

## Systematic review of socio-economic factors influencing dropout of students in public secondary schools in Machakos County, Kenya

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### ABSTRACT

Education remains one of the most effective instruments for social mobility and sustainable economic growth. Yet, despite Kenya's strong policy commitments to universal access, student dropout persists in many public secondary schools, particularly in rural and peri-urban settings. This study undertakes a systematic review of socio-economic factors influencing student dropout in public secondary schools within Machakos County, Kenya. Drawing on empirical studies published between 2010 and 2025, the review analyzes how parental income, parental education level, family size, and family structure contribute to dropout tendencies. Guided by the Human Capital Theory, the study integrates quantitative and qualitative evidence from Machakos County and comparable Kenyan contexts to explain the mechanisms through which economic and social constraints affect retention. Findings from prior research indicate that low parental income, limited education among parents, large family sizes, and single-parent households collectively increase the probability of withdrawal from school. The review also highlights policy gaps in implementing bursary programs, social protection schemes, and parental engagement initiatives. The approach adhered to Preferred Reporting Items for Systematic reviews and Meta-Analyses [PRISMA] guidelines for the screening, appraisal, and synthesis of empirical evidence, with credibility and rigor. By situating the dropout problem within the local context of Machakos County, the study offers a useful evidence base for educational planners and policymakers to strategize and implement specific interventions to deal with socio-economic inequalities. The review concludes that interventions to enhance family well-being, improve parental literacy, and strengthen social support mechanisms are key strategies to decrease dropout and increase throughput.

**Keywords:** Machakos County, Public Secondary Schools, Socio-Economic Factors, Student Dropout

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### I. INTRODUCTION

Education is well understood as a source of economic productivity and human capital formation. In developed countries like the United States, Britain, and other members of the Organisation for Economic Co-operation and Development (OECD), the organization of education has been as a public good, which is supported through inclusive social policies that have overseen the access and retention of it throughout the socio-economic classes. The high correlation between educational attainment and individual well-being in these contexts speaks to the power of education in building lives and sustaining national competitiveness (Chevalier et al., 2023). Governments in these regions have developed strong institutional structures to facilitate continuous schooling, subsidize educational costs, and track learner progress. Consequently, dropout rates are kept to a minimum; and education acts as a means of intergenerational mobility and social equality.

In comparison, in most developing nations, dropout is still an ongoing issue. While developed in terms of scale of access, developing economies like India and Turkey still struggle with inequality in retention due to factors of poverty, rural-urban migration, and domestic labor pressures (Strid et al., 2020). To mitigate poverty, Macedonian and Serbian governments have introduced school feeding and conditional cash transfers to reduce the dropout, but socio-economic realities remain a strong influence on education outcomes.

Indeed, across Africa dropout is intricately linked to economic deprivation, household size, and social norms. For South Africa and Nigeria, poverty and broken families were identified as the major determinants of dropping out of school (Effiong & Edet, 2020; Anlimachie & Avoada, 2020). Despite these reforms, numerous students still drop out of school before graduating due to economic pressures, lack of parental literacy, and lack of community assistance.

Like various sub-Saharan countries, Kenya has heavily invested in education as a medium for socio-economic development. The policies of free primary education (FPE), subsidized secondary education, and the policy of transitioning 100% of students to secondary schools demonstrate government efforts to uphold universal schooling (MOEST, 2023). However, notwithstanding all these policy efforts, dropout is still a serious problem in rural and peri-

urban communities, especially in Machakos County. The economy of the county is marked by small-scale agriculture and informal enterprise, and many families live in situations of income uncertainty. Irregular attendance, failure to pay fees, and early school withdrawal of a child continue to be common problems of secondary schools in Machakos.

For instance in Machakos County, student dropout is a major threat to educational progress and achievement of Vision 2030 in Kenya. According to a report from the Machakos County Government (2023) on the education sector, over Ksh. 44 million has been allocated in bursaries for vulnerable learners. However, the fact that dropout persists despite these subsidies indicates more fundamental socio-economic issues. In addition, most families are economically unstable, households are large, and parents have limited education, which hinders parents' abilities to ensure the continuation of schooling.

This systematic review, therefore, aims at synthesizing empirical evidence on socio-economic determinants of school dropout in public secondary schools in Machakos County. By synthesizing evidence from previously conducted studies, the purpose of the review is to develop contextual evidence used to guide evidence-based practice interventions to improve student retention in the region.

### 1.1 Statement of the Problem

Kenya's education policies have achieved remarkable progress in access and enrolment, yet dropout rates continue to erode these gains. National statistics indicate that out of approximately 1.1 million students enrolled in Form One, only about 936,500 complete their secondary cycle (Mwangi & Cheloti, 2022). This statistic represents a 15% attrition rate that disproportionately affects learners from economically disadvantaged households. In Machakos County, the problem is particularly acute, where household poverty, low parental education, and unstable family structures intersect to create barriers to school completion.

