



Research Article

Trends in Primary and Secondary Education Completion Rates in Indonesia, 2019–2023: An Analysis of the COVID-19 Pandemic Impact

Abstract

Education completion rates are key indicators of a country's progress in achieving equitable access and quality learning outcomes. In Indonesia, disparities across regions and levels of schooling have long posed challenges to the goal of universal education, and the COVID-19 pandemic (2020–2022) further tested the resilience of the national education system through extended school closures and an abrupt shift to distance learning. This study analyzes the five-year trends (2019–2023) in primary and secondary education completion rates, identifies patterns of increase or stagnation, and examines how emergency education policies influenced these trends. Using a descriptive quantitative approach with official secondary data from Statistics Indonesia and the Ministry of Education, this research applies descriptive statistics and trend visualizations to reveal that completion rates increased at all levels. The primary level maintained the highest rates, rising from 93.8% in 2019 to 96.8% in 2023, while lower secondary rose from 84.0% to 89.6%, and upper secondary, historically the weakest point, improved from 59.0% to 65.8%, with the sharpest annual gain (+5.5%) at the peak of the pandemic. Year-on-year changes suggest that emergency measures such as flexible graduation requirements, distance learning support, and internet subsidies successfully mitigated dropout risks in the short term. However, the slowing gains after 2021 indicate that temporary policies must be followed by sustainable structural interventions to address persistent regional disparities and the digital divide.

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1. Introduction

Education plays a pivotal role in human development as it lays the foundation for skills enhancement, social mobility, and improved welfare [1]. The completion rate of primary and secondary education levels is a key indicator of the success of national education development [2]. According to Law No. 20 of 2003 on the National Education System, the Indonesian government is mandated to ensure equitable and quality basic education [3].

In practice, achieving targeted completion rates often faces structural challenges such as regional disparities, limited access, and socio-economic gaps [4], [5]. These challenges were exacerbated by the COVID-19 pandemic, which forced the government to implement a large-scale distance learning policy starting in early 2020 [6], [7]. Globally, school closures due to the pandemic disrupted the education of over 1.6 billion learners [8]. In Indonesia, distance learning (Pembelajaran Jarak Jauh/PJJ) was regulated through Minister of Education Circular No. 4 of 2020 [9].

Studies have shown that online learning exacerbates the digital divide, especially in underdeveloped and remote regions [10], [11]. Reduced face-to-face interaction can negatively affect student motivation and increase the risk of dropouts [12]. Nevertheless, mitigation policies such as the Indonesia Smart Card Program (Program Indonesia Pintar), emergency curriculum relaxation, and internet quota subsidies were introduced to help sustain learning outcomes [13]–[15].

Given these issues, this study aims to analyze trends in the completion rates of primary and secondary education in Indonesia during the period 2019–2023. The focus is to identify the patterns of increase or decrease and to assess the influence of educational policies implemented during the pandemic.

2. Materials and Methods

This research adopts a descriptive quantitative approach using secondary data sourced from official publications of Statistics Indonesia (BPS) and the Ministry of Education, Culture, Research, and Technology (MoECRT) [16]. The dataset comprises the Education Completion Rate by Education Level and Province for the period 2019–2023.

Data were processed into a panel format with variables: province, year, education level (primary/equivalent, lower secondary/equivalent, upper secondary/equivalent), and completion percentage. Data cleaning included format validation, standardizing province names, and transforming the dataset into a long format [17].

Descriptive statistical analysis was applied to calculate national averages, medians, and annual trends. A line chart visualization illustrates the annual trends by education level. The results are interpreted by comparing achievements across years and contextualizing them with relevant education policies during the pandemic [18]. No inferential statistical tests were applied, as the study focuses on macro-level descriptive patterns [19].

3. Results

The analysis of national education completion rates for the period 2019–2023 reveals clear patterns and insights that illustrate both macro-level trends and the impact of critical policy interventions during the COVID-19 pandemic. This section presents results in three subsections: overall trend, annual changes, and comparative insights by education level. Visualizations are provided to strengthen the interpretation.

