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Mentoring and Workshop for Environmental Activists: Utilizing Vizly (AI – Powered Data Analysis) in Environmental Statistical Analysis

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Abstract

This mentorship and workshop aims to enhance the capacity of environmental activists to understand and apply statistical analysis to environmental issues. Through the use of Vizly (AI-Powered Data Analysis), participants were introduced to an artificial intelligence-based approach that simplifies data processing, visualization, and interpretation of results. The workshop method included intensive mentoring, theoretical presentations, and hands-on practice using relevant environmental data, such as air quality, waste management, and renewable energy utilization. The workshop was conducted in a systematic manner: identifying participant needs, introducing basic statistical analysis concepts, simulating the use of Vizly, and post-workshop mentoring to ensure continued understanding. The results demonstrated improved skills among participants in processing environmental data more quickly, accurately, and evidence-based. Vizly has been proven to assist environmental activists in producing analyzes that can support decision-making, policy advocacy, and environmental program planning. The implications of this activity include facilitating the integration of AI technology into environmental work, while also opening up opportunities for collaboration between academics, government, and communities.

Keywords Mentorship And Workshop, Environmental Activists, Environmental Data, Technology Utilization, Vizly as AI

INTRODUCTION

Statistical analysis plays a crucial role in understanding environmental issues. Environmental data, such as air quality, water pollution levels, waste production,

and energy use, are often complex and dynamic. Without proper statistical analysis, these data become mere numbers that are difficult to interpret. Statistics enable environmental activists to identify trends, measure policy impacts, and formulate more effective environmental management strategies. Thus, statistical analysis is not only an academic tool but also a practical instrument to support sustainability and evidence-based decision-making. Environmental activists often face challenges in data processing. Technical limitations, such as a lack of understanding of statistical methods, software limitations, and limited access to training, are key barriers. Many environmental communities work with large and diverse field data sets but lack the capacity to process them systematically. As a result, the potential of data to support advocacy and policymaking is often underutilized. This challenge underscores the need for mentoring and workshops that can bridge the gap between data collection and meaningful analysis (Mardhotillah et al., 2022 & Mardhotillah et al., 2023).

Artificial intelligence (AI) technology offers innovative solutions. Vizly, an AI-Powered Data Analysis platform, simplifies statistical analysis with a user-friendly interface and high automation capabilities. Vizly enables environmental activists to process data without requiring a deep statistical background. With interactive visualization features and machine learning-based analysis, Vizly helps uncover hidden patterns in environmental data, accelerating decision-making. The role of this technology is becoming increasingly relevant in the digital age, where the speed and accuracy of analysis are crucial for the effectiveness of environmental action.

This Community Service (PPM) activity is titled Mentoring and Workshop for Environmental Activists: Utilizing Vizly in Environmental Data Analysis. This PPM aims to describe mentoring and workshop activities specifically designed for environmental activists in utilizing Vizly for statistical analysis. This activity not only provides a theoretical understanding of the importance of data but also equips participants with practical skills for processing and interpreting environmental data. Mentoring is carried out systematically, starting from an introduction to basic concepts, direct practice using Vizly, and post-workshop mentoring. With this approach, it is hoped that participants will be able to integrate AI technology into their daily activities. The practical benefit of this activity is the creation of a community of environmental activists who are more data literate and able to use modern technology to support environmental advocacy and programs. Vizly helps them produce faster, more accurate, and evidence-based analyses, thereby strengthening their position in dialogue with the government, academics, and the community. The broader implication is the creation of a data-driven environmental

management ecosystem, which ultimately can improve the quality of environmental policies and sustainability.

Environmental statistical analysis is a scientific approach used to understand ecosystem dynamics and the impact of human activities on the environment. The basic concepts of this analysis include the collection, processing, and interpretation of environmental data, such as air quality, water pollution, biodiversity, and carbon emissions. Statistics enable the identification of long-term trends, the measurement of variability, and comparisons between regions or time periods. Using statistical methods, environmentalists can transform raw data into meaningful information, thus supporting the formulation of evidence-based policies and more effective mitigation strategies (Mardhotillah et al., 2022 & Mardhotillah et al., 2023).