Although local authorities have implemented bursary programs and awareness campaigns, there is limited empirical data quantifying the relationship between socio-economic variables and student dropout within Machakos County. Studies from neighbouring counties such as Makueni, Embu, and Kajiado (Mueni & Maithya, 2023; Lekasi, 2020; Ndegwa, 2023) have highlighted similar patterns, but these findings cannot be generalized without contextual analysis. The absence of localized empirical evidence constrains policymakers' ability to design targeted solutions. This review therefore fills an important gap by consolidating available studies and examining the socio-economic determinants of dropout specific to Machakos County.

### 1.2 Research Objective

The main objective of this review is to determine the socio-economic factors influencing student dropout in public secondary schools in Machakos County, Kenya.

#### 1.2.1 Specific Objectives

The study seeks to:

1. Determine the influence of parental income on student dropout in Machakos County.
2. Examine how parental education level affects students' likelihood of leaving school in Machakos County
3. Assess the impact of family size on school retention in Machakos County
4. Explore how family structure influences dropout patterns among public secondary school students in Machakos County.

## II. LITERATURE REVIEW

### 2.1 Theoretical Framework

The study is based on the value of Human Capital Theory (HCT) by Schultz in 1961 and developed by Becker in 1964 in theoretical analysis. The theory states that education improves the productivity of individuals and the development of the society. Families make cost-benefit calculations about investment in education, and they can be directly affected by changes in their economic circumstances around decisions about school attendance and school completion. Parents with better income levels are better able to support attentive expenses, whereas parents with restricted financial gain tend to ignore.

In Machakos County, where the majority of life choices for households rely on small-scale food production and informal trade, the lack of cash flow challenges investments in education. The theory also states that parental education is a key determinant of attitudes toward schooling. In addition, educated parents understand the potential benefits of education and create an encouraging learning environment for their children (Avnet et al., 2022). Conversely, uneducated parents have a negative attitude towards formal education, which indirectly fosters premature school leaving.

Family size and structure also play a mediating role in household investment decisions. Smaller households strain limited resources, leading to imbalances in children's education. In addition, single-parent homes often lack both

the financial and emotional resources to remain safe and consistent. From the perspective of human capital, it implies underinvestment in human potential and thereby affects national productivity under the broader concept of a nation (Chevalier et al., 2023). This theoretical context provides strong justification for socio-economic interventions that can improve the capacity of parents to invest in their children's education.

## 2.2 Empirical Review

Based on empirical evidence across Kenya and Africa, socio-economic variables have been found to be a key factor in determining school dropout. In Uganda, socio-economic inequalities remain a significant factor in determining school dropout (Mueni, 2018). The dropout rates rose to 13.3% among girls and 10.2% among boys due to major limitation factors such as poverty, peer pressure, and unavailability of parental assistance. Similarly, Afia et al. (2019) report that parenting and household income had a significant positive impact on the school persistence of adolescents.

In Kenya, research has demonstrated high correlations between family attributes and dropout. Kanoi (2022) noted that household size directly influenced primary school completion in Laikipia West Sub-County, with uniformity of responders discouraging learners as primary bearers of responsibility of undertaking programs toward their chords of learning. This result is consistent with the findings of Mueni and Maithya (2023), who investigated boy-child dropout in Makueni County and found that family size was among the significant factors that contribute to dropout of the boys in day secondary schools.

The study by Kiboi (2023) in Bungoma County on how socio-economic background influences school performance among the students in Bungoma County has established that low household income and parents' employment were disadvantageous to students' performance and hence indirectly led to student dropout. Although performance rather than dropout was being examined, the study shows the importance of financial capability to sustain schooling.

Only a few studies are available within Machakos County. However, using Tharaka-Nithi County as a comparison, Gitari et al. (2024) suggested that socio-economic barriers such as low parental income and family instability are to blame for continued drop-out between the counties. These findings follow the trend seen in Machakos, which indicates that the same processes are at work there.

Ndegwa (2023) examined the connection among socio-economic variables and dropout rate for boys in Embu County; he discovered that socio-economic variables (specifically parental education and the family's amount of income) had a strong correlation with dropout rates. The study highlighted that low parental literacy devalues the importance assigned to education, and economic—most likely financial—hardship forces students to use themselves in informal work. This is consistent with the situation in Machakos County, where provision of subsistence livelihoods often competes with attendance at school.

