

Dr. Ioulia Papageorgiou

Current Position Associate Professor in Statistics, Athens University of Economics and Business, Department of Statistics.

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Qualifications

B.Sc. in Mathematics (2.1) from University of Ioannina (1992), Department of Mathematics with major in Statistics.

Ph.D. in Statistics, University of Ioannina, Department of Mathematics (1998). Title: Optimal sampling schemes for Autocorrelated finite Populations.

Professional Experience

- 2017-Present Associate Professor in Statistics, Athens University of Economics and Business, Department of Statistics.
- 2007-2017 Assistant Professor in Statistics, Athens University of Economics and Business, Department of Statistics.
- 2002-2007 Lecturer in Statistics, Athens University of Economics and Business, Department of Statistics, Athens, Greece.
- 2001-2002 Post-doctoral research fellow, Athens University of Economics and Business, Athens, Greece.
- 1998-2001 Post-doctoral research fellow, Nottingham Trent University, Department of Mathematics, Statistics and OR, Nottingham, UK.
- Subject:** Development of new Statistical techniques and application to data coming from Archaeology for studying provenance.

Research Interests

Sampling Theory, Model Based Clustering, Mixture Models, Factor Analysis, Multivariate statistical techniques with applications to Archaeometry.

Teaching

Modules taught in undergraduate and graduate level:

Probability, Statistics I, Statistics II, Sampling Techniques, Sampling Theory, Theoretical Statistics, Distribution Theory, Multivariate Statistical Analysis, Multivariate Statistical Techniques. Statistical Learning.

Publications in Books and International Journals

1. **Papageorgiou, Ioulia** & Karakostas, K. X. (1997). 'Exact Optimum Sampling Designs for Autocorrelated Finite Populations: The Moving Average Case'. *Internat. Journal of Mathem. and Statist. Sciences.*, **6**, 161-178.
2. **Papageorgiou, Ioulia** & Karakostas, K. X. (1998). 'On Optimal Sampling Designs for Autocorrelated Finite Populations'. *Biometrika*, **85**, 2, pp. 482-486.
3. Paschidis C. A., Stephaniotou N., **Papageorgiou, J.**, Skourtis P., Psilas K. (1998). 'Ocular surface and environmental changes'. *Acta Ophthalmologica*, **76**, 74-77.
4. **Papageorgiou, Ioulia** & Karakostas, K. X. (2001) Model-complete strategies for sampling from convex autocorrelated finite populations. *Journal of Statistical Planning and Inference*, **99**, 71-89.
5. **Papageorgiou, Ioulia**, Baxter M.J. & Cau, M. A. (2001) Model-based clustering techniques in archaeological ceramic provenance studies. *Acrhaeometry*, **43**, 4, 571-588.
6. Beardah C.C., Baxter M.J., **Papageorgiou I.** and Cau. M.A. (2002) Approaches to petrographic data analysis using S-Plus. In Burenhult, G. (ed.) **BAR** International Series 1016, Oxford: Archaeopress, 441-448.
7. **Papageorgiou, I.** and Baxter M.J. (2002) Model-based clustering methods in archaeological ceramic provenance studies. *Modern Trends in Scientific Studies on Ancient Ceramics, BAR (British Archaeological Reports), International Series*, 51-58.
8. Discussion on the paper by **Brooks, Giudici and Roberts**. (2003) *The Royal Statistical Society Series B*, **65**, 1, 39-55.
9. Cau M.A., **Papageorgiou I.**, Day P.M., Baxter M.J., Iliopoulos I, & Montana G. (2004). Exploring Automatic Grouping Procedures in Ceramic Petrology. *Journal of Archaeological Science*, **31**, 1325-1338.
10. Irini Moustaki & **Ioulia Papageorgiou**. (2005) Latent class models for mixed variables with applications in Archaeometry *Computational Statistics and Data Analysis*, **48**, 3, 659-675.
11. Dellaportas, P. & **Papageorgiou, Ioulia** (2006) Multivariate mixtures of Normals with unknown number of components. *Statistics and Computing*, **16**, 1, 57-68.
12. **Ioulia Papageorgiou** & Ioannis Liritzis.(2007) Multivariate Mixture of Normals with unknown number of components. An application to cluster Neolithic Ceramics from Aegean and Asia Minor. *Archaeometry*, 49, **4**, 795-813.

