

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 Faruq²¹ juniamanullah@mail.unnes.ac.id² 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

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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

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

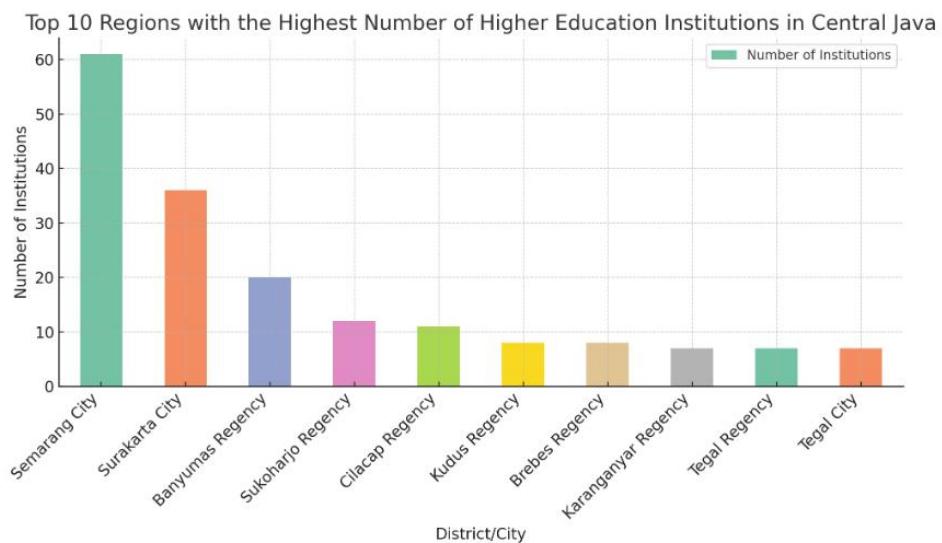
An analysis of 112 active higher education institutions in Central Java reveals a noticeable imbalance in regional distribution. Cities such as Semarang, Surakarta, and Banyumas account for the highest concentration of institutions, serving as dominant educational hubs within the province. In contrast, 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)

Distribution by Ownership Status

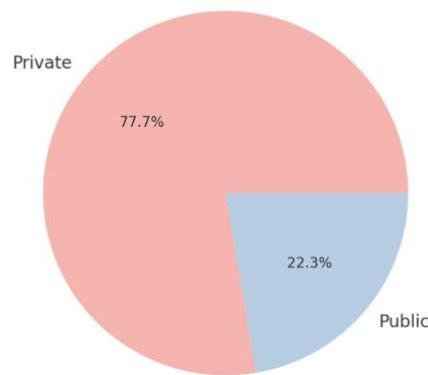
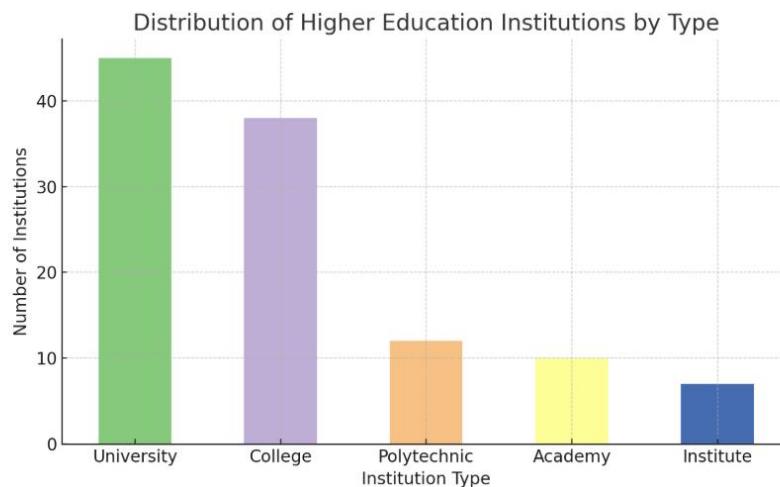


Figure 3. Distribution of Institutions by Academic Classification (University, Institute, Polytechnic, etc.)



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.

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