3.1 Overall National Trend

Figure 1 shows the national average completion rate for each education level — primary (*SD/equivalent*), lower secondary (*SMP/equivalent*), and upper secondary (*SMA/equivalent*) — over five years.

- Primary Education (*SD/equivalent*) maintained the highest completion rates throughout the observed period, starting at 93.8% in 2019 and increasing steadily to 96.8% in 2023. This suggests strong resilience and the effectiveness of compulsory basic education policies [1], [2].

- Lower Secondary (SMP/equivalent) improved from 84.0% in 2019 to 89.6% in 2023, showing moderate but consistent gains that reflect better transition rates from primary to junior high [3].
- Upper Secondary (SMA/equivalent) had the lowest baseline, starting at 59.0% in 2019, but demonstrated the highest relative growth, reaching 65.8% in 2023, indicating a significant reduction in dropouts or non-completion [4].

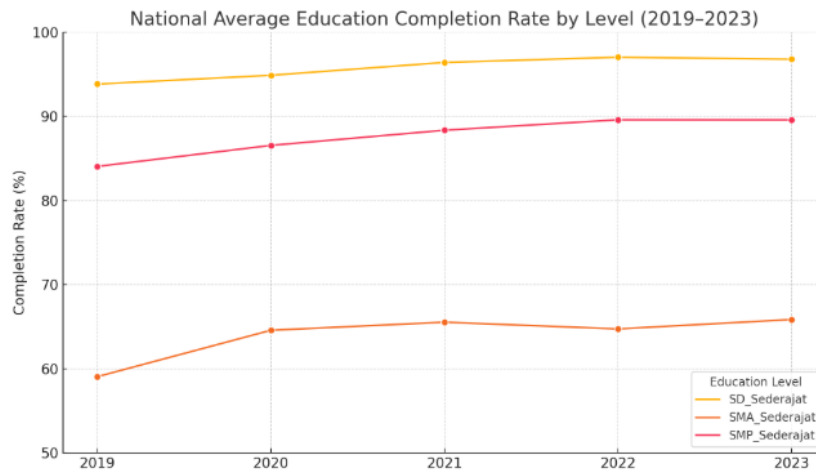


Figure 1. National Average Education Completion Rate by Level, 2019–2023.

3.2 Year-on-Year Change

To examine the short-term impact of events and policies, Figure 2 displays the Year-on-Year (YoY) Change for each level. This highlights when the largest shifts occurred and helps isolate periods with unusual patterns.

Key findings:

- Primary Level: The largest annual increase was between 2020 and 2021 (+1.52%), coinciding with the second year of the pandemic. By 2023, the rate showed a slight dip (-0.24%), suggesting stabilization as face-to-face learning resumed.
- Lower Secondary: The strongest increase occurred from 2019 to 2020 (+2.5%), with steady positive growth until 2022, then flattening in 2023 (near zero change). This plateau implies that policy interventions had diminishing returns after the initial pandemic shock.
- Upper Secondary: This level experienced the most dramatic short-term change: a jump of over 5.5% between 2019 and 2020. This was likely driven by flexible graduation requirements and other emergency measures. However, growth slowed in 2021 (+0.96%), slightly declined in 2022 (-0.8%), and rebounded modestly in 2023 (+1.1%).