13. Baxter, M.J., Beardah, C.C., **Papageorgiou, I.**, Cau, M.A, Day, P.M. (2008) On statistical approaches the study of ceramic artefacts using geochemical and mineralogical data. *Archaeometry*, **50**, 1, 142-157.
14. **Ioulia Papageorgiou** (2012) Applications of computational and model-based Statistical methodologies in Archaeology. A book chapter to appear in book with title: *Pattern Recognition and Signal Processing in Archaeometry: Mathematical and Computational Solutions for Archaeology*. A book edited by Constantin Papaodysseus. Published by IGI Global.
15. **Ioulia Papageorgiou** (2016). Sampling from Correlated Populations. Optimal Strategies and comparison Study. *Sankhya B*, **78**, 119-151.
16. **Ioulia Papageorgiou** (2016). Optimal estimation and sampling allocation in survey sampling under a general correlated superpopulation model. *Journal of Modern Applied Statistical Methods*, **15**, 2, 293-321.
17. **Ioulia Papageorgiou**. (2016) Sampling Theory. Hellenic Academic EBooks. ISBN: 978-960-603-275-2.
18. **Ioulia Papageorgiou**. (2018) Cluster Analysis. *The SAS Encyclopedia of Archaeological Sciences*, John Wiley & Sons.
<https://doi.org/10.1002/9781119188230.saseas0099>
19. Liritzis, I., Zacharias, N., **Papageorgiou, I.**, Tsaroucha, A., Palamara, E. (2018) Characterisation and Analyses of Museum Objects using a pXRF: an Application from the Delphi Museum, Greece. *Studia Antiqua et Archaeologica* 24 (1), 31-50
20. **Papageorgiou, Ioulia**, Moustaki, Irini. (2019) Sampling of pairs in pairwise likelihood estimation for latent variable models with categorical observed variables. *Statistics and Computing* **29**, 351–365. doi: 10.1007/s11222-018-9812-8.
21. **Papageorgiou, Ioulia** (2020) Ceramic investigation. How to perform statistical analyses. *Archaeological and Anthropological Sciences*, **12** (9), 1-19.
22. Liritzis .I, Xanthopoulou, V., Palamara, E., **Papageorgiou, I.**, Iliopoulos, I., Zacharias, N., Vafiadou, A., Karydas, A.G. & Sideris (2020) A. Characterization and provenance of ceramic artifacts and local clays from late mycenaean kastroli (greece) by means of p-xrf screening and statistical analysis. *Archaeological and Anthropological Sciences*.
<https://doi.org/10.1016/j.culher.2020.06.004>
23. Ion Andronache, **Ioulia Papageorgiou**, Athena Alexopoulou, Dimitrios Makris, Maria Bratitsi, Helmut Ahammer, Marko Radulovic, Ioannis Liritzis (2024) [Can Complexity Measures with Hierarchical Cluster Analysis identify overpainted artwork?](#) *Scientific Culture*, **10** (1).

Publications in International Conference proceedings

Baxter M.J., **Papageorgiou, Ioulia**, Cau M.A., Day P.M. and Jackson C.M. (1999). Integrating geochemical and mineralogical data in studies of ceramic provenance: some statistical issues. Computer Application in Archaeology Conference 99, Dublin, April 1999. Oxford: **BAR**.

Baxter M.J. and **Papageorgiou, I.** (2002) Statistical modeling of artefact compositional data: some considerations. *Modern Trends in Scientific Studies on Ancient Ceramics*, **BAR** (*British Archaeological Reports*), *International Series*.

Beardah, C.C., Baxter, M.J., **Papageorgiou, I.** and Cau, M.A. (2003) "Mixed-mode" approaches to the grouping of ceramic artefacts using S-Plus. In Doerr, M. and Sarris, A. (eds.), *The Digital Heritage of Archaeology: CAA2002*, Hellenic Ministry of Culture, 261-265.

Publications in Greek conference proceedings

Papageorgiou, Ioulia & Karakostas, K. X. Optimal Sampling Schemes for Finite Populations with Convex Autocorrelation function'. Proceedings of the 8th Conference of the Greek Statistical Institute, 9-11 June, 1995, Delfoi, Greece.

Papageorgiou, Ioulia & Karakostas, K. X. Exact optimum sampling designs for finite autocorrelated populations. Proceedings of the 10th Conference of the Greek Statistical Institute, Xanthi, Greece, April 18-20, 1996.

