Report from the 34th Scientific Conference of the Classification and Data Analysis Section of the Polish Statistical Association

Andrzej Dudek,[a] Aleksander R. Mercik[b]

The 34th Scientific Conference of the Classification and Data Analysis Section of the Polish Statistical Association took place on 23rd–24th September 2025, in Wrocław, Poland. It was organized by the Classification and Data Analysis Section (Sekcja Klasyfikacji i Analizy Danych – SKAD) of the Polish Statistical Association (Polskie Towarzystwo Statystyczne – PTS) and the Wrocław University of Economics and Business (WUEB). Basic information about the conference is available at https://www.skad.edu.pl/skad2025/.

Krzysztof Jajuga, PhD, DSc, ProfTit (WUEB), chaired the organising committee, which included Andrzej Dudek, PhD, DSc, Assoc. Prof. at WUEB, Katarzyna Kuziak, PhD, DSc, Assoc. Prof. at WUEB, Aleksander Mercik, PhD, DSc, Assoc. Prof. at WUEB, Scientific Secretary of the Conference, Marcin Pełka PhD, Assoc. Prof. at WUEB and Marek Walesiak, PhD, DSc, ProfTit.

The aim of the SKAD conference was to provide a platform for the exchange of ideas related to the theoretical and applied aspects of classification and data analysis, to present the latest research in this area and to indicate its possible

[a] Wroclaw University of Economics and Business, Faculty of Economics and Finance, Department of Financial Investments and Risk Management, ul. Komandorska 118/120, 53-345 Wrocław, Poland, e-mail: andrzej.dudek@ue.wroc.pl, ORCID: https://orcid.org/0000-0002-4943-8703.

[b] Wroclaw University of Economics and Business, Faculty of Economics and Finance, Department of Financial Investments and Risk Management, ul. Komandorska 118/120, 53-345 Wrocław, Poland, e-mail: aleksander.mercik@ue.wroc.pl, ORCID: https://orcid.org/0000-0003-1076-6619.

development directions. The following topics were addressed during the conference:

- theoretical aspects of classification and data analysis: taxonomy, graphical methods, discriminant analysis, linear ordering methods, multivariate statistical analysis, methods of analyzing continuous and discrete variables, symbolic data analysis, machine learning methods, and artificial intelligence;
- application: financial data analysis, marketing data analysis, spatial data analysis, computer application of statistical methods, and other areas of the application of data analysis such as medicine, psychology and archaeology.

The conference featured 51 participants, including faculty members and doctoral students from the following universities and institutions: Wroclaw University of Economics and Business, Leiden University, Statistics Poland, University of Rzeszów, University of Lodz, Institute of Environmental Protection – National Research Institute, University of Szczecin, Krakow University of Economics, Jan Kochanowski University of Kielce, Nicolaus Copernicus University in Toruń, University of Warsaw, Mazovian Academy in Płock, Poznań University of Economics and Business, Statistical Office in Poznań, University of Economics in Katowice, Warsaw University of Life Sciences, University of Gdańsk, Federal University of Bahia, Adam Mickiewicz University, Poznań, Maria Curie-Skłodowska University in Lublin, StatSoft Poland, and EMPIRICA Ltd.

A total of 32 presentations introducing research results related to the theory and application of classification and data analysis were made during five plenary sessions, six parallel sessions, and a poster session. The sessions were chaired by Józef Pociecha, Eugeniusz Gatnar, Paweł Lula, Krzysztof Najman, Marek Walesiak, Andrzej Dudek, Marcin Salamaga, Grażyna Dehnel, Kamila Migdał-Najman, Katarzyna Kuziak and Joanna Landmesser-Rusek.