Artificial intelligence (AI) has become a significant breakthrough in the field of data analysis. AI can automate data processing, detect complex patterns, and produce more accurate predictions than conventional methods. In the context of environmental data, AI is used to integrate big data from various sources, such as field sensors, satellite imagery, and public reports. This development makes analysis faster, more efficient, and more accessible to a wide range of audiences, including non-academic communities. Thus, AI opens up new opportunities for environmental activists to utilize advanced technology without requiring a deep statistical background.

Previous studies have shown that the use of AI in environmental monitoring has been applied in various fields, such as air pollution detection using sensor networks, deforestation monitoring through satellite imagery, and water quality prediction using machine learning algorithms. These studies confirm that AI can improve the accuracy and speed of analysis, while expanding the scope of monitoring. In this context, Vizly presents itself as an innovative tool that combines the power of AI with a user-friendly interface. Vizly enables environmental activists to intuitively perform statistical analysis, generate interactive visualizations, and present relevant insights for decision-making. Vizly's position as an AI-powered data analysis platform makes it a practical solution for environmental communities seeking to optimize data as a basis for advocacy, planning, and sustainable policy.

METHOD

The implementation of mentoring and workshops related to the use of Vizly/Artificial Intelligence in Data Analysis was initiated by Bunga Mardhotillah, S.Si., M.Stat as Team Leader, consisting of Ir. Shally Yanova, S.Si., M.Si., Ir. Ade Nurdin, ST, MT, Ir. Ade Adriadi, S.Si., M.Si., Ir. Lailal Gusri, ST, MT, Edi Saputra, ST,

M.Sc., Dr. Bambang Irawan, S.Pd., MT, and Tri Syukria Putra, ST, M.Si. Participants in this community service activity consisted of environmental activists from various backgrounds, such as community groups, environmental impact controllers, academics (students and lecturers), and field practitioners. The participant profiles reflect a diversity of experiences, ranging from those accustomed to field data collection to those new to the concept of statistical analysis. By involving various parties, this activity is expected to be able to bridge the knowledge gap and create synergy between academic theory and field practice. The workshop materials are designed to provide a comprehensive understanding of the importance of statistical analysis in environmental issues. The initial phase includes an introduction to Vizly (AI-Powered Data Analysis), an innovative tool that can facilitate fast and accurate data processing.

Figure 1. Workshop on Using Vizly for Environmental Data

The mentoring method is conducted face-to-face to ensure direct interaction between the facilitator and participants. In this session, participants are invited to conduct data simulations using relevant environmental datasets, such as air quality or waste management data. In addition, local case studies are also used as discussion material, so participants can see how statistical analysis supports decision-making in the field. This approach emphasizes experiential learning, which is more easily understood by environmental activists with a non-statistical background. The activity begins with a pre-workshop to assess participants' needs, map their initial level of understanding, challenges faced, and expectations for the workshop. This pre-workshop is conducted to adapt the material and methods to be more relevant to

real-world needs. This PPM activity is designed not only theoretically but also contextually according to the field conditions faced by environmental activists.

The next stage is a workshop in mid-October 2025, held in the 2nd-floor Meeting Room of Tempoa Inn & Art Gallery Jelutung. This workshop consists of theoretical material and hands-on practice. In the theory session, participants are introduced to the basic concepts of statistical analysis and the role of AI in data processing. The practical session is conducted using Vizly. This practice includes data input, visualization exploration, and interpretation of analysis results. With the combination of theory and practice, participants gain applicable skills ready for use in daily activities, especially comparing the use of R and Python in Vizly.

Following the workshop's conclusion, the activity continued with post-workshop mentoring. This phase included follow-up via an online forum in December 2025 to ensure participants could continue developing their acquired skills. A follow-up scientific forum was also established to provide a platform for sharing experiences, discussing cases, and collaborating among participants. This forum is expected to foster a sustainable learning community and strengthen the long-term capacity of environmental activists. Post-workshop mentoring also serves as an evaluation mechanism for the effectiveness of the activity. Participants were asked to implement Vizly in their respective environmental projects.

Figure 2. Group Photo of Participants and PPM Team

This mentoring and workshop is designed to provide a holistic learning experience. From assessing participants' needs and delivering theoretical materials, hands-on practice, to ongoing mentoring, all stages are geared toward enhancing the capacity of environmental activists to process AI-based data. By utilizing Vizly, participants gain not only technical skills but also analytical capabilities that support

rapid decision-making. This is expected to strengthen the role of environmental activists in planning and policymaking in the environmental sector.