Contribution to Conferences with paper presentation

Papageorgiou I & Karakostas K. X. Optimal Sampling Schemes for Finite Populations with Convex Autocorrelation function'. **8th 10th Conference of the Greek Statistical Institute, 9-11 June, 1995, Delfoi, Greece.**

Papageorgiou I & Karakostas KX. Exact optimum sampling designs for finite autocorrelated populations. **10th Conference of the Greek Statistical Institute, Xanthi, Greece, April 18-20, 1996.**

Papageorgiou I & Karakostas KX. On optimal sampling designs for autocorrelated finite populations. **2nd World Congress of IFNA (Institute of Federation of Nonlinear Analysts), Athens, Greece, July 10-17, 1996.**

Papageorgiou I & Karakostas KX. Systematic Sampling for the finite Autocorrelated Populations. **4th World Congress of the Bernoulli Society, Vienna, Austria, August 26-31, 1996.**

Baxter MJ, **Papageorgiou I**, Cau MA, Day PM, Jackson CM. Integrating geochemical and mineralogical data in studies of ceramic provenance: some statistical issues. Poster presentation. Computer Applications and Quantitative Methods in Archaeology. **CAA International Conference 1999. 14th - 18th April 1999, Dublin, Ireland. (Poster).**

Papageorgiou I, Baxter MJ. Model-Based clustering methods in Archaeological ceramic provenance studies. **EMAC'99, 18 - 20 October 1999, Athens.**

Baxter MJ, **Papageorgiou I.** Statistical modelling of artefact compositional data: some considerations. **EMAC'99, 18 - 20 October 1999, Athens.**

Papageorgiou Ioulia and Baxter, M. J. Multivariate Statistical Techniques on the Analysis of compositional data from Archaeometry. Third World Congress of Nonlinear Analysts, **WCNA-2000. Catania, Sicily, July 2000, Invited speaker.**

C.C. Beardah, M.J. Baxter, **I. Papageorgiou** and M.A. Cau. Approaches to petrographic data analysis using S-Plus. **CAA International Conference 2001. 25th - 29th April 2001, Visby, Gotland, Sweden.**

Beardah, C.C., Baxter, M.J., **Papageorgiou, I.**, Cau, M.A., Day, P.M., and Rutter, J.B. ""Mixed-mode" approaches to the grouping of ceramic artefacts using S-Plus." **Computer Applications and Quantitative Methods in Archaeology 2002**, Heraklion, Crete, Greece (to be submitted for publication in the proceedings of the same).

Baxter, M.J., **Papageorgiou. I.** and Cau, M.A. "Statistical analysis of geochemical and mineralogical data in ceramic provenancing." 33rd International Symposium on Archaeometry 2002, Amsterdam, Holland.

Ιουλία Παπαγεωργίου & Κ. Χ. Καρακώστας. "Model –Complete Strategies For Sampling From Convex Autocorrelated Finite Populations". 15^ο Συνέδριο Ελληνικού Στατιστικού Ινστιτούτου (ΕΣΙ), Ιωάννινα 2002.

Papageorgiou Ioulia and M.J. Baxter, "Multivariate Statistical Techniques for Integrating geochemical and mineralogical data in studies of ceramic provenance". 15^ο Συνέδριο Ελληνικού Στατιστικού Ινστιτούτου (ΕΣΙ), Ιωάννινα 2002.

Μουστάκη, Ειρήνη & **Παπαγεωργίου Ιουλία.** "Latent class model for mixed variables with applications in Archaeometry". 16^ο Πανελλήνιο Συνέδριο **Ελληνικού Στατιστικού Ινστιτούτου (ΕΣΙ)**, Καβάλα, **30 Απριλίου-3 Μαΐου, 2003.**

Moustaki, Irini and Papageorgiou, Ioulia. Latent Class Models for mixed variables with Applications in Archaeometry. Computational Management Science, **2-5 April 2004, Neuchâtel, Switzerland.**

Dellaportas, P. and Papageorgiou, Ioulia. Multivariate Mixture of Normals with unknown number of components, **2-5 April 2004, Neuchâtel, Switzerland.**

Dellaportas, P. and Papageorgiou Ioulia. Multivariate Mixture of Normals with unknown number of components. 17^ο Πανελλήνιο Συνέδριο **Ελληνικού Στατιστικού Ινστιτούτου (ΕΣΙ)**, Λευκάδα, **14-18 Απριλίου 2004.**

Papageorgiou, I. and Liritzis, I. Multivariate Mixture of Normals with unknown number of components. An application to cluster Neolithic Ceramics from Aegean and Asia Minor. 8th WSEAS International Conference on AUTOMATIC CONTROL, MODELLING & SIMULATION (ACMOS '06), Prague, 12-14 March, 2006 (invited speaker).