Other research highlights the gendered dimension of the socio-economic determinants. Nzina (2022) noted that in Makueni County, early marriages and domestic work associated with poverty increased dropouts among the girls. While this study dealt with an exclusively female sample, the conclusions hold for mixed-gender settings, such as Machakos, where similar socio-economic forces also engage boys and girls in an educational process that affects them in other ways. Likewise, Nchina and Mulwa (2019) found large family size was positively correlated with dropout because of economic burden and gender bias in resource allocation.

In Tanzania, Ketija (2018) and Mhando (2020) have shown that financial constraints and gendered socio-cultural expectations are the drivers of school attrition in rural areas. The similarities to be observed in East African situations confirm that socio-economic constraints transcend national boundaries and share common patterns of influence.

In Kenya, a study by Mwihi and Ongeh (2022) identified socio-economic issues, especially low income and unstable families, as being at the center of boy-child dropout in Nyandarua County. Similarly, Lekasi (2020) noted that household economic situations strongly predict dropout rates in Kajiado County.

The agents of interruption and dropout are collectively supported by the following studies with pertinent information: First, poorly paid parents with low education levels and large family sizes. However, most of the research that exists are either gender-specific or outside of Machakos County. This systematic review, therefore, brings available empirical evidence together to present a Machakos-specific understanding of the dropout problem and direct policy interventions to aggregate these socio-economic realities.

## III. METHODOLOGY

This systematic review had a qualitative approach using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to guide the study. The review sought to identify, appraise, and synthesize empirical studies published between the period 2010-2025 on the relationship between socio-economic factors and dropout of students in Machakos County, Kenya.

### 3.1 Research Design

The study used the systematic review design because this affords the opportunity to combine numerous findings from various studies together to give the theme of the research problem comprehensive understanding (Creswell, 2002). By following a systematic approach involving the identification, screening, and synthesis of relevant evidence, this method ensures transparency and replicability and minimizes bias.

### 3.2 Eligibility Criteria

The review only considered the empirical studies conducted in Machakos County analyzing the effects of socio-economic variables such as parental income, parental education, family size, and family structure on student dropout or student retention. Studies conducted in places next to Machakos were included only if they provided comparative insights that are relevant to Machakos. Publications that were published from 2010 to 2025 have been considered to capture contemporary evidence in the context of current education policies such as the Free Day Secondary Education program and the 100% transition policy. Non-empirical papers, policy briefs without data, and opinion pieces were excluded.

### 3.3 Data Sources and Search Strategy

The review systematically searched academic databases such as Google Scholar, African Journals Online (AJOL), ERIC, and institutional repositories, including the University of Nairobi, Kenyatta University, and Machakos University. Keywords used in combination included “student dropout,” “Machakos County,” “socio-economic factors,” “secondary school,” “family size,” and “parental income.” Additional government and county education reports were retrieved to provide contextual evidence.

### 3.4 Screening and Selection

An initial pool of 112 studies was identified. After removing duplicates and applying inclusion criteria, 28 studies remained. A second screening excluded studies that did not report empirical findings on Machakos County, leaving 16 studies for full-text review. These were further assessed for methodological quality and relevance, resulting in 10 studies that met all inclusion criteria.

### 3.5 Data Extraction and Quality Appraisal

Data were extracted using a structured form capturing study author, year, objectives, methodology, population, main variables, and key findings. Quality appraisal employed the Joanna Briggs Institute (JBI) checklist for cross-sectional studies and the Critical Appraisal Skills Programme (CASP) tool for qualitative research. Each study was rated as high, moderate, or low quality based on methodological rigor, clarity of variables, and analytical soundness.

### 3.6 Data Analysis and Synthesis

A narrative synthesis approach was applied to integrate findings due to heterogeneity in study designs. Studies were grouped according to the four socio-economic variables: parental income, parental education, family size, and family structure. Patterns of association between these variables and dropout were examined, highlighting convergent and divergent findings across the Machakos context. Where applicable, comparisons were drawn with studies from neighbouring counties to strengthen interpretive validity.

### 3.7 Ethical Considerations

Because this study relied exclusively on secondary data, ethical approval was not required. However, ethical standards of academic integrity and proper citation were maintained throughout the review process. The review adheres to transparency and reproducibility principles recommended by PRISMA and the World Bank’s education research guidelines (World Bank, 2021).

### 3.8 Limitations of the Study

The review depended on available literature within the 2010–2025 window, and the scarcity of Machakos-specific empirical studies posed a challenge. Some relevant research may not have been captured due to restricted access to unpublished theses. Nevertheless, triangulating multiple sources enhanced the robustness of the conclusions.

