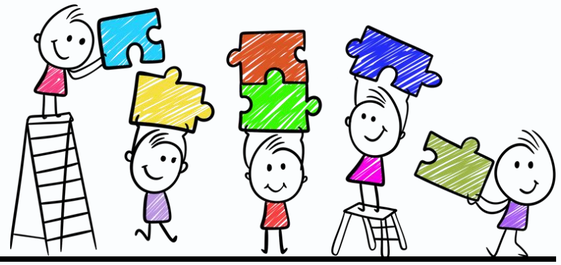
RECLAIMING CHILDHOOD

Unearthing the Roots of Child Labor



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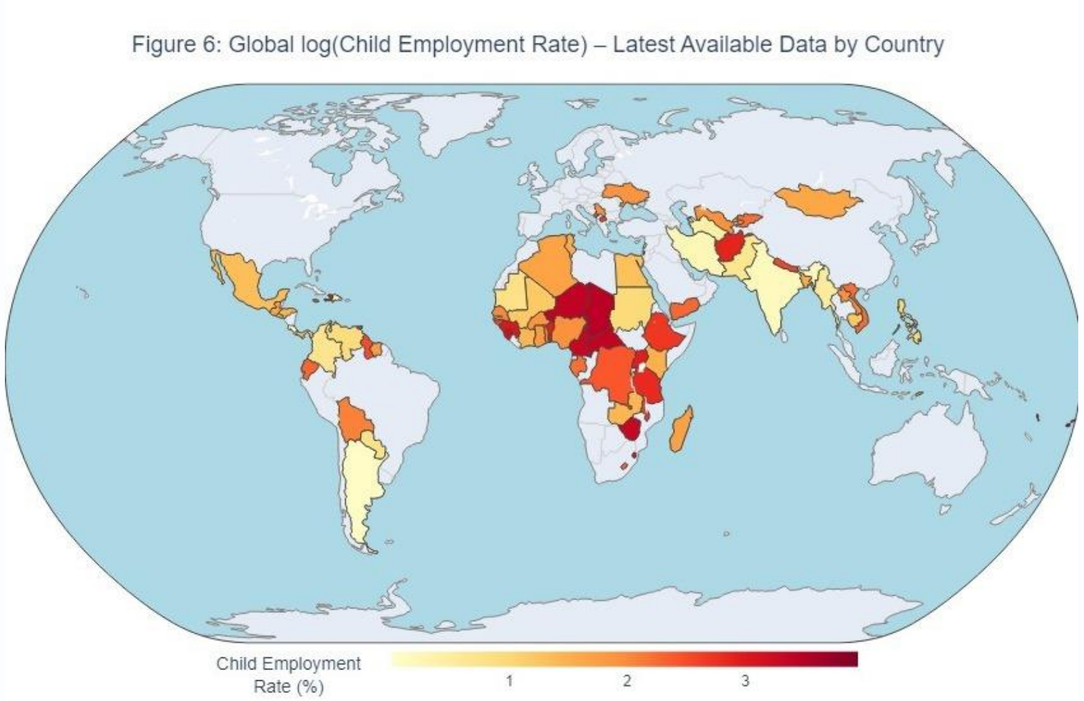

The reason we decided to focus on the issue of child labor—among the extensive data provided to all participants—is that, in recent years this topic has not received the attention it deserves due to other global challenges dominating public attention.

In the beginning of our presentation, We'd like to state that our dataset only includes countries where surveys were conducted and covers data collected *after* 2010.

However, as can be observed from the world map chart on the left side, child labor remains a persistent and unresolved problem, particularly concentrated in the African region. Despite global efforts, the data clearly states that this issue continues to pose a significant social and economic challenge in many parts of the world.