Ioulia Papageorgiou*, Ioannis Liritzis & M. A. Cau. Multivariate mixture of normals for clustering data coming from Archaeology International Conference on Multivariate Statistical Modeling and High Dimensional Data Mining (**HDM-2008**) 19-23 June 2008, Kayseri, Turkey.

One-Day Conference on Data Mining, 21 April 2009, Imperial College, Royal Statistical Society, London, UK.

Ioulia Papageorgiou, A comparison study of sampling strategies in correlated populations. The Pyrenees International Workshop on Statistics, Probability and Operation Research, SPO 2009 Jaca, September 15-18th 2009.

Ioulia Papageorgiou. Optimal sampling strategies for populations with a general type of correlation. 3rd International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM'10) 10-12 December 2010, Senate House, University of London, UK.

Ioulia Papageorgiou. Approximate method to Optimal sampling designs for populations with a general type of correlation, Applied Stochastic Models and Data Analysis (ASMDA2011), The 14th Conference of the ASMDA International Society, Rome, Rome, Italy, 7 - 10 June 2011.

Ioulia Papageorgiou. An optimal design to improve control charts for correlated observations. 4th International Conference of the ERCIM WG on COMPUTING & STATISTICS (ERCIM'10) 17-19 December 2011, Senate House, University of London, UK.

Ioulia Papageorgiou & Aglaia Kalamatianou. Job Satisfaction of European graduates. An analysis and multiple group comparison. 3rd Stochastic Modeling Techniques and Data Analysis International Conference (SMTDA). 11-14 June 2014, Lisbon, Portugal.

Ioulia Papageorgiou and Irini Moustaki. Pairwise likelihood estimation based on a sample of pairs. Conference of European Statistics Stakeholders, Sapienza University, Dpt. of Statistical Sciences, November 24-25, 2014, Rome, Italy.

Ioulia Papageorgiou and Irini Moustaki. Pairwise likelihood estimation based on a sample of pairs. 4th SMTDA2016, 1-4 June, Valletta, Malta. University of Malta.

Ioulia Papageorgiou and Irini Moustaki. Sampling of pairs in composite likelihood estimation for latent variable models for categorical responses. 10th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2017), 16-18 December 2017, London, UK.

Ioulia Papageorgiou, Takis Besbeas and Irini Moustaki (2018) A fast automatically calibrated resampling multinomial model fit. 11th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2018), 14-16 December 2018, University of Pisa, Italy.

Ioulia Papageorgiou and Irini Moustaki (2019) Pairwise likelihood estimation for latent variable models based on a sample of pairs. 32o Greek conference of ESI (Greek Statistical Institute), Ioannina, 30 May – 1 June 2019.

Ioulia Papageorgiou, Takis Besbeas and Irini Moustaki (2018) A fast automatically calibrated resampling multinomial model fit. 12th International Conference of the ERCIM WG on

Computational and Methodological Statistics (CMStatistics 2019), 13-17 December 2019, University of London, UK.

Other Publications

Technical Reports

Papageorgiou, I., Baxter M. J. (2000). Model-based Clustering Methods in Archaeological Ceramic Provenance Studies. Department of Mathematics Statistics and O.R., Nottingham Trent University. Research Report 14/00

Papageorgiou, I., Baxter M. J. and Cau M.A (2000). Model-based Cluster Analysis of Artefact compositional data. Department of Mathematics Statistics and O.R., Nottingham Trent University, Research Report 15/00. (Δημοσιεύτηκε αργότερα σε περιοδικό

Papageorgiou, Ioulia and K. X. Karakostas (1995). Optimum Sampling Designs for Finite Population with Convex Autocorrelation Function. Department of Mathematics, University of Ioannina, Technical Report 256.

Papageorgiou, Ioulia and K. X. Karakostas (1997). Exact Optimum Sampling Designs for Autocorrelated Finite Populations: The Moving Average Case. Department of Mathematics, University of Ioannina, Technical Report 266.

Research grants

- 2015 – 2016 Original Research Funding Program, Athens University of Economics and Business, Greece (€3000).
- 2017 – 2018 Original Research Funding Program, Athens University of Economics and Business, Greece (€3500).
- 2019 – 2020 Original Research Funding Program, Athens University of Economics and Business, Greece (€3500).

Citations

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