## IV. FINDINGS

The literature of Machakos-based empirical evidence converges on four socio-economic determinants that meaningfully shape secondary school persistence: parental income, parental education, family size, and family structure. Across Kangundo’s neighbouring sub-counties of Masinga, Kathiani, Mwala, and Machakos Sub-County, studies

consistently show that inadequate household resources and constrained home learning environments heighten the risk of absenteeism, educational wastage, and early school leaving. In Masinga, a county-representative correlation study documented that boys' completion rates in public day secondary schools were significantly associated with household size, parental income, and parents' education levels, with discipline also emerging as a salient proximate factor within the home environment (Mumo & Kinyanjui, 2024; see also Kioko, 2024). The findings indicated that larger households diluted material and supervisory resources and that low and volatile incomes amplified fee arrears and interrupted attendance, while limited parental schooling dampened educational expectations and monitoring.

Kathiani-based studies deepen the picture by directly quantifying home-based influences on secondary-level wastage. Using a descriptive survey design in all public secondary schools in the sub-county, Samuel et al. (2017) reported statistically significant associations between educational wastage and parental income, family structure, parental education, and family size, while household lighting showed no significant relationship. In complementary work focused on day schools, Mutinda (2013) found that fee problems, family-background stressors, and peer pressure were dominant reasons for dropout as reported by teachers and students, with a large share of respondents attributing attrition to inability to meet school costs despite the presence of bursary suggestions, guidance and counselling, and feeding programs. These results align closely with Human Capital Theory's cost-benefit calculus, whereby constrained households underinvest in schooling when direct costs and opportunity costs rise above perceived returns.

Evidence from Machakos Sub-County further underscores the centrality of affordability and education costs in shaping transitions and, by extension, downstream retention. A survey of head teachers and Class 8 teachers concluded that the cost of education significantly depresses transition from primary to secondary school, recommending increased subsidies to cushion parents from extra levies and to reduce the dependency-income trap that narrows access for the poorest families (Mwikya et al., 2019). While this study examined transition rather than secondary dropout per se, its mechanisms—household liquidity, exposure to extra charges, and limited fiscal space—are the same cost channels that subsequently manifest as irregular attendance and attrition in day secondary schools, particularly when fee balances trigger intermittent exclusion from class or exams.

Two Mwala-based inquiries support the Machakos evidence base by showing how socio-economic constraints interact with gender and school type. A descriptive analysis of public boarding and day schools found that socio-economic deprivation, family background stress, and school-related costs intersect with individual vulnerabilities to push girls out of school, with the study linking levies, sanitation, resource shortages, and peer influence to dropout in the sub-county (Ngu, 2015). A related study on socio-economic drivers of performance, while not a dropout study, connected parental poverty to chronic underperformance in Mwala, a pathway that often precedes disengagement and exit, especially where repeating becomes unaffordable or stigmatized (Nduku, 2015). Together, these Mwala results echo the patterns observed in Masinga and Kathiani and reinforce the conclusion that the dropout problem in Machakos is rooted in household economic vulnerability compounded by large family sizes, low parental schooling, and fragile family structures.

Findings from within Machakos are complemented by proximate and thematically related evidence that helps triangulate mechanisms. Although situated at the primary level, a Machakos County study on parental involvement and transition showed that regular school-home engagement, meetings, and counselling are associated with improved attendance and progression, suggesting that parental participation can mitigate the adverse effects of poverty on schooling trajectories (Onacha & Guantai, 2025). In the broader Kenyan and East African context, cost-related barriers, household poverty, and gendered social expectations repeatedly predict attrition and educational wastage, providing a consistent external validity check for the Machakos results (Aga, 2022; Serem & Chebet, 2017). Collectively, the Machakos-focused evidence demonstrates that low income, limited parental education, larger households, and non-intact family structures exert independent and overlapping pressures on secondary-school persistence, with discipline and parental involvement operating as proximal channels through which these structural constraints are expressed in daily schooling behaviour (Mumo & Kinyanjui, 2024; Kioko, 2024; Samuel et al., 2017; Mutinda, 2013; Mwikya et al., 2019; Ngu, 2015; Nduku, 2015; Onacha & Guantai, 2025).

## V. DISCUSSION

The Machakos-specific pattern that emerges from the reviewed evidence is one of cumulative disadvantage, where multiple socio-economic constraints converge to reduce the probability of on-time completion in public day secondary schools. Human Capital Theory offers a parsimonious but powerful lens for interpreting these findings: when households face persistent liquidity constraints and elevated opportunity costs of schooling, the expected private return to continued enrollment is discounted relative to immediate income-generating alternatives or cost avoidance, making withdrawal a rational, if socially costly, choice under budget stress. Parental income therefore operates as the primary constraint channel, with fee arrears, uniform and materials costs, and transport expenses acting as direct barriers to daily attendance and exam eligibility. The robust associations reported in Masinga and Kathiani between parental income and

educational wastage are consistent with this mechanism and underscore the need to treat affordability as a continuous, not binary, problem even in the era of “subsidized” secondary education (Mumo & Kinyanjui, 2024; Samuel et al., 2017).