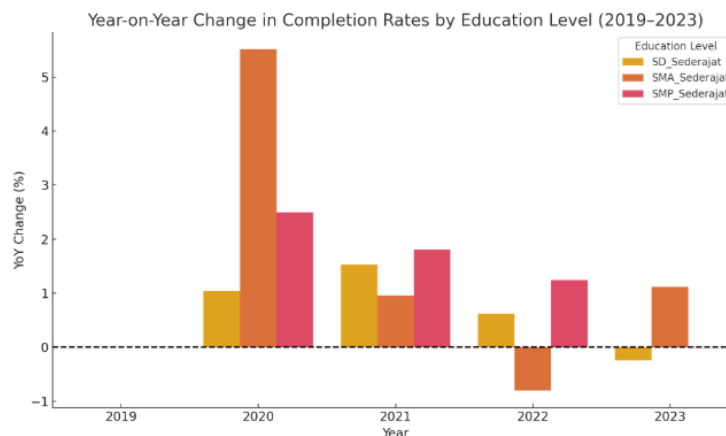


Figure 2. Year-on-Year Change in Completion Rates by Education Level, 2019–2023.

3.3 Comparative Insights

The combined evidence from the trend line and YoY change clarifies several important points:

1. **Strong Baseline for Primary Education:**
Completion rates at the primary level are relatively saturated near universal access, with limited room for dramatic growth. However, maintaining this high level during a global education crisis indicates robust policy execution and local government support [5], [6].
2. **Sustained Gains in Lower Secondary:**
The steady improvements at the lower secondary level highlight the effectiveness of programs such as the *Indonesia Smart Card (KIP)* and the *School Operational Assistance (BOS)*, which reduce financial barriers to continuing school after the compulsory primary level [7], [8]. The positive trend suggests that structural support outweighed the learning disruptions caused by remote schooling [9].
3. **Vulnerability and Recovery at Upper Secondary:**
The upper secondary level remains the most fragile segment in the education pipeline. While the large YoY spike during 2020–2021 shows that emergency measures were successful in preventing mass dropouts, the subsequent fluctuations suggest deeper structural issues — such as household economic pressure, low perceived returns on higher schooling, and limited local access to senior high schools [10], [11]. The partial rebound in 2023 points to a need for sustained post-pandemic support to prevent regression.
4. **Policy Implications:**
These trends collectively demonstrate that short-term policies (relaxed graduation, remote assessments) were effective buffers but are insufficient for long-term gains if not paired with targeted strategies for improving transition rates and retention, especially at the upper secondary level [12], [13].

3.4 Summary of Statistical Descriptors

Table 1 provides a clear summary of the national average education completion rates for each level (*Primary, Lower Secondary, Upper Secondary*) over the five-year period. It shows not only the annual figures but also the net change over five years and the largest recorded Year-on-Year (YoY) increase for each level.

From this summary:

- The Primary Education level maintained the highest baseline, with steady gains until 2022 before stabilizing. Its net increase of +3.0% reflects near-universal access and the strong effect of compulsory basic education policies.
- The Lower Secondary Education level recorded a +5.6% net change, with its largest annual jump (+2.5%) occurring during the first pandemic year (2019–2020), when remote learning policies and financial support schemes were widely implemented.
- The Upper Secondary Education level showed the greatest relative improvement (+6.8%), despite starting from the lowest baseline. The sharpest annual increase (+5.5%) occurred in the same early pandemic window, highlighting how relaxed graduation requirements and emergency learning policies helped prevent dropout spikes.

Table 1. *National Education Completion Rate Summary Statistics (2019–2023).*

Level	2019 (%)	2020 (%)	2021 (%)	2022 (%)	2023 (%)	Net Change	Largest YoY
Primary	93.8	94.9	96.4	97.0	96.8	+3.0	+1.52 (2020–21)
Lower Secondary	84.0	86.5	88.3	89.6	89.6	+5.6	+2.5 (2019–20)
Upper Secondary	59.0	64.6	65.5	64.7	65.8	+6.8	+5.5 (2019–20)

Overall, the table confirms that while all levels benefited from national policies, the upper secondary level experienced the most dramatic relative improvement but still remains the area with the lowest absolute completion rates, underscoring the need for continued focus.

