

## *Ensure Inclusive and Equitable Education: Who's Left Behind?*

Freshy Windy Rosmala Dewi, University of Indonesia, Indonesia  
Azka Muthia, University of Indonesia, Indonesia

The Asian Conference on Education 2024  
Official Conference Proceedings

### **Abstract**

There are numerous challenges for Indonesia to achieve inclusive and equitable education. One of the persistent issues is the high number of out-of-school children (OOSC). Therefore, this study aims to identify the determinants of OOSC among 7-to-18-year-olds in Indonesia, who are in the compulsory schooling age. Using a socio-ecological model approach, determinants of OOSC are examined across various levels: individual, household, and community. This study uses the head of household's education level and employment status as instrumental variables for per capita expenditure (a proxy for income), which is one of the independent variables. Other independent variables are child's sex, disability status, presence of biological mother in household, household size, and type of residence. Using IV-probit regression, results indicate that disability status is the strongest determinant of OOSC among 7-to-18-year-olds. Assuming average values of the independent variables, the likelihood of being OOSC for children with disabilities is 23.5% higher compared to those without disabilities. Another finding is that higher per capita expenditure is associated with a lower risk of children being out of school. Furthermore, boys, children not living with their biological mother, living in households with more than 4 members, and living in rural areas are at the higher risk of being OOSC. The study finally calls for government to; improve facilities and infrastructure, especially in rural areas; provide education assistance for those who are at high risk of being OOSC; and promote inclusive education programs for children with disabilities since they are one of the most marginalized groups.

Keywords: Out-of-School Children, Compulsory Education, Disability, IV-Probit

**iafor**

The International Academic Forum  
[www.iafor.org](http://www.iafor.org)

## Introduction

Development in the education has become a global goal, including Indonesia. In the target 4.1 of Sustainable Development Goals (SDGs), it is stated that by 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes. The Indonesian government's commitment to achieving this target is reflected in its consistent decision to maintaining the education budget at 20% of the national expenditure (Kemenkeu, 2023). This budget is allocated through policies aimed at increasing school participation, such as the Program Indonesia Pintar (PIP), Kartu Indonesia Pintar (KIP), School Operational Assistance (BOS), Early Childhood Education Operational Assistance (BOP PAUD), and others (DPR, 2023). From an economic perspective, these government policies aim to increase the demand for schooling.

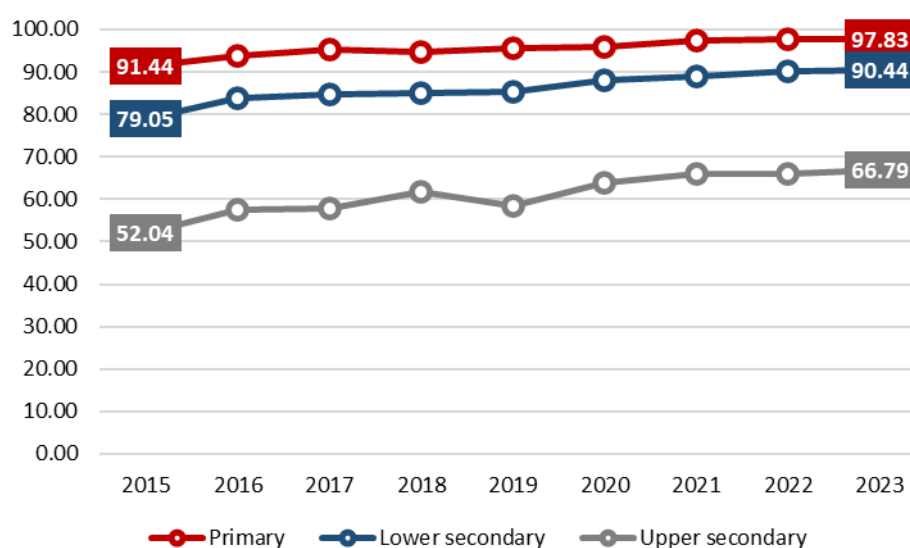


Figure 1: Completion Rate by School Level, 2015-2023

Source: Susenas 2015-2023

In fact, the educational attainment of the Indonesian population is still disappointing. As shown in Figure 1, school completion rates at all levels are still not 100 percent, particularly at the upper secondary level. Over the eight years since the SDGs were established, the upper secondary completion rate has increased by 14.75 percentage points (from 52.04 percent in 2015 to 66.79 percent in 2023). On average, the upper secondary completion rate has only increased by 1.8 percentage points per year. Considering there are only six years left until the SDGs deadline, an annual increase of 1.8 percent would only raise the upper secondary completion rate to around 80 percent by 2030. Without accelerated programs, achieving the SDGs target of ensuring all children complete primary and secondary education will be impossible.