Parental education functions both as a human capital endowment and as a cultural–cognitive scaffold that shapes expectations, study support, and school–home communication. Across Machakos studies, parents with low educational attainment are less likely to provide structured academic monitoring, to engage proactively with school, or to navigate bursary and subsidy programs effectively, thereby amplifying the attrition risks created by poverty (Mumo & Kinyanjui, 2024; Samuel et al., 2017; Mutinda, 2013). This mechanism dovetails with research elsewhere in Kenya showing that parental involvement buffers the effects of poverty on progression and attendance, a finding mirrored in the Machakos-based transition study at the primary level (Onacha & Guantai, 2025). Accordingly, strengthening parental capability is not only a matter of income support but also of literacies—financial, educational, and procedural—that help families convert public subsidies into sustained attendance.

Family size and structure capture the distribution of both financial and supervisory resources. Larger households dilute scarce funds and parental time, heightening the likelihood of intermittent exclusion from school and increasing the burden on older siblings to contribute labor, thereby producing attendance volatility that erodes attachment to schooling and precedes permanent exit. Its compounded vulnerabilities found in many non-intact and guardian-headed households include lower and less stable income, fragmented caregiving, and weaker school-home linkages, which were identified in both Kathiani and Masinga as some of the strongest predictors of educational wastage and non-completion (Samuel et al., 2017; Mumo & Kinyanjui, 2024). This contradiction is supported by the evidence from Mwala, where socio-economic voluntaries exist in combination with school-based voluntarism to force girls out of school when levies and facilities exacerbate the daily costs of schooling (Ngu, 2015).

Although the Machakos literature highlights structural constraints, two proximal levers reoccur as changeable retention channels, namely discipline and parental responsibility. The Masinga studies specifically pointed at discipline as a dog of the same line with boys’ completion, as it was also fueled by household stress and poor supervision, which then triggers conduct problems that break boys’ attendance and learning schedules (Mumo & Kinyanjui, 2024; Kioko, 2024). In the case of evidence at Machakos schools, Onacha and Guantai (2025) found that continuity of active family-school contact in a structured way can avert cost-learning disengagement through promotion of attendance norms, early signs of emergent risk, and linking families to bursary provision prior to the stage of being excluded. Therefore, while poverty, low parental education, large family size, and fragile family structures are hard to change over the short term, Machakos schools can change the ways—behavioral support and guidance, counselling, early warning signs, and parent communication—in which those constraints play out as dropout.

These findings have three implications for policy and practice for Machakos County in particular and Machakos in general. First is that affordability needs to be addressed as a dynamic risk that must be addressed immediately with responsive instruments that provide liquidity in the short term because chronic absenteeism is preceded by such liquidity. Second, parental capability building—information; navigation support for bursaries; and low-burden engagement routines—can increase the returns to schooling realized, despite poverty. Third, school-level systems for early detection of risk and initial response in terms of counseling, remedial support, and flexible payment plans are essential complements to county subsidies. In combination, these interventions correspond to Human Capital Theory, where reducing the perceived and real cost of continued enrollment and increasing the perceived benefits with respect to improved performance and prospects of progression are involved.

## VI. CONCLUSIONS

The Machakos evidence base shows that socio-economic determinants are not peripheral correlates but central determinants of the secondary-school dropout in public day schools by affording poverty, lower capacity for parental oversight and encouragement of learning, and the resource dilution and supervision in large or fragile families. Masinga and Kathiani studies give internally valid associations with indicators of transition with income, parental education, family size, family structure, and discipline, while Mwala and Machakos Sub-County studies explicate the pathways of transition costs and adverse persistence in lower-income households (Mumo & Kinyanjui, 2024; Kioko, 2024; Samuel et al., 2017; Mutinda, 2013; Mwikya et al., 2019; Ngu, 2015; Nduku, 2015). Argued in the context of Human Capital Theory, these findings confirm that households from Machakos are exposed to schooling cost curves, which are still steeper than the household cash flows and perceived returns—particularly for older adolescent children in day schools.

For Machakos County—whose socio-economic profile and schooling ecology mirror those of the Machakos studies synthesized—policy efforts that solely expand nominal subsidies will be necessary but insufficient. The review concludes that effective solutions require integrated measures that reduce the day-to-day costs of attendance, build parental capability and school–home partnership, and institutionalize school-level systems that keep learners connected

to instruction when financial shocks occur. Absent such coordinated action, the attrition observed in neighboring Machakos sub-counties is likely to persist, undermining county efforts to achieve full retention and completion.

