence of missing data, instability in estimation when cell counts are small, and the extended use of contingency tables under multivariate and high-dimensional settings.

To address these issues, our laboratory works on improving and evaluating statistical models for symmetry testing and estimation of categorical data. Through this, we aim to advance the theoretical framework of contingency table analysis while also exploring its applicability to real-world data in fields such as medicine, education, and social surveys.



Comparison with Conventional or Competitive Technologies

We work together to explore effective ways to utilize data based on the needs of each company, aiming to apply and develop appropriate statistical analysis methods.

Expected Applications

We support hypothesis testing by working together from the stage of data collection to address the challenges faced by companies.

Challenges in Implementation

The development of methodologies may take time and does not necessarily guarantee success.

What We Expect from Companies

We may be able to provide support when statistical methods are required to address a given challenge.

Points

- Analysis of Categorical Data
- Analysis of Contingency Tables
- Development of Statistical Methodologies

Future Developments

2022.4 Development of various methods for contingency table analysis

2023.4 Started research on the analysis of missing data

2023.9 Started research on data visualization

2025.8 Started research on measuring educational effectiveness

- Related Systems : None
- Awards : None
- Intellectual Property: None
- Prototypes : None
- Samples : None