

Research Article

The Distribution Pattern of Higher Education Institutions in Central Java: A Secondary Data Analysis as a Basis for Educational Research

Juni Amanullah^{1*}, Moh. Yudik Al Faruq²

¹ juniamanullah@mail.unnes.ac.id

² yudik@mail.unnes.ac.id

* Corresponding Author : Juni Amanullah

Abstract: This study investigates the distribution patterns of higher education institutions across Central Java Province by utilizing available secondary data. Using a descriptive quantitative approach, the research analyzes the spatial distribution of institutions based on administrative regions, ownership status (public or private), and institutional type—namely universities, colleges, polytechnics, academies, and institutes. The findings demonstrate notable regional disparities, with higher education institutions largely concentrated in urban centers such as Semarang and Surakarta. In contrast, several regencies remain underserved, highlighting a pressing imbalance in educational infrastructure. A key observation is the dominance of private higher education institutions, which account for the majority of active providers in the province. Most of these are universities and colleges, pointing to a trend toward certain institutional models. This uneven distribution not only reflects geographical imbalances but also raises questions regarding access, equity, and the long-term development of human capital at the regional level. By offering a data-driven snapshot of institutional presence, this study serves as a foundational resource for policymakers, educators, and researchers. It emphasizes the importance of equitable educational planning and advocates for more inclusive policies that address gaps in higher education access. The research contributes to a broader discourse on regional development and educational equity in Indonesia.

Keywords: Higher Education Distribution; Regional Disparity; Private Universities; Central Java; Secondary Data

1. Introduction

Higher education serves as a strategic pillar in developing human resources and enhancing national competitiveness. In Indonesia, equitable access to higher education remains an ongoing challenge, particularly when examined through geographic, social, and economic dimensions. Central Java Province, as one of the most populous regions with diverse administrative structures, plays a vital role in supporting the national education system (Agustina et al., 2025)(Evan & Holý, 2021). However, the distribution of higher education institutions across the province does not always align with population density or regional educational needs (Aslan et al., 2025).

Uneven distribution of these institutions can lead to disparities in learning opportunities, patterns of educational migration, and imbalances in the development of human capital between regions (Figard et al., 2023)(Hajj-Hassan et al., 2024). In several urban centers, the number and variety of institutions are relatively high, whereas other areas remain underserved and have limited access to higher education (Islam et al., 2025). These disparities highlight the need for comprehensive data-driven analysis to inform more inclusive and regionally responsive education policies (Dang & Zhang, 2021).

This study seeks to describe and analyze the distribution patterns of higher education institutions in Central Java based on secondary data (Gottesman & Ismailescu, 2021). The

Received: April 10, 2025

Revised: May 20, 2025

Accepted: May 29, 2025

Published: June 2025

Curr. Ver.: June 2025



Copyright: © 2025 by the authors.
Submitted for possible open access publication under the terms and conditions of the Creative Commons Attribution (CC BY SA) license (<https://creativecommons.org/licenses/by-sa/4.0/>)

analysis includes institutional classification by type, ownership (public or private), and administrative region (El-Haouly et al., 2021) (Maschmann et al., 2023). By offering a focused exploration of this provincial landscape, the study provides a foundation for data-informed research and policymaking aimed at promoting fairer access to higher education across diverse regional contexts (Örücü & Kutlugün, 2022)(Saraite-Sariene et al., 2020).

2. Literature Review

The landscape of higher education has been increasingly shaped by the need to ensure institutional quality, governance transparency, and equitable access across regions. (Zuha et al., 2023), in their study of lecturer competencies across higher education institutions in the Maldives, emphasized the critical role of pedagogical, professional, and interpersonal skills in ensuring educational quality (Khalifa et al., 2024)(Hernández-Lloret et al., 2021). Their findings revealed substantial variations among institutions, suggesting that institutional distribution alone is insufficient to address regional disparities unless accompanied by quality assurance mechanisms and continuous faculty development (Chen et al., 2022).