One of the factors that can inhibit the attainment of completion rates is the issue of out-of-school children. According to Unicef (2015), out-of-school children can be divided into two groups based on their exposure to education: those who entered school in the past and dropped out, and those who have not entered school. Data from the Susenas from 2015 to 2023 shows that the rate of out-of-school children has remained quite stagnant for each school-age group over nearly a decade (Figure 2). The rate of out-of-school children tends to increase with age. In 2023, the out-of-school rate for the 16-18 age group was 21.61 percent.

In other words, about 1 in 5 children aged 16-18 in Indonesia were not attending school in 2023.

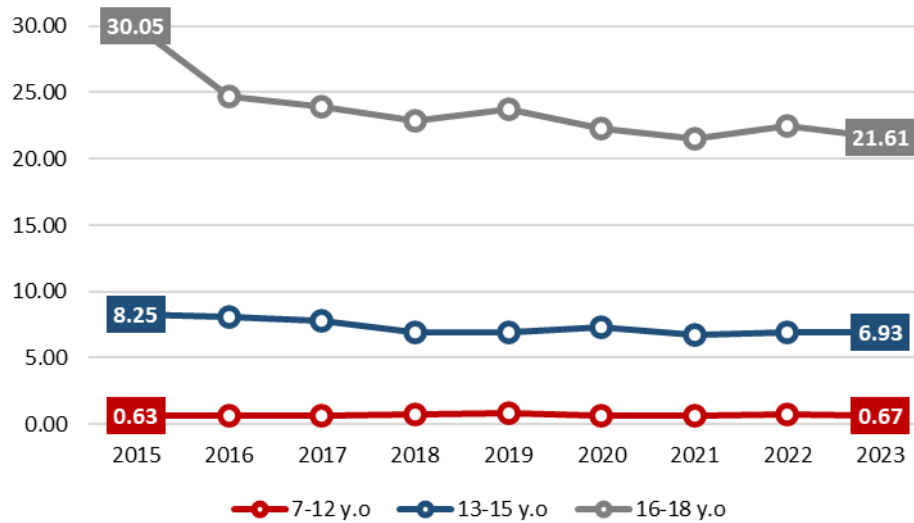


Figure 2: Out-of-school Children by Age-Group, 2015-2023  
Source: Susenas 2015-2023

Children who never enter school will have no exposure to formal education at all and will bear the attendant lifelong consequences. For children who entered school but dropped out and those who will enter school in the future, the consequences vary according to the timing and extent of their exposure to education (Unicef, 2015). UNICEF (2022) formulated an educational attainment framework by adopting a socio-ecological model, where educational outcomes are influenced by factors at various levels, from the innermost level (i.e., individual) to the outermost level (i.e., environment/region). This study aims to gain a deeper understanding of the determinants of OOSC among 7-to-18-year-olds in Indonesia, who are in the compulsory schooling age. The paper is organized as follows: the next section, dedicated to literature review; methods, describes the IVP model, the data used, and the variables selected; results of the estimations are presented in the following section. Comments on the results and implications for health policies conclude the study.

## Literature Review

As shown in Figure 3, out-of-school children can be divided into two groups based on their exposure to education: those who are in primary and secondary school age, have entered school in the past and dropped out, and those who have not entered school (Unicef, 2015). In Indonesia, the primary and secondary school age is 7 to 18 years old. Children who never enter school will have no exposure to formal education at all and will bear the attendant lifelong consequences. Among children who will enter school in the future, their participation in primary education may be delayed by years after they reach the appropriate age for enrolment. An increase in this delay has been shown to place children at increased risk of dropout and low academic achievement (Unicef, 2015).

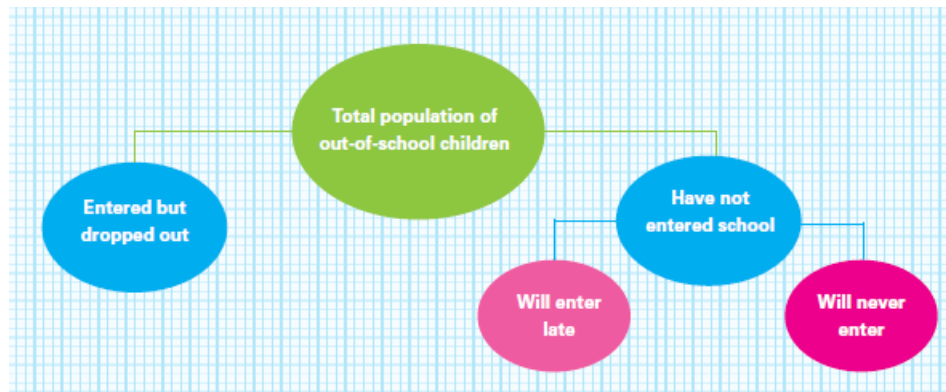


Figure 3: Classification of the Out-of-School Population, by School Exposure  
Source: Unicef, 2015