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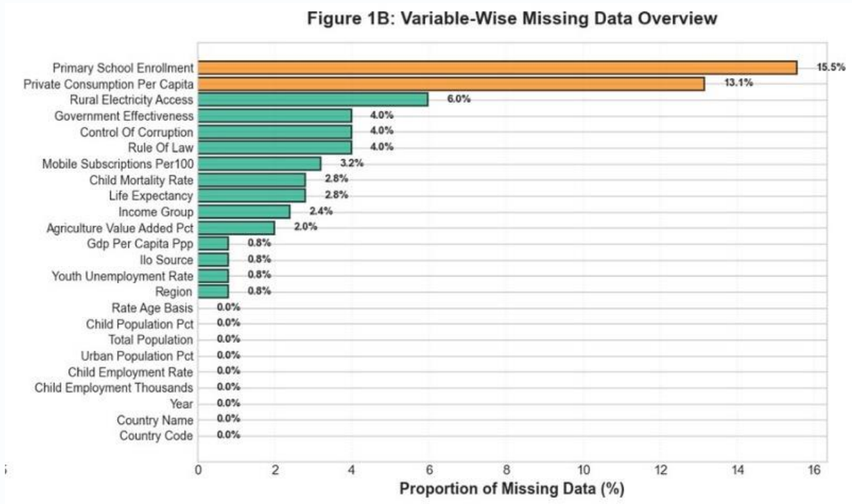
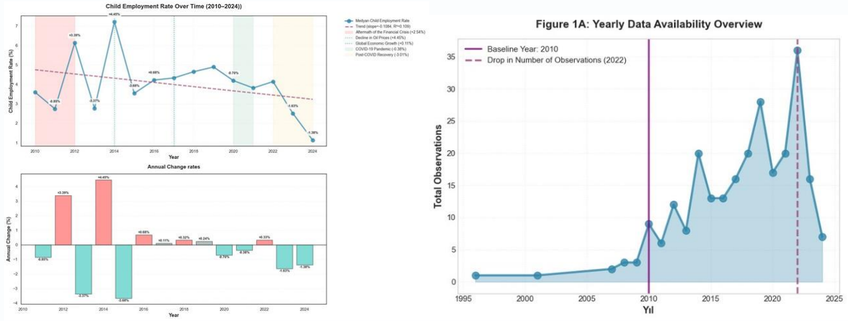


On the left, you can see the indicators we used and their proportion of missing data. Some key variables, such as Primary School Enrollment and Private Consumption per Capita, show higher data gaps — reflecting and demostrating the challenges of collecting consistent global data on social issues like child labor.



On the left, the charts shows that survey activities began to rise notably after 2010, which is our baseline year. However, after peaking around 2020, the number of observations sharply declined.

We believe this drop is not because the problem was solved, but because global priorities have shifted to economic crises, the COVID-19 pandemic, and to other issues have drawn attention away from child labor, which sadly still remains a persistent global challenge.

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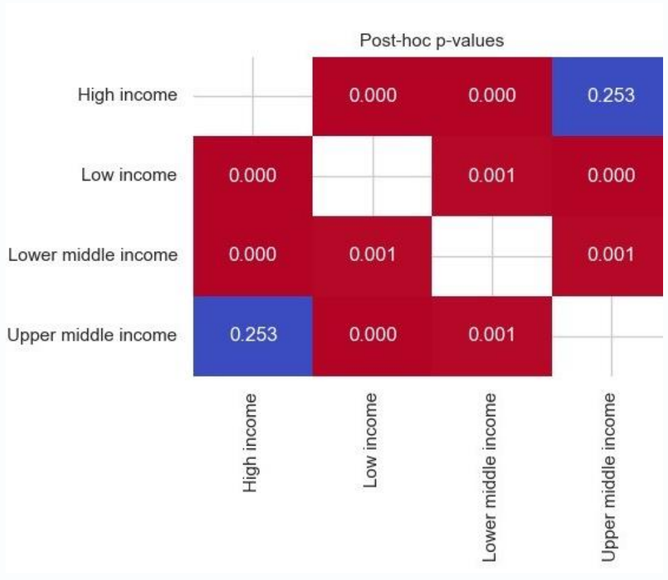