In the context of governance, (Agustina et al., 2025) (Rafique et al., 2022) explored the differences in anti-fraud disclosures between public and private universities in Indonesia. Their research highlighted that public universities tend to exhibit greater transparency in articulating ethical commitments through their mission statements (Njoku & Cole, 2024) (Goggin et al., 2022). This distinction not only reflects institutional priorities but also underscores the broader issue of accountability in higher education governance—an aspect closely tied to institutional type and public trust (Fernández-Arias et al., 2023)(Chau et al., 2022).

Though distinct in focus, the study by (Aslan et al., 2025) on tobacco use among medical students in Türkiye and Northern Cyprus offers a complementary perspective. By analyzing how institutional environments influence student behavior, the authors point to the significance of university culture in shaping health-related norms and compliance with public regulations (Batra et al., 2022). Taken together, these studies suggest that research on the distribution of higher education institutions—such as in Central Java—should not be limited to spatial or quantitative aspects alone, but must also consider institutional integrity, quality, and social influence within regional contexts (Deora et al., 2020)(Venuti et al., 2021).

3. Research Methodology

3.1. Research Design

This study employs a descriptive quantitative approach aimed at portraying the distribution patterns of higher education institutions in Central Java Province using available secondary data (Teixeira et al., 2022). This method is appropriate for examining real-world phenomena through pre-existing numerical data without manipulating variables or conducting experimental interventions (Danielsen et al., 2022).

3.2. Data Source and Unit of Analysis

The data utilized in this study were derived from the *Central Java Campus Dataset*, which contains information on institutional names, types, ownership status (public or private), and administrative locations (districts or cities) (Rackoff et al., 2025). The dataset was systematically compiled from publicly accessible and verified sources (Soar et al., 2022).

The unit of analysis consists of formal higher education institutions operating within the administrative boundaries of Central Java. The study covers all 35 districts and municipalities in the province.

3.3. Data Analysis Procedure

The data were analyzed in several stages:

- 1) Classification of institutions by type (e.g., university, college, polytechnic, academy, institute) and ownership status (public or private);
- 2) Tabulation of institutional counts across districts and cities;

- 3) Visualization of distribution patterns using tables and graphical representations such as bar charts and pie charts.

All data processing and analysis were conducted using spreadsheet software, primarily Microsoft Excel.

4. Results and Discussion

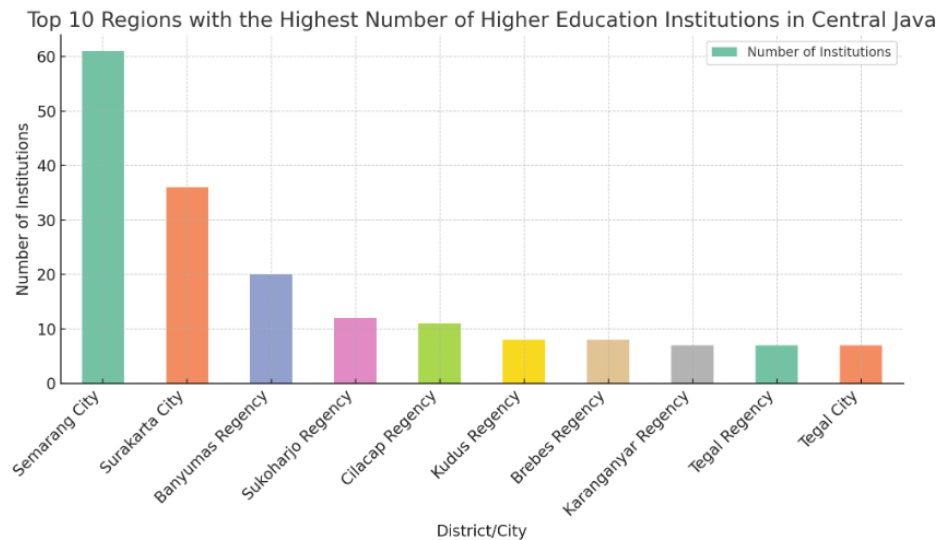
An analysis of 112 active higher education institutions in Central Java reveals a noticeable imbalance in regional distribution. Cities such as Semarang, Surakarta, and Banyumas account for the highest concentration of institutions, serving as dominant educational hubs within the province. In contrast, regencies like Banjarnegara, Boyolali, and Blora have significantly fewer institutions, suggesting unequal geographic access to higher education opportunities.