Children who drop out in early grades are unlikely to have acquired even the most basic mastery of reading and writing, numeracy and other skills. All school leavers can, in theory, return to school in the future, but very few early school leavers continue their formal education (Unicef 2015). Using a socio-ecological model approach, determinants of drop out school amongst children are examined across various levels: individual, household, school, and community (Unicef, 2022) as shown in Figure 4. The socio-ecological model informs how student dropouts relate to various child-level characteristics (e.g., gender and age), family-level conditions (e.g., wealth, deprivation, parental expectations), school-level characteristics and practices (e.g., teachers’ and directors’ characteristics, supervision visits and school councils) as well as community-level variables (e.g., access to infrastructure and services). Factors facilitating or reducing students’ school engagement and outcomes, such as dropout, can be found at each level of the interconnected dimensions (Unicef, 2022).

The social norms, beliefs, and growing traditions in society led to the emergence of educational discrimination against women. In addition, the phenomenon of school dropouts is often experienced by women in different regions. (Colclough et al, 2000 in Sabates et al, 2013). However, a study from Sabates (2013) showed that girls are 66 percent less likely to drop out of school than boys. Besides, UNICEF (2022) and Mike et al (2008) also found that school dropout rates are not very different between men and women.

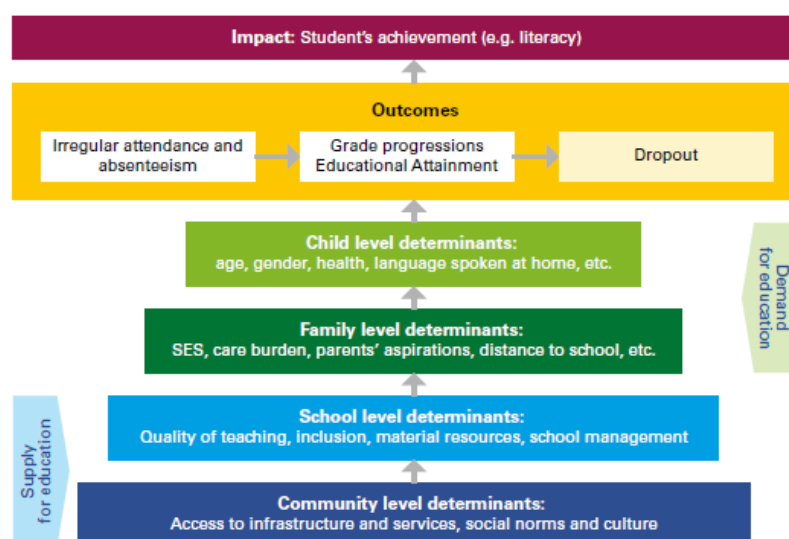


Figure 4: Unicef’s Conceptual Framework of Drop-Out School  
Source: Unicef, 2022

A factor that also determines the sustainability of a child's school is disability status. Assumed they have the same access and same educational facilities, children with disabilities have fewer chances of achieving education due to the barriers or functional difficulties they encounter (Peters, 2003 in Sabates, 2013). Research results from Sabates (2013) showed that disability status has a significant influence on school dropouts. Children with disabilities are 1.9 times more likely to drop out of school than non-disabled children.

Francavilla and Giannelli (2007) found that the presence of the mother in the household is crucial because a mother is the one who contributes most to the well-being of the child (in terms of affection, nutrition, education, and other needs). Branson et al. (2013) in his research explains that school dropouts are less found in children who live with both parents, and more found in children whose parents had died. The presence of a mother significantly reduces the chance of dropping out of school, whereas a father's presence has no significant influence on the chances of leaving school.

The size of the household is also assumed to be correlated with OOSC. Children from families with a larger number of household members have a higher likelihood of dropping out of school compared to children from families with a smaller number of household members, and this number of household members is statistically significant (Mike et al., 2008). Thus, the number of household members is positively related to the likelihood of children dropping out of school.