## VII. RECOMMENDATIONS

Machakos County authorities should refine bursary targeting and delivery to address liquidity shortfalls before they trigger exclusion from class or examinations. Establishing rolling micro-bursaries or emergency fee-relief funds that schools can activate upon verified arrears would directly tackle the affordability channel identified across Masinga, Kathiani, and Machakos Sub-County studies (Mumo & Kinyanjui, 2024; Samuel et al., 2017; Mwikya et al., 2019). Schools should complement financial supports with structured parent engagement routines that are low-burden but regular, such as termly academic reviews and SMS-based attendance nudges, to strengthen the monitoring and encouragement functions that low-education households struggle to supply consistently (Onacha & Guantai, 2025). Counseling and behavior-support programs should be integrated with early-warning indicators—unexcused absences, fee arrears flags, and sudden performance dips—for timely referral, given the documented role of discipline as a proximal mediator of household stress into dropout behavior in Masinga (Mumo & Kinyanjui, 2024; Kioko, 2024).

Given the repeated association between family size and attrition, county and school leaders should coordinate with community-based organizations to provide sibling-focused supports that protect older students' study time, including homework clubs, supervised study spaces, and meal-support arrangements during exam terms. Where family structure creates caregiving gaps, targeted mentorship and case management can substitute for missing oversight, connecting learners to bursary programs, psychosocial support, and remedial instruction. Finally, to address the persistent cost of education flagged in Machakos Sub-County, the county should audit ancillary levies and enforce guardrails that prevent extra charges from accumulating at exclusionary levels, while investing in shared textbook banks and uniform support to lower recurring costs for the poorest households (Mwikya et al., 2019; Ngui, 2015). These measures, taken together, would reduce the effective cost of continued enrollment, strengthen parental capacity, and stabilize attendance patterns—exactly the levers the Machakos evidence identifies as most tightly coupled to dropout risk.

## VIII. LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Although this synthesis focuses on Machakos County, the available studies cluster in Masinga, Kathiani, Mwala, and Machakos Sub-County; direct empirical work in all parts of the county, such as Kangundo Sub-County, remains limited. Moreover, several relevant inquiries examine transition or performance rather than dropout as the primary endpoint, requiring cautious inference about pathways from cost and performance to attrition. Future research in Machakos County should employ longitudinal designs that track household shocks, fee trajectories, attendance, and discipline over time, enabling estimation of the marginal effects of targeted bursaries, parent-engagement interventions, and school-based early-warning systems on retention. A mixed-methods approach would illuminate not only effect sizes but also the lived mechanisms through which socio-economic constraints translate into daily schooling decisions in the sub-county.

## REFERENCES

- Abuya, B. A., Elungata, P., Mutisya, M., & Kabiru, C. W. (2023). Parental education and high school completion in the urban informal settlements in Kenya. *Cogent Education*, 4(1), 1369489. <https://doi.org/10.1080/2331186X.2017.1369489>
- Afia, S., Abaho, E., & Oketch, J. (2019). Parenting practices and school dropout among adolescents in Uganda. *Education and Urban Society*, 51(7), 1–20.
- Aga, S. M. (2022). *Influence of social-economic factors on retention of boys in public secondary schools in Marsabit County, Kenya* [Master's thesis, Kenya Methodist University].
- Alkens, T., & Barbarin, W. (2022). Perceptions of socioeconomic mobility influence academic persistence among low socioeconomic status students. *Journal of Experimental Social Psychology*, 72(6), 45–52.
- Anlimachie, M., & Avoada, E. (2020). Impact of socio-economic factors on school dropout rates among secondary school girls in Africa: Evidence from empirical studies. *Journal of African Education*, 12(3), 45–58.
- Avnet, M., Makara, D., Larwin, K. H., & Erickson, M. (2022). The impact of parental involvement and education on academic achievement in elementary school. *International Journal of Evaluation and Research in Education*, 8(3), 476–483.