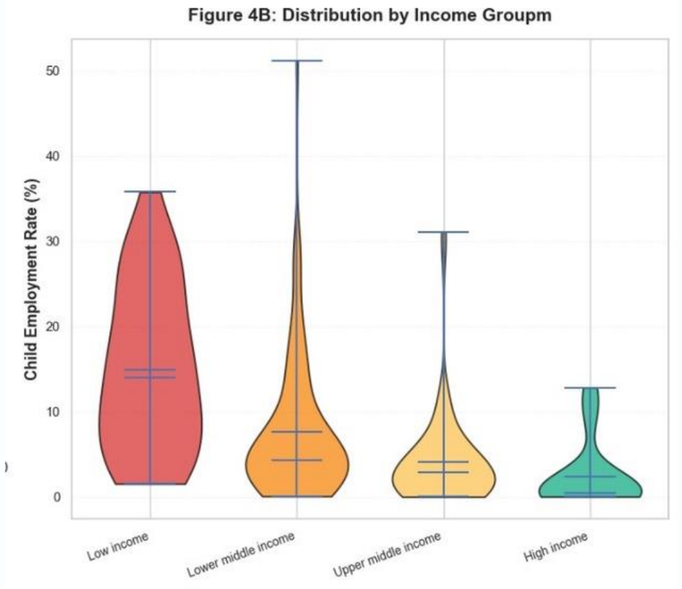

Almost every pairwise comparison is significant($p \approx 0.000–0.001$), confirming that child employment rates strongly differ between income levels.
The only *non-significant* difference($p = 0.253$) is between high income and upper-middle income groups. Meaning these two groups have relatively similar, low child employment patterns. This pattern implies a nonlinear decline: most of the reduction in child labor happens as countries move from low to middle income, with diminishing returns afterward.

Low Income|Broken Symmetry
Child labor is not an exception but a norm. In some nations, nearly half of children work, not study. High variance shows crisis-driven volatility: poverty is chronic, but fragility makes it worse.

Lower Middle Income|The Transition Zone
The shape narrows, but the long tail remains. Some countries reform while others resist. Median declines, yet extremes still persist. This group is a turning point for nations.

Upper Middle Income|Fading Echoes
Variance shrinks and rates drop below 10%. Child labor becomes marginal, becoming a *statistical noise* rather than a systemic issue.
Still, rural or informal sectors hide residual exploitation. We think that this masks the issue on upper-middle

High Income|The Bimodal Paradox
The first peak near zero shows protection through welfare and education. But a small second peak reveals *invisible* children — migrants and refugee childeren are still working.
In the case of these countries, even prosperity leaves a shadow.