Haveman and Wolfe (1995) and Branson et al. (2014) found that household income is positively related to children's educational attainment and is statistically more significant compared to other variables. Parents with better economic conditions have more resources, making them more capable of sending their children to school (Huisman and Smits, 2015). Theoretically, the size of household income (approximately by expenditure) is influenced by the level of education of the head of the household. The head of a household with a higher education will be able to give a decent life to the members of his household compared to those with a lower education. (ILO, 2022).

The residential location of the child or parent determines the likelihood that a child will be out-of-school. According to the report of UNESCO (2005), the proportion of children that are out-of-school in rural areas is about 30% while that of the urban area is 18%. Mike et al. (2008) found that the likelihood of children dropping out of elementary school is lower in urban areas compared to rural areas. This has been attributed to the lack of quality teachers, poor educational facilities, the high level of insecurity and the remote location of schools (OCHA, 2022 in Adeleke and Alabede, 2022).

## **Methods**

### ***Sample Selection***

This analysis utilized data from the National Socio-Economic Survey (Susenas), a cross-sectional, population-based survey. The study utilized the 2023 Susenas data, collected through face-to-face interviews. The analysis focused on respondents aged 7-18 years at the start of the academic year, excluding those outside this age range to prevent bias associated with compulsory education. The final sample consisted of 277,276 respondents from a total of 1,223,377 observations.

## Measures

Some information contained in the Susenas, related to residence, sex, disability status, work and education have been selected for the empirical analysis. The dependent variable in this study is the OOSC status of children, divided into two categories: (1) OOSC and (0) not OOSC, with the “not OOSC” as the reference category. OOSC refers to children aged 7-18 in the beginning of academic calendar who are not currently attending formal or non-formal education. Those who are aged 7-18 and are attending preschool or who are no longer in school but have graduated from upper secondary or equivalent are not counted as OOSC.

The determinants of OOSC are divided into three levels, i.e individual, household, and community level. For individual level, the independent variables are child’s sex (a dummy variable assuming value=1 if the child is man and =0 otherwise), and child’s disability status (a dummy variable assuming value=1 if the child is disabled and =0 otherwise). For household level, we use household number/size (a dummy variable assuming value=1 if the HH number >4 people and =0 otherwise), biological mother’s presence in the household (a dummy variable assuming value=1 if the children are not living with their biological and =0 otherwise), and per capita expenditure as the independent variables. And for community level, we use type of residence (a dummy variable assuming value=1 if the children are living in rural areas and =0 otherwise) as one of the determinants of OOSC.

Household expenditure per capita may be influenced by unobserved factors like parental attitudes or cultural values and is often interdependent with dropout decisions. To address the endogeneity issue between household expenditure and out-of-school children (OOSC), instrumental variables are required. These variables must correlate with household expenditure but not directly with dropout decisions. This study uses the household head's education level (e.g., primary, lower secondary, upper secondary or higher) and employment status (e.g., unemployed, working in the informal sector, working in the formal sector) as instrumental variables, analyzed using IV probit estimation. The IV probit method is used to address endogeneity with the binary outcome of the dependent variable. The expenditure per capita is transformed into log-normal form because, theoretically, the distribution of consumption approximates a log-normal distribution (Battistin and Blundell, 2009), and will ease the interpretation of the result.

Table 1: Summary of Variables Used in this Study

Variables	Label	Coding
OOSC	Out-of-school children status	1) OOSC 0) <b>Not OOSC*</b>
Ln(Expend)	Log normal expenditure per capita	Scale
HH_Education	Head of Household’s Education	1) <b>Primary*</b> 2) Lower secondary 3) Upper secondary and above
HH_Occupation	Head of Household’s employment status	1) <b>Not working*</b> 2) Working in informal sector 3) Working in formal sector
Sex	Child’s sex	1) Men 0) <b>Women*</b>

Variables	Label	Coding
Disable	Child's disability status	1) Disabled 0) <b>Non-disabled*</b>
HHNumber	Household number	1) >4 people 0) <b>&lt;=4 people*</b>
Mother	Biological mother's presence in the household	1) Not living with bio-mother 0) <b>Living with biological mother*</b>
Urban	Type of residence	1) Rural 0) <b>Urban*</b>

Noted: \* reference category

### ***The Statistical Model (IV-Probit)***

The analysis used to identify the relationships between the dependent variable and the independent variables involves descriptive and inferential analysis. The descriptive analysis employed consists of cross-tabulation between the dependent variable and each independent variable, expressed as a percentage (%). To support the results of these cross-tabulations, further inferential analysis is needed.