RESULTS AND DISCUSSION

The workshop with speakers Dr. Bambang Irawan, S.Pd., MT (Lecturer in the Environmental Engineering Study Program at UNJA), Mimi Rosi Anggraini, ST, as the Coordinator of Environmental Impact Control for Jambi Province, and Bunga Mardhotillah, S.Si., M.Stat. (Lecturer in Statistics at UNJA), showed a significant increase in participants' understanding of the concept of statistical analysis. Before the activity began, most participants only knew statistics as numbers or tables that were difficult to interpret. After attending the theory and practice sessions, they began to understand how statistics can be used to identify trends, measure impacts, and develop environmental strategies. This improvement was evident from the results of the pre-test and post-test evaluations, where the majority of participants were able to answer basic questions about data distribution, correlation, and graph interpretation better. Participants' interest in using Vizly was quite good. Vizly, from the participants' perspective, really helped them process environmental data more quickly. For example, in the air quality dataset, participants were able to easily display daily and monthly trends, as well as identify periods with high pollution levels. For waste management data, Vizly facilitated analysis of household waste composition and plastic waste reduction trends. Meanwhile, for renewable energy data, participants were able to visualize the contribution of solar and wind energy to total energy consumption.

Figure 3. Workshop Resource Persons and Mentoring

The case studies are taken from the BPS publication, the Indonesian Environmental Statistics Book (SLHI), and also use waste management data to demonstrate that a waste sorting program at the household level can reduce the volume of waste entering the landfill by up to 20%. These case studies provide concrete evidence that Vizly can be used to generate relevant and applicable insights for environmental activists. The discussion also highlighted Vizly's advantages. The main advantage is its ease of use, allowing participants with non-statistical backgrounds to still conduct complex analyses. Furthermore, the interactive visualization feature makes it easy for participants to convey analysis results to the public or stakeholders. Vizly also supports collaboration, as analysis results can be shared digitally and understood by various parties.

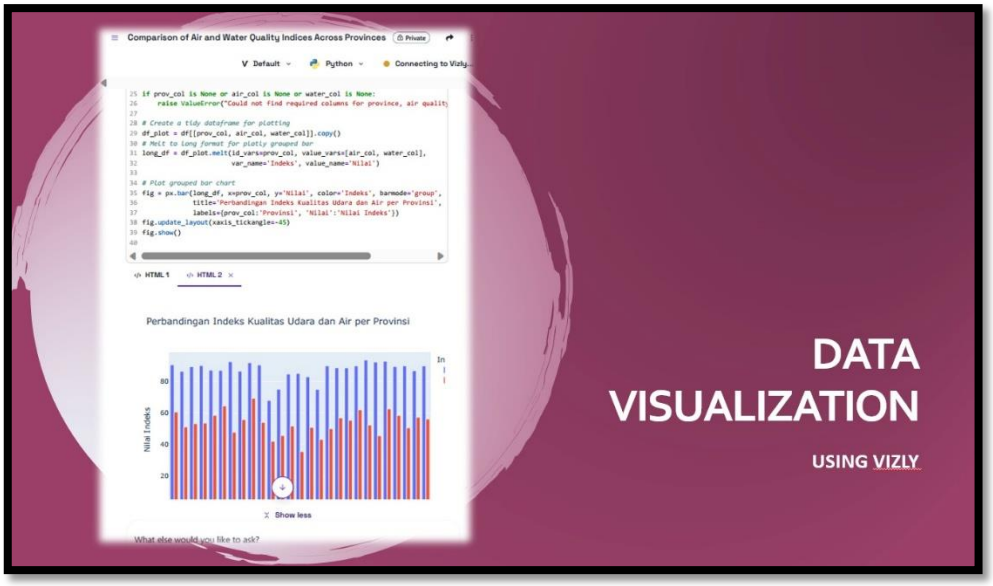

Figure 4. Visualization Results of Air and Water Quality Index Using Vizly

There are also limitations to note regarding the use of Vizly as an AI data analyzer. Vizly requires high-quality data for accurate analysis. In local contexts, environmental data is often incomplete or non-standardized, complicating the analysis process. Furthermore, limited internet access in some areas presents a challenge, given that Vizly is based on digital technology. Participants also emphasized the need to adapt Vizly's features to better suit local needs, such as integrating with local government or community data. The impact of using Vizly on data-driven decision-making was evident. Participants who previously relied solely on intuition or experience were now able to develop stronger recommendations supported by data. For example, recommendations to tighten industrial emissions regulations were based on air pollution trend analysis conducted with Vizly. Similarly, waste management policies were strengthened by waste composition data

analyzed by participants. Vizly helps improve the quality of environmental advocacy and program planning.