A closer look at institutional ownership shows that the majority are private universities (PTS), while public institutions (PTN) represent only a small fraction of the total. This dominance of private providers underscores the critical role played by non-state actors in expanding educational access—though it also raises questions regarding the consistency of quality and regulation across regions (Mendoza-Mendoza et al., 2024).

In terms of institutional type, the data indicate that universities and colleges (sekolah tinggi) make up the most common categories. This reflects a prevailing trend toward broad-based and specialized undergraduate education, yet may also point to limited diversity in academic offerings in some areas.

The following figures visually illustrate key findings of this study:

Figure 1. Top 10 Districts/Municipalities by Number of Higher Education Institutions in Central Java



The bar chart illustrates the ten districts and cities in Central Java with the highest number of higher education institutions. Semarang City stands out significantly, hosting over 60 institutions, making it the most concentrated educational hub in the province. This dominance is likely due to its role as the provincial capital and a major urban center with extensive infrastructure, resources, and student demand.

Following Semarang, Surakarta City and Banyumas Regency also emerge as important academic centers, with 36 and 20 institutions respectively. These cities have

long-established traditions in education and are home to several well-known universities and colleges.

In contrast, other regions such as Sukoharjo, Cilacap, Kudus, Brebes, Karanganyar, Tegal Regency, and Tegal City show a sharp decline in institutional numbers, ranging between 7 to 12. While these areas still contribute to the provincial educational landscape, their lower concentration suggests more limited access or smaller-scale institutions.

The visual disparity in the chart highlights a regional imbalance in higher education availability. This emphasizes the need for policy interventions aimed at expanding institutional presence in underrepresented districts to ensure broader and more equitable educational opportunities across Central Java.

Figure 2. Distribution of Higher Education Institutions by Ownership Type (Public vs Private)

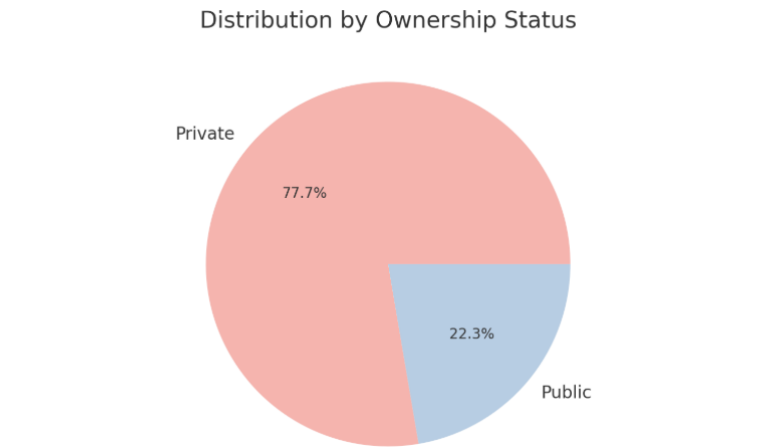
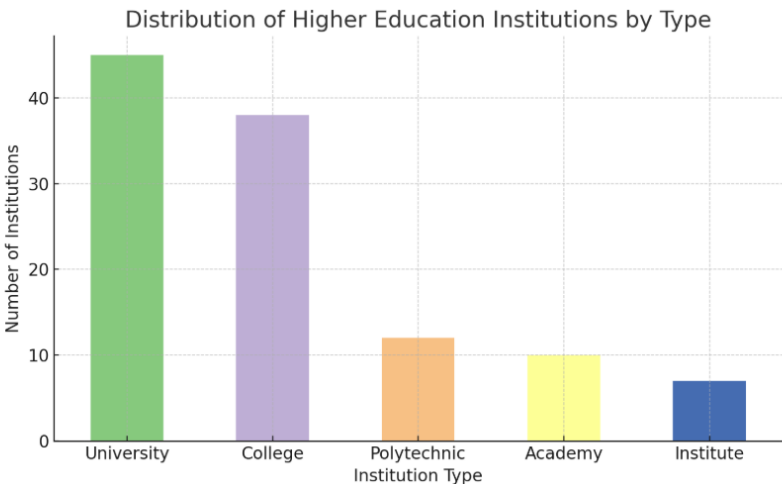


Figure 3. Distribution of Institutions by Academic Classification (University, Institute, Polytechnic, etc.)