Below is a list of all papers presented during the conference:

- Mark de Rooij, *Reduced Rank Regression for Mixed Predictor and Response Variables*;
- Marek Cierpiał-Wolan, *Statistics in a Hyper-Turbulent Era*;
- Józef Pociecha, Marek Walesiak, Krzysztof Jajuga, *The Section of Classification and Data Analysis of the Polish Statistical Association – a bit of history*;
- Andrzej Dudek, *Data Preprocessing Step in Forecasting with Deep Learning Models*;
- Paweł Rokita, Radosław Pietrzyk, Piotr Grzybowski, *Toxic Order Flow, VPIN Spikes, and Price Changes: Implications for Market Makers in Unregulated Crypto-Token Market*;
- Beata Bieszk-Stolorz, *Survival Time Entropy in Assessing the Chances of Taking Up Employment*;
- Krzysztof Dmytrów, *Multidimensional Evaluation of Linear Ordering Methods in Location Selection During Order Picking*;
- Joanna Michalak, Małgorzata Szczepaniak, *Profiling Attitudes Toward Income Inequality in Poland Using Cluster Analysis*;
- Volodymyr Melnykov, *Conditional Mixture Modelling with Applications;*
- Paweł Lula, *Methods for Classifying Text Documents*;
- Krzysztof Najman, Kamila Migdał-Najman, *Explainable Artificial Intelligence – A Step Toward Increasing Trust in AI Models*;
- Joanna Trzęsiok, *On Discrimination Without Bias*;
- Katarzyna Raca, Alisson Soares, *Discussions Around the "Great Reset" Theory on Reddit: Content and Dynamics Analysis*;
- Janusz Wątroba, *Accounting for Additional Sources of Variability When Assessing Statistical Significance of Effects*;

- Marta Dziechciarz, Marcin Pełka, *Linear Ordering Based on Symbolic Histogram Data*;
- Monika Święciochowska, Łukasz Smaga, *Random Projections Method in Multifactor Analysis of Variance for Functional Data*;
- Joanna Landmesser-Rusek, *GAT Neural Networks in Exchange-Rate Modelling*;
- Marcin Salamaga, *Examining the Impact of Firms' Internationalization on Their Digital Innovativeness Using Structural Equation Modelling*;
- Dorota Rozmus, *Impact of Current and Expected Inflation on Assets of Public-Sector Manufacturing Enterprises*;
- Tomasz Klimanek, Sylwia Filas-Przybył, *Assessing the Impact of Changes in Temporal Accessibility on Permanent-Residence Migration*;
- Kamil Zientarski, *On the Correctness of Selecting and Weighting Diagnostic Variables in Taxonomic Procedures*;
- Marcin Pełka, Aneta Rybicka, *Studying Beer Consumer Preferences Using Latent Profile Analysis*;
- Aleksander Mercik, Krzysztof Piontek, *Volatility Spillovers Between Stock Exchanges in Digital Asset Markets*;
- Marek Walesiak, Grażyna Dehnel, *Achieving SDG 4 in EU countries in relation to the target year 2030: A multivariate indicator analysis using a hybrid approach*;
- Katarzyna Kopczewska, *Spatial Association Rules for Uncovering the Urbanization-Greening Relationship: Land-Use Changes Under Population Change in Europe (2006–2018)*;
- Jacek Batóg, Barbara Batóg, *Multidimensional Analysis of Public Debt of the World's Largest Economies*.

During the poster session, the following papers were presented:

- Andrzej Geise, *Digitalization and Innovation Impact on Export of High-Tech Products in European Countries – A Panel Data Approach*;
- Dominik Krężołek, *Nonparametric Risk Classification Methods for Selected Companies Listed on the Warsaw Stock Exchange*;
- Norbert Jaworski, *A Novel Density-Based Metric for Measuring Spatial Competition in Urban Agglomerations*;
- Michał Boda, Marta Karaś, Michał Stachura, *Beyond Traditional Risk Models: A Robust Interaction-Based Framework for Systemic Risk Assessment*;
- Elżbieta Antczak, Agnieszka Sobol, *Energy Poverty in Poland – Assessment of the Situation and Spatial Trends Using a Composite Development Measure*;
- Paweł Kaczmarczyk, *VAR Models for Approximating and Forecasting the Telecommunication Market: Empirical Results on Effectiveness*.