In addition to supporting decision-making, Vizly also strengthens the position of environmental activists in dialogue with government, academics, and the public. Data processed with Vizly is easier to understand and more convincing, thus enhancing the credibility of environmental activists. This opens up opportunities for broader collaboration, both with academics, government, and the private sector. With data-based evidence, environmental activists can be more effective in influencing policy and encouraging changes in public behavior. The workshop results showed that the mentoring and use of Vizly had a significant positive impact. Participants not only gained technical skills but also analytical skills that support more professional environmental work. Vizly's strength in simplifying statistical analysis makes it a relevant tool for environmental activists, although local limitations still need to be addressed. The broader implication of this activity is the creation of a data-driven environmental management ecosystem, which can strengthen the sustainability and effectiveness of future environmental programs.

CONCLUSION

The mentoring and workshop activities provided tangible benefits to environmental activists. Participants gained an enhanced understanding of statistical analysis concepts and practical skills in processing environmental data using Vizly. The approach, which combined theory, hands-on practice, and post-workshop mentoring, proved effective in building participant capacity. As a result, environmental activists are now better equipped to utilize data as a basis for advocacy, program planning, and decision-making, strengthening their role in environmental management. Vizly, as an AI-Powered Data Analysis platform, demonstrates significant potential as a sustainable solution for environmental activists. With its user-friendly interface and analytical automation capabilities, Vizly bridges technical limitations that have historically been a barrier. This technology not only accelerates data processing but also produces visualizations that are easily understood by various stakeholders. Vizly's potential for integration into community work, non-governmental organizations, and academic institutions makes it a strategic tool in strengthening the data-driven environmental management ecosystem. For the development of similar activities in the future, several recommendations can be put forward. First, integrate workshop results with local government policies so that Vizly-based analysis can support sustainable development planning. Second, expanding collaboration with academics and

researchers to enrich methodologies and strengthen the validity of the data used. Third, building a data-driven network of environmental activist communities that serves as a forum for sharing experiences, case studies, and technological innovations. With these steps, mentoring and workshops will not be mere one-off activities but will develop into a sustainable movement that strengthens the capacity of environmental activists to face future ecological challenges.

REFERENCES

Mardhotillah B, Asyhar R, & Elisa E. Applied Statistics Scientific Philosophy in the Smart Society 5.0 Era. Multi Proximity: Jurnal Statistika, 2022, 1 (2), 57 - 70.

Environmental Impact Analysis - UPM [accessed May 20, 2025]. Available from: http://repository.upm.ac.id/4280/1/referensi%20Analisa%20Mengenai%20Dampak%20Lingkungan.pdf

AI-Powered Data Analysis for the Environment - AIPure [accessed May 20, 2025]. Available from: https://aipure.ai/id/products/vizly

Implementation of AI in Environmental Monitoring - ResearchGate [accessed 2025 May 20]. Available from: https://www.researchgate.net/publication/385703314_Impact_of_Green_Economy_Regulation_and_Use_of_New_Energy_Technology_on_Efficiency_of_Electricity_in_Indonesia/fulltext/6731a77f77f274616d687784/Impak-of-Green-Economy-Regulation-and-Use-of-New-Energy-Technology-on-Efficiency-of-Electricity-in-Indonesia.pdf)

Potential Renewable Energy Projects in Indonesia - Detik Finance [accessed May 20, 2025]. Available from: https://finance.detik.com/energi/d-7842138/ri-punya-333-gw-potensi-proyek-energi-terbarukanlayak-finansial

Spatial Regression in Environmental Analysis - Undip Repository [accessed 2025 May 20]. Available from: https://eprints2.undip.ac.id/id/eprint/3926/1/Buku%20Regresi%20Spasial%20Aplikasi%20dengan%20R.pdf

Mardhotillah B, Fadli A, Elisa E, Zurweni Z. Calinski - Harabasz Index Fuzzy C Means and K-Means Cluster Analysis of Districts/Cities in Jambi Province According to Mining, Quarrying, Electricity Procurement, and Gas Potential. Multi Proximity: Jurnal Statistika, 2023, 2 (1).