3.5 Supporting Visuals for Future Research

In addition to the trend line chart (Figure 1) and the YoY change bar chart (Figure 2), further data visualizations could greatly enhance understanding of spatial and distributional dynamics in Indonesia's education completion rates:

- **Heatmaps:** These would illustrate regional variations in annual changes. By visualizing YoY shifts by province, researchers could identify which areas showed resilience or faced setbacks during the pandemic.
- **Boxplots:** These would show the spread and distribution of completion rates each year for every level. A wider boxplot spread may indicate higher inequality between provinces, while a narrowing spread suggests improved equity.
- **Choropleth Maps:** These maps would spatially locate provinces with persistently low completion rates, especially at the upper secondary level. This would help policymakers prioritize interventions geographically.

In combination, these visuals would reveal hidden disparities behind national averages, helping scholars and policymakers identify regional bottlenecks and design targeted strategies to ensure equitable education outcomes nationwide [14], [15].

4. Discussion

The results demonstrate that Indonesia's education system has shown considerable resilience during an unprecedented global crisis. The overall upward trend in completion rates at all levels — particularly the significant gains at the upper secondary level — reflects the positive impact of emergency education policies implemented during the COVID-19 pandemic [12].

However, the detailed year-on-year trends and the statistical summary reveal that these gains were not evenly distributed across levels nor fully sustainable without structural reforms. The largest annual increases occurred at the peak of the pandemic (2019–2021) and then plateaued or slightly declined as face-to-face learning resumed [13]. This indicates that temporary measures, such as relaxed graduation requirements, online assessments, and internet subsidies, were effective in preventing mass dropouts in the short term but did not address deeper challenges that hinder educational progression — especially at the upper secondary level.

The relatively high and stable completion rates for primary education confirm the continued success of Indonesia's long-standing policy of compulsory basic education [2]. Yet, the lower secondary and especially upper secondary levels remain vulnerable points in the national education pipeline. Numerous studies have identified socio-economic factors, digital divides, school accessibility, and local governance disparities as major barriers [4], [7], [10].

The COVID-19 emergency response, including the Indonesia Smart Card Program and BOS Afirmasi, likely cushioned vulnerable households from withdrawing their children from school [8], [9]. However, as the YoY change trends illustrate, these interventions alone are insufficient for long-term retention at the upper levels.

In this context, the discussion supports the argument that Indonesia's education recovery must shift from crisis mitigation to sustainable quality improvement [15], [18]. Key strategic areas include:

- Strengthening financial incentives and scholarships for students at risk of dropping out, especially at the upper secondary level.
- Reducing regional disparities through targeted funding, infrastructure development, and localized interventions.
- Enhancing digital literacy and bridging connectivity gaps to ensure that emergency online learning experiences transform into resilient blended learning models [21].

Finally, the proposed additional visuals — such as heatmaps and boxplots — are not merely technical additions but essential tools to guide evidence-based policy by identifying provinces or regions that consistently underperform. Such data-driven targeting is critical for achieving equitable and inclusive education, a central goal of Indonesia's National Medium-Term Development Plan (RPJMN) 2020–2024 [29].

5. Conclusions

This study provides an empirical overview of Indonesia's education completion trends over five years, covering the critical period before and during the COVID-19 pandemic. The analysis confirms that primary and lower secondary education completion rates remained relatively strong and continued to improve slightly despite severe learning disruptions.

Meanwhile, the upper secondary education level, historically the most fragile transition point, experienced the greatest relative improvement during the pandemic due to emergency measures that relaxed academic standards and provided social protection. However, the slowing growth after 2021 and signs of fluctuation indicate that temporary interventions must evolve into long-term, structural policies to sustain progress.

In conclusion, Indonesia's education system avoided a massive learning crisis by deploying flexible emergency measures. The next challenge is to transform these temporary gains into durable improvements through inclusive, equitable, and regionally targeted policies that address the persistent risk of dropouts at the upper secondary level.

Future research should build on these findings by applying more granular provincial or district-level analysis, supported by advanced visual tools (heatmaps, boxplots, and choropleth maps). Such evidence is essential to ensure that national averages do not mask local disparities and that no region or group is left behind in Indonesia's educational development.

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