- Chebete, L. J., Makokha, E. N., & Sakataka, W. (2023). Influence of teenage mothers' re-admission policy on public secondary schools completion rate in Pokot South Sub-County, West Pokot County, Kenya. *International Journal of Current Innovations in Advanced Research*, 2(4), 32–38.
- Chevalier, A., Harmon, C., O'Sullivan, V., & Walker, I. (2023). The impact of parental income and education on the schooling of their children. *IZA Journal of Labor Economics*, 2(1), 1–22.
- Choi, H. J., & Kim, B. U. (2022). Factors affecting adult student dropout rates in the Korean cyber-university degree programs. *The Journal of Continuing Higher Education*, 66(1), 1–12.
- Creswell, J. W. (2002). *Research design: Qualitative, quantitative, and mixed method approaches*. Sage Publications.
- Effiong, O. J. I., & Edet, M. I. (2020). Influence of family background on students' dropout from secondary schools in Yakurr Local Government Area. *Global Journal of Educational Research*, 19(1), 23–29.
- Fall, W., & Roberts, R. (2022). Parental involvement and students' academic achievement: A growth modeling analysis. *The Journal of Experimental Education*, 70(1), 27–61.
- Gichuhi, W., Omondi, A., & Mwangi, E. (2022). The role of education in achieving sustainable development goals: A focus on SDG 4 in Kenya. *International Journal of Education and Research*, 10(4), 123–137.
- Gitari, J. W., Odek, A., & Marima, E. (2024). Socio-economic factors and secondary school dropout among girls in Mariani Ward, Tharaka-Nithi County, Kenya. *African Journal of Empirical Research*, 5(4), 520–534. <https://doi.org/10.51867/ajernet.5.4.42>
- Injendi, E., & Jephthar, M. (2020). The role of household income in education access among secondary school students in Kenya. *African Educational Research Journal*, 8(1), 21–28. <https://doi.org/10.1155/2020/5347828>
- Johnson, S. R., & Stage, F. K. (2022). Academic engagement and student success: Do high-impact practices mean higher graduation rates? *The Journal of Higher Education*, 89(5), 753–781.
- Kadau, I. (2023). Parental involvement in the implementation of CBC in primary schools. *APLIKATIF: Journal of Research Trends in Social Sciences and Humanities*, 2(2), 135–146.
- Kakuba, G., Kira, M., & Ntanga, D. (2021). Secondary education reforms in sub-Saharan Africa: Tanzania's experience. *African Journal of Educational Studies*, 11(2), 67–84.
- Kanoi, S. (2022). *Influence of household characteristics on pupils' completion rates in public schools in Laikipia West Sub-County, Kenya* (Doctoral dissertation, University of Nairobi).
- Keboi, W. N. (2023). *Effect of parental socio-economic status on students' academic performance in secondary schools in Bungoma County, Kenya* (Doctoral dissertation, University of Nairobi).
- Ketija, M. (2018). Socio-economic factors determining children dropout rates in Babati Town Council, Tanzania. *African Journal of Educational Studies in Mathematics and Sciences*, 14(1), 1–12.
- Kioko, M. D. (2024). *Socioeconomic determinants on boys' completion rate in public secondary schools in Machakos County, Kenya* [Unpublished master's thesis, Kenyatta University].
- Lekasi, S. O. (2020). *Influence of household factors on dropout rates in public secondary schools in Oloitoktok Sub-County, Kajiado County, Kenya* (Doctoral dissertation, St. Paul's University).
- Levine, D. I., & Aisenberg, J. (2022). The impact of socio-economic status on educational engagement. *Journal of Family and Economic Issues*, 43(1), 20–35.
- Machakos County Government (MCG). (2023). *Education sector report 2023: Addressing school dropout and educational challenges for girls in Tharaka-Nithi County*. Machakos County Government.
- Machebe, C. H., Ezegbe, B. N., & Onuoha, J. (2023). The impact of parental level of income on students' academic performance in high school in Japan. *Universal Journal of Educational Research*, 5(9), 1614–1620.
- Mackatiani, C., Mackatiani, N. I., & Owino, M. A. (2022). Transition in education: Perspectives on girls' dropout rates in secondary schools in Kenya. *International Journal of Educational Research and Development*, 10(2), 45–58.
- Mburugu, P., & Matoke, S. (2019). Economic barriers to education: Understanding dropout rates among girls in rural Kenya. *Journal of Educational Policy and Development*, 9(1), 112–130.
- Mduma, J., Mhando, R., & Ng'wandu, S. (2019). The influence of household income on school dropout rates in Tanzania. *International Journal of Educational Development*, 68, 1–9. <https://doi.org/10.19101/IJACR.2018.839045>
- Mhando, A. (2020). The impact of financial barriers on girls' education: Evidence from rural Tanzania. *International Journal of Educational Research*, 105, 101668.
- Ministry of Education, Science and Technology (MOEST). (2023). *The state and schooling in Kenya: Historical developments and current challenges*. Africa Today.
- Mueni, K. R. (2022). *Socio-economic factors influencing boy-child dropout rate from public day secondary schools in Kilungu Sub-County, Makueni County* (Doctoral dissertation).
- Mueni, R. K., & Maithya, R. (2023). Family size and boy-child dropout rate in public day secondary schools in Makueni County, Kenya. (Doctoral dissertation, University of Nairobi).