As mentioned before, the dependent variable in this study is binary, while one independent variable, log-normal per capita expenditure, is endogenous. Due to endogeneity, OLS cannot be used. To address this and account for the binary nature of the dependent variable, the study employs the Probit Model with Endogeneity, utilizing the instrumental variable method. The general model for probit with endogeneity is as follows (Martens et al., 2006):

$$Y = \beta_0 + \sum_{i=1}^k \beta_i X_i + u \quad (1)$$

$$X = \delta_0 + \sum_{j=1}^l \delta_j Z_j + v \quad (2)$$

where Y is the dependent variable, X is the independent variable with endogeneity, Z is the instrumental variable, u and v are the error components, k is the number of independent variables, and l is the number of instrumental variables. When applied to the variables used in this study, the model can be written as follows:

$$OOSC = \beta_0 + \beta_1 \text{Ln}(\widehat{Expend}) + \beta_2 \text{Sex} + \beta_3 \text{Disable} + \beta_4 \text{HHNumber} + \beta_5 \text{Mother} + \beta_6 \text{Urban} + u \quad (3)$$

With the head of household's education level and employment status as the instrumental variables, the model for the log-normal per capita expenditure is as follows:

$$\text{Ln}(\text{Expend}) = \delta_0 + \delta_1 \text{HH\_Education} + \delta_2 \text{HH\_Occupation} + v \quad (4)$$

In this study, we apply the MLE method using stata software package Version 17.0. After the estimation, Wald tests for exogeneity were conducted to control if IVP regression might be a suitable approach. If it is not possible to reject the null hypothesis of exogeneity, there is no need for an IVP approach and estimates of a probit model are more efficient.

## Results and Discussion

Table 2 displays descriptive statistics of all variables included in the empirical analysis. In general, the sample shows that 6.4 percent of children aged 7-18 years are not currently attending formal or non-formal education (being out-of-school children). At the individual level, 51.94 percent of children aged 7-18 years were male and more than 90 percent were not disabled. From the household level, children who do not live with their biological mother are 8.42 percent and 51.07 percent of children live in households with more than 4 household members. Meanwhile, if we look at household expenditure, the average monthly household expenditure per capita in the sample is around 1,2 million rupiah. At the community level, we can see that most of the children in the sample (59.79 percent) live in rural areas.

Table 2: Summary of the Sample (Unweighted)

Variables	Mean/Percentage	Min	Max
<b>OOSC status of children</b>			
Not OOSC (reference)	93.6		
OOSC	6.4		
<b>Gender</b>			
Female (reference)	48.06		
Male	51.94		
<b>Disability status</b>			
Not-disabled (reference)	99.51		
Disabled	0.49		
<b>Biological mother's presence in the household</b>			
Living with biological mother (reference)	91.58		
Not living with biological mother	8.42		
<b>HH number</b>			
≤ 4 people (reference)	48.93		
> 4 people	51.07		
<b>Type of residence</b>			
Urban (reference)	40.21		
Rural	59.79		
<b>Expenditure (per capita) in rupiah</b>	1,243,370	132,621	65,906,278

As we mentioned before in Figure 2, in general, about 0.67 percent of children aged 7-12 years old were out of school in 2023. This number grows larger as the age group of the children increases. Table 3 shows cross tabulation between OOSC status and each independent variable. From the individual level, the percentage of children who become OOSC is higher for males (than females), and for disabled children (compared to non-disabled ones). The percentage for children with disabilities are 29.42 percent. In other words, around 3 out of 10 children with disabilities are OOSC.



Table 3: Cross Tabulations (Weighted)

Variables	Not OOSC	OOSC
<b>Gender</b>		
Female (reference)	93.57%	6.43%
Male	91.93%	8.07%
<b>Disability status</b>		
Non-disabled (reference)	92.84%	7.16%
Disabled	70.58%	29.42%
<b>Biological mother's presence in the household</b>		
Living with biological mother (reference)	93.30%	6.70%
Not living with biological mother	85.74%	14.26%
<b>HH number</b>		
≤ 4 people (reference)	93.02%	6.98%
> 4 people	92.47%	7.53%
<b>Type of residence</b>		
Urban (reference)	93.83%	6.17%
Rural	91.27%	8.73%
<b>Per capita expenditure (mean) in rupiah</b>	1,306,527	1,179,259

At household level, children who do not live with their biological mother have a higher percentage of OOSC (14.26 percent), compared to those who live with their biological mother (6.70 percent). Based on the number of household members, the percentage of children with OOSC status is not much different between children living with household members of less than 4 people and household members living with more than four people. Meanwhile, from the average per capita expenditure per month, children who become OOSC tend to have lower per capita expenditure in their household than children who remain in school. From the community level, children who live in rural areas have a higher percentage of being OOSC (8.53%) compared to children who live in urban areas.