The distribution of higher education institutions by type in Central Java reveals a clear predominance of universities and colleges. As shown in the chart, universities constitute the largest proportion, with 45 institutions recorded, followed closely by colleges (sekolah tinggi) totaling 38. This suggests that most higher education providers in the region focus on broad-based academic programs or specialized single-discipline education, both of which are typical of universities and colleges, respectively.

Polytechnics and academies occupy a noticeably smaller share, with 12 and 10 institutions respectively. These types of institutions usually offer vocational or applied science programs, indicating a relatively limited emphasis on technical and professional training within the provincial landscape. Institutes—often research-oriented or serving niche academic fields—represent the smallest category, with only 7 institutions identified.

This distribution pattern underscores a concentration of traditional academic institutions over vocational and applied education models. Such an imbalance may have implications for workforce readiness and regional economic development, particularly in areas that could benefit from more diverse and skills-oriented educational offerings.

6. Conclusions

This study has revealed significant disparities in the distribution of higher education institutions across Central Java. The data show a clear concentration of institutions in major urban centers such as Semarang, Surakarta, and Banyumas, while several regencies—including Banjarnegara, Boyolali, and Blora—remain underrepresented. This uneven spread potentially limits equitable access to higher education for residents in rural or peripheral areas.

Furthermore, the dominance of private institutions, particularly universities and colleges, reflects the important role of non-governmental actors in expanding educational opportunities. However, the limited presence of polytechnics, academies, and institutes suggests a lack of diversity in institutional types, which could hinder the development of applied skills and vocational expertise among the regional population.

To address these gaps, policymakers should prioritize data-informed strategies to promote a more balanced regional distribution of institutions. This includes incentives for establishing new campuses in underserved areas and support for expanding technical and vocational education. Future research is encouraged to explore the relationship between institutional distribution and student outcomes, as well as the impact of educational infrastructure on local development.

References

- Agustina, L., SeTin, S., & Debbianita, D. (2025). University mission statements and anti-fraud disclosures: public vs private universities in Indonesia. *Journal of Financial Crime*, 32(4), 790 – 803. <https://doi.org/10.1108/JFC-06-2024-0185>
- Aslan, D., Ay, P., Raymond, K., Aşut, Ö., Abuduxike, G., Şengelen, M., Çekici, D., Yıldız, F., Evren, E. Ü., Kalyoncu, A. F., & Dağlı, E. (2025). Medical Students' Tobacco Consumption Status and Experiences with Smoke-free Law Violations in Enclosed Spaces in Türkiye and Northern Cyprus. *Thoracic Research and Practice*, 26(2), 48 – 54. <https://doi.org/10.4274/ThoracResPract.2024.24084>
- Batra, S., Orban, J., Zhang, H., Guterbock, T. M., Butler, L. A., Bogucki, C., & Chen, C. (2022). Analysis of Social Mission Commitment at Dental, Medical, and Nursing Schools in the US. *JAMA Network Open*, 5(5). <https://doi.org/10.1001/jamanetworkopen.2022.10900>
- Chau, Q., Nguyen, C. H., & Nguyen, T.-T. (2022). The emergence of private higher education in a communist state: the case of Vietnam. *Studies in Higher Education*, 47(4), 888 – 903. <https://doi.org/10.1080/03075079.2020.1817890>
- Chen, W., Bohloul, S. M., Ma, Y., & Li, L. (2022). A blockchain-based information management system for academic institutions: a case study of international students' workflow. *Information Discovery and Delivery*, 50(4), 343 – 352. <https://doi.org/10.1108/IDD-01-2021-0010>
- Dang, M. Y., & Zhang, Y. G. (2021). Examining Gender Differences in Student Learning During the COVID-19 Pandemic: A Model From the Switching Costs and Quality-Related Perspectives. *Journal of Information Technology Education: Research*, 20, 459 – 477. <https://doi.org/10.28945/4881>