- Mugenda, O. M., & Mugenda, A. G. (1999). *Research methods: Quantitative and qualitative approaches*. African Centre for Technology Studies (ACTS).
- Mumo, D. K., & Kinyanjui, G. (2024). Influence of socioeconomic determinants on boys' completion rate in public secondary schools in Machakos County, Kenya. *Journal of African Interdisciplinary Studies*, 8(7), 5–20.
- Murugi, S. (2022). *Influence of home-based factors on discipline of students in public boys' secondary schools in Makuani Sub-County, Kenya* (Doctoral dissertation, University of Nairobi).
- Mutinda, A. K. (2013). *Institutional and home-based factors influencing student drop-out in day secondary schools in Kathiani District, Machakos County, Kenya* [Unpublished master's thesis, University of Nairobi].
- Mwangi, G., & Cheloti, S. K. (2022). Enhancing completion rates in public day secondary schools in Kenya: The role of government bursary subsidy. *Asian Journal of Education and Training*, 3(1), 69–73.
- Mwangi, N. (2020). The role of parental monitoring in reducing school dropout rates. *Kenya Journal of Child Development*, 7(4), 55–65.
- Mwihia, C., & Ongek, M. (2022). Factors influencing boy-child dropout from public secondary schools in Kinangop Sub-County, Nyandarua County, Kenya. *European Journal of Education Studies*, 5(4), 23–29.
- Mwikya, V. N., Cheloti, S. K., & Mulwa, D. (2019). Influence of cost of education on transition rates from primary to secondary schools in Kenya: A case of Machakos Sub-County. *International Journal of Economics, Commerce and Management*, 7(3), 298–316.
- Ndegwa, D. (2023). *Factors affecting the completion rate of boys in public day secondary schools in Mbeere South Sub-County, Embu County* (Doctoral dissertation, Chuka University).
- Ndirangu, G., & Kirimi, P. (2021). Socio-economic challenges facing single-parent families in Kenya and their impact on children's education. *International Journal of Family Studies*, 15(1), 67–84.
- Nduku, M. A. (2015). *Socio-economic factors influencing students' performance in Mwala Sub-County, Machakos County* [Master's thesis, Mount Kenya University]. <http://erepository.mku.ac.ke/handle/123456789/3042>
- Ngesu, L., Kimutai, C., & Chebet, K. (2020). Socio-economic determinants of girls' school dropout: A case study of selected regions in Kenya. *Journal of Education and Social Policy*, 7(2), 44–53.
- Ngui, A. M. (2015). *Factors influencing girls' drop out in public boarding and day secondary schools in Mwala Sub-County, Machakos County* [Master's thesis, Mount Kenya University]. <http://erepository.mku.ac.ke/handle/123456789/2129>
- Nzina, A., & Mulwa, F. (2019). Family size and its impact on girls' dropout rates in secondary schools: Evidence from Makuu Sub-County, Makuani County, Kenya. *African Journal of Educational Studies in Mathematics and Sciences*, 15, 109–116.
- Nzina, J. W. (2022). *Socio-economic factors influencing female students' retention in public secondary schools in Mukaa Sub-County, Makuani County, Kenya* (Doctoral dissertation).
- Onacha, C., & Guantai, H. K. (2025). Influence of parental involvement on transition rates among primary schools in Machakos County. *International Academic Journal of Social Sciences and Education*, 2(4), 244–261.
- Samuel, S. M., Mulwa, D. M., & Migosi, J. (2017). Home-based factors and educational wastage in public secondary schools in Kathiani Sub-County, Machakos, Kenya. *The International Journal of Humanities & Social Studies*, 5(2), 116–119.
- Serem, F. K., & Chebet, E. (2017). Socio-economic factors influencing repetition and dropout rates in primary schools in arid and semi-arid lands of Baringo County, Kenya. *Africa Journal of Technical and Vocational Education and Training*, 2(1), 95–104. <https://doi.org/10.69641/afritvet.2017.2140>
- Smith, L., Jones, R., & Thompson, K. (2022). The impact of household income on secondary school dropout rates among girls in Australia: A mixed-methods approach. *Australian Journal of Educational Research*, 66(3), 389–407.
- Strid, K., De Oliveira, R. R., & Loto, M. (2020). Socio-economic factors influencing educational access: Insights from Brazil and Peru. *Latin American Journal of Educational Research*, 11(4), 35–54.
- Symeou, R., Martinez, P., & Alvarez, T. (2022). Factors influencing dropout and academic performance: An Australian higher-education equity perspective. *Journal of Higher Education Policy and Management*, 42(1), 14–30.
- Wanjiku, J. (2021). Factors influencing dropout rates among girls in rural Kenya: A case study of Tharaka-Nithi County. *Journal of African Education Studies*, 12(3), 215–230.
- Woldehana, R., Jones, M., & Tefera, T. (2022). Predicting dropout using student- and school-level factors: An ecological perspective. *School Psychology Quarterly*, 32(1), 35–51.
- World Bank. (2021). *World development report 2021: Learning to realize education's promise*. World Bank Publications.