To support the descriptive statistics above, we use IV-Probit regression to know more about the determinants of children being OOSC in Indonesia. The final model from probit regression with endogeneity estimation is as follows:

$$\begin{aligned} \ln(\text{Expend}) = & 0.1196 \text{ LowerSecondary} + 0.3334 \text{ UpperSecondary} \\ & - 0.0742 \text{ Informal} + 0.1270 \text{ Formal} \end{aligned} \quad (5)$$

$$\begin{aligned} \text{OOSC} = & 0.1193 \text{ Male} + 0.8777 \text{ Disable} + 0.3386 \text{ Mother} \\ & + 0.0173 \text{ HHNumber} + 0.1032 \text{ Urban} \\ & - 0.8797 \ln(\widehat{\text{Expend}}) \end{aligned} \quad (6)$$

Equation (5) demonstrates that the head of household's education level positively influences per capita expenditure. The initial estimation confirms that the household head's education level and employment status are valid instrumental variables for household expenditure. Higher education levels correlate with increased per capita expenditure, reflecting improved household welfare. Additionally, the employment status of the household head shows that formal employment increases per capita expenditure, while informal employment decreases it, emphasizing the role of formal work in enhancing welfare. The IVP estimation results, which address the endogeneity of log-normal per capita expenditure, are detailed in Table 4,

alongside an analysis of Indonesia's sociocultural and economic context to provide deeper insights into these determinants.

Table 4: IVP Regression With the “Log-Normal Per Capita Expenditure”  
As Endogenous Variable

Variables	Coefficients	Std Error	Marginal Effect
Gender			
Female (reference)			
Male	0.1193***	0.0065	0.0170
Disability status			
Not-disabled			
Disabled	0.8777***	0.0320	0.2349
Biological mother’s presence in the household			
Living with biological mother (reference)			
Not living with biological mother	0.3386***	0.0101	0.0613
Household size			
≤ 4 people (reference)			
> 4 people	0.0173**	0.0068	0.0025
Type of residence			
Urban (reference)			
Rural	0.1032***	0.0075	0.0145
Ln per capita expenditure	-0.8797***	0.0146	-0.0041
Constant	10.6671***	0.2103	

IVP = Instrumental Variable Probit

\*\*\* significant at 99%; \*\* significant at 95%.

The findings reveal that disability status is the most significant factor driving children aged 7-18 to become out-of-school children (OOSC). Children with disabilities are 23.5% more likely to be OOSC compared to their non-disabled peers, highlighting a persistent educational gap in Indonesia. Participation rates for children with disabilities in mainstream education decline at each educational level, largely due to negative stigma that influences family perceptions and treatment. Many families hide children with disabilities from public spaces, including schools, viewing them as incapable or a source of shame. Although the Indonesian government promotes inclusive mainstream education, special schools remain the preferred option due to insufficient support for children with disabilities in inclusive settings. The study by Mizunoya et al. (2016) found that disability status is the main factor affecting school participation in developing countries, with a greater impact compared to household and other individual factors. Furthermore, Zablocki and Krezmien (2012) found that children with emotional and behavioral difficulties have a higher likelihood of dropping out of school.

Another individual-level factor affecting the risk of being OOSC is the child's sex. Boys have a 1.7 percent higher chance of becoming OOSC compared to girls. This is because boys are considered to have a more economic role within the household, so when have economic problems, boys are more likely to leave school to work compared to girls. In many Indonesian families, especially in rural or low-income areas, there is a cultural expectation for boys to contribute to the family income. This leads to boys leaving school early to work in agriculture, construction, or informal sectors. This finding aligns with studies from Alspaugh (2000) and Okumu et al. (2008), which found that dropout rates are lower for girls than for boys. This might be because boys are considered to have a more economic role within the

household, so when have economic problems, boys are more likely to leave school to work compared to girls.