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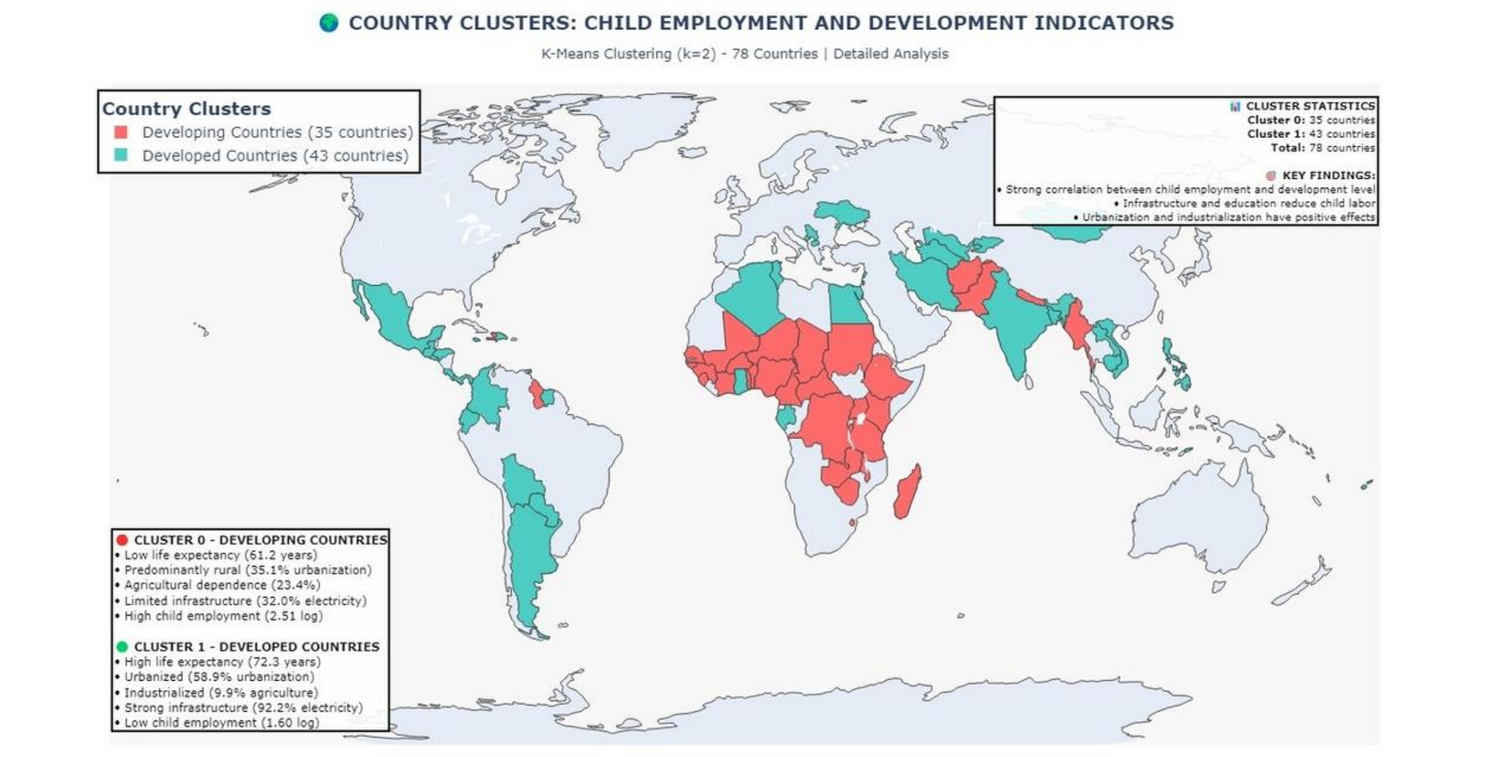

Figure: Country Clusters – Child Employment and Development Indicators

The K-Means clustering (k=2) clearly separates the world into two groups based on development and child labor indicators.

Cluster-0|Developing Countries: Countries in Sub-Saharan Africa, parts of South Asia, and the Middle East dominate this group. They show low life expectancy (≈61 years), rural dominance, agricultural dependence, and limited infrastructure, resulting in high child employment(≈2.5 log rate).

Cluster-1|Developed Countries: Found mostly in Europe, North America, and East Asia. These nations are urbanized (≈59%), industrialized, and enjoy strong infrastructure and education systems, corresponding to very low child employment (≈1.6 log rate).

Interpretation: The clustering confirms a strong inverse relationship between socioeconomic development and child labor. Education, industrialization, and urbanization act as key buffers against child employment—transforming economic progress into social protection.

Where electricity, education, and urban life expand, child labor fades. The divide on this map is not geographic — it's developmental.

References

Datasets Utilized

- Competiton Dataset
- International Labour Organization-ILOSTAT
  Children in Employment by Sex and Age(By Thousands)

https://ilostat.ilo.org/data/

Closure

For more details regarding methods, code snippets and more detailed graphics, please check out our project's repo on GitHub.

https://github.com/TanerYSLY/ASA-child-labor-data-analysis

For any inquiries regarding this project and related matters, please do not hesitate to contact us.

—Contact info have been provided in the cover page.—

Due to Competition Rules, the link provided above will be available after the deadline provided to us. The repo will be turned from private to public after 31/10/2025 23:59(Türkiye Time)

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