On the first day of the conference, the members of SKAD held their annual meeting. Prof. Andrzej Dudek, the president of SKAD, chaired the meeting which included the following agenda items:

1. Report on the activities of SKAD PTS;
2. Information on the planned national and international conferences;
3. Organization of the SKAD PTS conference in 2026 and 2027;
4. Election of the SKAD PTS Representative to the IFCS Council for the 2026–2029 term;
5. Miscellaneous matters.

Opening the session, the Chair welcomed the participants and confirmed the agenda, emphasizing the importance of continued collaboration within the scientific community and the active role of SKAD members in national and international initiatives.

The first item on the agenda was a comprehensive report on the activities of SKAD. The report summarized the developments in June 2024–September 2025. It included membership statistics, administrative matters related to GDPR declarations, maintenance of communication channels, and the availability of information resources for the members. The Chair emphasized the ongoing engagement and thanked the members for their support and involvement in the SKAD initiatives.

According to the report, SKAD currently has 231 members. Any bylaws and membership applications are available on the SKAD website. Then, a moment of silence was observed in memory of SKAD members, Alina Karska, PhD, and Cyprian Kozyra, PhD, who have recently passed away.

The report concerning the SKAD conference (which was held in Kraków on 5th–6th June 2024) could be found in issue 2/2025 of the *Przegląd Statystyczny. Statistical Review* journal (Dudek, A., Lula, P., & Pawełek, B. (2025). Report from the 33rd Scientific Conference of the Classification and Data Analysis Section of the Polish Statistical Association. *Przegląd Statystyczny. Statistical Review*, *71*(2), 39–42. https://doi.org/10.59139/ps.2024.02.3.).

The growing SKAD members' international presence was also emphasized, evidenced by their active participation in major global conferences, strengthening the visibility of the Polish research in the area of classification and data analysis, and the related fields.

The second item on the agenda concerned the planned national and international conferences. Information on important upcoming scientific meetings in Poland was presented, which included the Multivariate Statistical Analysis 2025 (4th–6th November 2025) and the Aleksander Zeliaś International Conference (11th–14th May 2026), as well as other international events: the IFCS 2026 (15th–19th July 2026), ECDA 2026 (9th–11th

September 2026), the German-Polish Seminar on Data Analysis (9th–11th September 2026), and CLADAG 2027. The SKAD members were encouraged to actively participate in these events.

The third item on the agenda related to the organization of future SKAD conferences. The members were informed that the negotiations concerning the SKAD 2026 conference were underway, with mid-September 2026 as the most likely date for the event to take place. Preliminary considerations for the organization of the SKAD 2027 meeting were also briefly mentioned, with details to be determined in due course.

The election of the SKAD representative to the IFCS Council for the 2026–2029 term was the fourth item on the agenda. A scrutinizing committee composed of Prof. Eugeniusz Gatnar and Prof. Marcin Pełka was appointed. Voting was carried out among the eligible participants, ensuring a transparent and orderly procedure, consistent with the SKAD rules.

The results of the election were subsequently announced. A total of 18 votes were cast, all valid. The candidate, Prof. Andrzej Dudek, received 17 votes in favour, 1 abstention, and no votes against, thus becoming elected as the SKAD representative to the IFCS Council for the 2026–2029 term. The Chair thanked the members for their trust and expressed readiness to continue supporting international collaboration and the strategic presence of SKAD within the IFCS structures.

In the final part of the meeting, participants were invited to submit additional remarks and proposals. Appreciation was expressed for the organizational efforts related to the conference and the functioning of the section. The Chair concluded the meeting by thanking all the attendees for their active participation and constructive contributions, reaffirming the shared commitment to advancing research in classification and data analysis. Prof. Andrzej Dudek and Jacek Białek (University of Lodz) invited the members to

the next SKAD conference, which will be held in Łódź or Bełchatów in September 2026.