Other findings in this study were seen at the household level. The higher the per capita expenditure, the lower the risk of a child becoming an OOSC. The UNICEF report shows that in Indonesia, children from poor families are four times more likely to drop out of school than children from rich families (UNICEF, 2013). This result is in line with a study by Garg et al. (2023) who found that the lower the spending quintile, the greater the chance of a child dropout from school. This suggests that the lower the economic condition of a household, the lower the risk of a child being able to pursue education. This condition is one of those affected by the cost of education that can't be afforded by poor households. Moreover, the data indicates that education costs in Indonesia remain relatively high, around 7.8 million rupiah per academic year for upper secondary school; 5.59 million rupiah per academic year for lower secondary school; and 3.24 million rupiah per academic year for primary school (BPS, 2021). For the richer households, those direct costs like fees, books, and uniforms, as well as opportunity costs like losing income from child labor may not be so important (Basu, 1999 in Huisman and Smits, 2015).

The size of the household is also a significant determinant for OOSC. Children living in households with more than four members have a 0.2 percent higher chance of becoming OOSC than children living with less than or equal to four household members. This is probably because any increase in the number of household members leads to higher expenditures due to additional costs and time demands. Having a large family often results in economic challenges, which limit parents' involvement in their children's education. The findings are in line with a study by Patrinos & Psacharopoulos (1997) who found that children in large family in both developing and developed countries have less schooling, are poorly nourished and perform poorly in achievements. According to Becker (1993), the number of children has a negative relationship with the economic status of households. Any increase in the number of children will increase the additional expenditure as there are additional costs and time for each child resulting in the total household expenditures becoming bigger.

The absence of a mother significantly impacts household dynamics, with children who do not live with their biological mother being 6.1% more likely to become out-of-school children (OOSC) compared to those who do. In many Indonesian households, mothers play a central role as primary caregivers, nurturing and guiding their children's educational development. They monitor homework, enforce discipline, and ensure regular school attendance. A mother's presence also provides emotional security, which is crucial for academic focus and performance, especially in early education when foundational social and learning skills are being developed. Additionally, children without a father or mother in the household are more likely to miss school as they may need to take on responsibilities typically handled by their absent parent. Research indicates that children with absent or unknown parents are more likely to drop out of school, particularly girls. When a parent is absent, children may need to take on parental responsibilities, reducing their likelihood of attending school. Studies by Agustina et al. (2023) and Kuno et al. (2021) confirm that incomplete parental presence significantly decreases school continuation rates for children aged 7–18 in Indonesia. Becker's (1973) marriage theory suggests that complete parents provide greater parental endowment, leading to higher household productivity, including better education outcomes. Consequently, families with both parents present are more likely to ensure their children's school continuity compared to single-parent or incomplete-parent households.

This study highlights residence type as a key community-level determinant affecting a child's risk of becoming an OOSC. Children in rural areas have a 1.45% higher likelihood of being OOSC compared to those in urban areas. This disparity stems from better infrastructure and transportation in urban areas, making educational facilities more accessible. The education gap between urban and rural areas remains severe, particularly in Indonesia's Western and Eastern regions. While urban schools are often close to students' homes, rural schools are typically far, requiring long, costly, and sometimes unsafe commutes. Rural areas also face teacher shortages, leading to large class sizes, limited individual attention, and underqualified or inadequately trained educators. Samosir (2008) highlights stark disparities in school facilities between regions in Indonesia. For example, primary schools in Medan often have permanent buildings and adequate furniture, whereas schools in East Nusa Tenggara may have old, leaky roofs and insufficient tables and chairs. These differences in quality and quantity of resources pose significant challenges for the government in promoting educational equity. Mike et al. (2008) also found that children in urban areas are less likely to drop out of primary school than those in rural areas, partly due to better infrastructure and easier access to educational facilities (Huisman and Smits, 2009).

## **Conclusion**

This study provides clear evidence that out of school children is a problem that needs to be addressed in Indonesia and affects progress in educational attainment. Children who are boys, disabled, not living with their biological mother, living in households with more than 4 members, have lower per capita expenditure, and living in rural areas are at the higher risk of being OOSC. Among those results, disability is the major reason at the individual level which increases the risk of being out of school. These results show that there are still educational gaps in Indonesia, where children with disabilities face difficulties in attending school.

This study finally calls for government to provide education assistance for those who are at high risk of being OOSC and improve facilities and infrastructure in rural areas to reduce the education gap between urban and rural areas. The government also needs to provide and promote inclusive education programs for children with disabilities since they are one of the most marginalized groups. These policies strengthen the resources available for children's education in Indonesia, so that can prevent children out of school and increase school participation. Considering that Indonesia comprises thousands of islands, conducting qualitative studies is essential to identify the most significant factors contributing to children being out of school. This will help the government in formulating the most suitable policies for each region.