- Danielsen, E., Mjåset, C., Ingebrigtsen, T., Gulati, S., Grotle, M., Rudolfson, J. H., Nygaard, Ø. P., & Solberg, T. K. (2022). A nationwide study of patients operated for cervical degenerative disorders in public and private hospitals. *Scientific Reports*, 12(1). <https://doi.org/10.1038/s41598-022-17194-z>
- Deora, H., Mishra, S., Tripathi, M., Garg, K., Tandon, V., Borkar, S., Varshney, N., Raut, R., Chaurasia, B., Chandra, P. S., & Kale, S. S. (2020). Adapting Neurosurgery Practice During the COVID-19 Pandemic in the Indian Subcontinent. *World Neurosurgery*, 142, e396 – e406. <https://doi.org/10.1016/j.wneu.2020.07.038>
- El-Haouly, A., Lacasse, A., El-Rami, H., Liandier, F., & Dragomir, A. (2021). Out-of-pocket costs and perceived financial burden associated with prostate cancer treatment in a quebec remote area: A cross-sectional study. *Current Oncology*, 28(1), 26 – 39. <https://doi.org/10.3390/curroncol28010005>
- Evan, T., & Holý, V. (2021). Economic conditions for innovation: Private vs. public sector. *Socio-Economic Planning Sciences*, 76. <https://doi.org/10.1016/j.seps.2020.100966>
- Fernández-Arias, P., Antón-Sancho, Á., Sánchez-Jiménez, M., & Vergara, D. (2023). Statistical Analysis of Professors' Assessment Regarding the Didactic Use of Virtual Reality: Engineering vs. Health. *Electronics (Switzerland)*, 12(6). <https://doi.org/10.3390/electronics12061366>
- Figard, R., Brunhaver, S., & Bekki, J. (2023). (WIP) About Us, Without Us: A Review of U.S. Disability-Related Institutional Policies and Practices. *Proceedings - Frontiers in Education Conference, FIE*. <https://doi.org/10.1109/FIE58773.2023.10343257>
- Goggin, K., Hurley, E. A., Lee, B. R., Bradley-Ewing, A., Bickford, C., Pina, K., De Miranda, E. D., Yu, D., Weltmer, K., Linnemayr, S., Butler, C. C., Newland, J. G., & Myers, A. L. (2022). Let's Talk About Antibiotics: a randomised trial of two interventions to reduce antibiotic misuse. *BMJ Open*, 12(11). <https://doi.org/10.1136/bmjopen-2021-049258>
- Gottesman, A., & Ismailescu, I. (2021). Student selectivity and higher education institutions credit ratings. *Journal of Financial Economic Policy*, 13(1), 136 – 159. <https://doi.org/10.1108/JFEP-10-2019-0200>
- Hajj-Hassan, M., Chaker, R., Karamah Shayya, J., & Lo Presti, V. (2024). Environmental citizenship in Lebanon: a study in the higher education context. *International Journal of Adolescence and Youth*, 29(1). <https://doi.org/10.1080/02673843.2024.2387079>
- Hernández-Lloret, C.-M., Fernández-Caminero, G., González-González, H., Espino-Díaz, L., & Álvarez-Castillo, y. J.-L. (2021). Check-list and questionnaire datasets on diversity in Spain's higher education. *Data in Brief*, 36. <https://doi.org/10.1016/j.dib.2021.107024>
- Islam, M. T., Bruce, M., & Alam, K. (2025). Prevalence and correlates of health care utilization for non-communicable diseases in Bangladesh. *BMC Health Services Research*, 25(1). <https://doi.org/10.1186/s12913-025-12906-3>
- Khalifa, B., Desmidt, S., Huisman, J., Meyfroodt, K., & Karataş Acer, E. (2024). Similar or different? An analysis of the organisational values expressed by public and private Turkish universities. *Higher Education Quarterly*, 78(4). <https://doi.org/10.1111/hequ.12538>
- Maschmann, R. M., De Jesus, R. G., Werutsky, G., Rebelatto, T. F., Queiroz, G., Simon, S. D., Bines, J., Barrios, C. H. E.,