## **Acknowledgements**

The authors would like to thank Indonesia Endowment Fund for Education (LPDP) from the Ministry of Finance Republic Indonesia for granting the scholarship and supporting this research.

## References

- Adeleke, R and Alabede, O. (2022). Geographical determinants and hotspots of out-of-school children in Nigeria. *Open Education Studies*, 2022; 4: 345–355. Retrieved from <https://doi.org/10.1515/edu-2022-0176>
- Agustina, R. E., Giyarsih, S. R., & Pangaribowo, E. H. (2023). Does Having Single or Both Parents Impact the Sustainability of Schooling for Students Aged 7–18 in Indonesia?. *Journal of Population and Social Studies [JPSS]*, 31, 696–707. Retrieved from <https://so03.tci-thaijo.org/index.php/jpss/article/view/262296>
- Becker, G. S. (1973). A theory of marriage: Part I. *Journal of Political Economy*, 81(4), 813–846. <https://www.jstor.org/stable/1831130>
- Garg, M. K., Chowdhury, P. & Sheikh, I. (2024). Determinants of school dropouts in India: a study through survival analysis approach. *J. Soc. Econ. Dev.* 26, 26–48. <https://doi.org/10.1007/s40847-023-00249-w>
- Kuno, C. B., Hein, S., Frankel, L. A., & Kim, H. J. (2021). Children’s schooling status: Household and individual factors associated with school enrollment, non-enrollment and dropping out among Ugandan children. *International Journal of Educational Research Open*, 2, Article 100033. <https://doi.org/10.1016/j.ijedro.2021.100033>
- Mike, Okumu Ibrahim & Nakajjo, Alex & Isoke, Doreen. (2008). Socioeconomic determinants of primary school dropout: The logistic model analysis. Research Series 93855, Economic Policy Research Centre (EPRC). <https://ideas.repec.org/p/ags/eprcrs/93855.html>
- Patrinos, H., Psacharopoulos, G. (1997). Family size, schooling and child labor in Peru – An empirical analysis. *J Popul Econ* 10, 387–405. <https://doi.org/10.1007/s001480050050>
- Samosir, M. (2008). The Effects of Decentralization on Education in Indonesia: Education for All? (Master thesis, Maastrich University).
- UNESCO. (2005). Children Out of School: Measuring Exclusion from Primary Education. Available at: <http://uis.unesco.org/en/document/children-out-school-measuring-exclusion-primaryeducation>
- UNICEF. (2013). Indonesia Laporan Tahunan 2012. Retrieved June 28, 2015, from [http://unicef.org/indonesia/id/UNICEF\\_Annual\\_Report\\_\(Ind\)\\_130731.pdf](http://unicef.org/indonesia/id/UNICEF_Annual_Report_(Ind)_130731.pdf)

**Contact emails:** [freshywindyrd@gmail.com](mailto:freshywindyrd@gmail.com)  
[azkamuthia25@gmail.com](mailto:azkamuthia25@gmail.com)

## Appendix

Extended probit regression

Number of obs = 277,276

Wald chi2(6) = 8935.76

Log likelihood = -296603.65

Prob > chi2 = 0.0000

	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
<b>OOSC</b>						
JK						
Laki-laki	.1193017	.0065475	18.22	0.000	.1064687	.1321346
disable						
Disabilitas	.8776528	.0320468	27.39	0.000	.8148423	.9404633
MOTHER						
Tidak ada Ibu	.3386468	.0101225	33.45	0.000	.318807	.3584865
HHNumber						
>4 orang	.0173224	.0068153	2.54	0.011	.0039646	.0306803
URBAN						
Perdesaan	.103163	.0074543	13.84	0.000	.0885529	.1177731
EXPEN						
_cons	-.8797417	.0146385	-60.10	0.000	-.9084327	-.8510507
	10.66708	.2103241	50.72	0.000	10.25486	11.07931
<b>EXPEN</b>						
KRT_EDUC						
SMP/ sederajat	.1195535	.0028433	42.05	0.000	.1139807	.1251264
SMA/ sederajat	.3333995	.0023453	142.15	0.000	.3288027	.3379963
KRT_OCCUP						
Kerja Informal	-.0741727	.0048332	-15.35	0.000	-.0836456	-.0646998
Kerja Formal	.1269528	.0049395	25.70	0.000	.1172715	.1366341
_cons	13.67485	.0047756	2863.49	0.000	13.66549	13.68421
var(e.EXPEN)	.3026125	.0008128			.3010237	.3042098
corr(e.EXPEN,e.OOSC)	.4682318	.0083396	56.15	0.000	.4517272	.4844161