- & Rosa, D. D. (2023). Time interval between diagnosis to treatment of breast cancer and the impact of health insurance coverage: a sub analysis of the AMAZONA III Study (GBECAM 0115). *Breast Cancer Research and Treatment*, 198(1), 123 – 130. <https://doi.org/10.1007/s10549-022-06809-8>
- Mendoza-Mendoza, A., Mendoza-Casseres, D., & De La Hoz-Domínguez, E. (2024). Comparison of industrial engineering programs in Colombia based on standardized test results. *Evaluation and Program Planning*, 103. <https://doi.org/10.1016/j.evalprogplan.2024.102415>
- Njoku, N. R., & Cole, E. R. (2024). “To Give Up the Little Kingdoms”: The Black College and the Gains and Losses of Desegregation. *Journal of African American History*, 109(1), 103 – 127. <https://doi.org/10.1086/726858>
- Örücü, D., & Kutlugün, H. E. (2022). Navigating the Covid-19 Turbulence in Higher Education: Evidence from Turkish Faculty Members. *Research in Educational Administration and Leadership*, 7(3), 597 – 631. <https://doi.org/10.30828/real.1159121>
- Rackoff, G. N., Fitzsimmons-Craft, E. E., Taylor, C. B., Eisenberg, D., Wilfley, D. E., & Newman, M. G. (2025). Psychotherapy utilization by United States college students. *Journal of American College Health*, 73(2), 503 – 510. <https://doi.org/10.1080/07448481.2023.2225630>
- Rafique, G. M., Jutt, R., & Idrees, H. (2022). Work Performance Self-Efficacy of Pakistani University Librarians. *Libri*, 72(2), 141 – 153. <https://doi.org/10.1515/libri-2020-0154>
- Saraite-Sariene, L., Alonso-Cañadas, J., Galán-Valdivieso, F., & Caba-Pérez, C. (2020). Non-financial information versus financial as a key to the stakeholder engagement: A higher education perspective. *Sustainability (Switzerland)*, 12(1). <https://doi.org/10.3390/su12010331>
- Soar, C., De Resende Salles, V., Filipini, R. E., Corrêa, L. S., & De Fragas Hinning, P. (2022). Factors associated with the academic performance of Nutrition students at a public university in southern Brazil; [Fatores associados ao desempenho acadêmico de estudantes de Nutrição de uma universidade pública do sul do Brasil]. *Revista de Nutricao*, 35. <https://doi.org/10.1590/1678-9865202235E210120>
- Teixeira, P. N., Silva, P. L., Biscaia, R., & Carla, S. á. (2022). Competition and diversification in higher education: Analysing impacts on access and equity in the case of Portugal. *European Journal of Education*, 57(2), 235 – 254. <https://doi.org/10.1111/ejed.12501>
- Venuti, M. S., Pedace, M. L., Díaz, A., Roffo, A., Bejarano, A. M., Grieve, G., Luis Do Pico, J., Quispe, R., Flores, D. M., & San Roman, J. E. (2021). Survey of ICU patients’ relatives on their religious beliefs and opinion about policies of visiting hours and end-of-life care; [Encuesta a familiares de pacientes internados en unidades de cuidados críticos sobre sus creencias religiosas, su opinión sobre cuidados de fin de vida y sus preferencias de horarios de visita]. *Acta Colombiana de Cuidado Intensivo*, 21(4), 308 – 314. <https://doi.org/10.1016/j.acci.2021.02.003>
- Zuha, A., Waheeda, A., & Wong, C. H. (2023). Comparison of Lecturers’ Competency in Maldives Higher Education Institutes. *Journal of Higher Education Theory and Practice*, 23(19), 100 – 112. <https://doi.org/10.33423/jhetp.v23i19.6707>