

The Implications of Covid-19 on State-Level Poverty in Malaysia

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ABSTRACT

This study examines how COVID-19 affected poverty across Malaysia's states between 2019 and 2023. Focusing on key macroeconomic drivers such as inflation, the Gini coefficient, and gross domestic product (GDP), the analysis draws on the Kuznets Curve framework to interpret links between income per capita and inequality. Using panel data methods that combine five years of time-series observations with cross-sectional data for 13 Malaysian states, the study estimates static panel models (Pooled OLS, Fixed Effects, and Random Effects). The results indicate that economic growth reduces poverty, while widening income inequality (higher Gini coefficient) is associated with significantly higher poverty incidence. Reported COVID-19 cases and inflation are not statistically significant, a pattern plausibly consistent with targeted government transfers and other support measures that mitigated immediate shocks. These findings underscore the importance of inclusive growth and fairer income distribution in post-pandemic poverty reduction. Policy suggestions include strengthening targeted social protection, narrowing income gaps, ensuring inclusive growth, improving crisis-response delivery, and enhancing poverty data systems to support sustained poverty reduction in Malaysia.

Keywords: Poverty; COVID-19; gross domestic product (GDP); Gini coefficient; inflation

INTRODUCTION

The COVID-19 pandemic reshaped Malaysia's economic landscape from 2019 to 2023. Beyond the public-health emergency, the crisis disrupted economic stability nationwide and contributed to higher poverty rates across states, particularly among B40 households and informal-sector workers who saw businesses weaken and jobs contract. According to the World Bank's Poverty and Inequality Platform (PIP), an estimated 97 million people globally were pushed into extreme poverty during the pandemic. Middle-income countries such as Malaysia were especially exposed, given evolving social-protection systems. Large-scale economic closures during Movement Control Orders (MCOs) triggered widespread job losses, notably in tourism, small businesses, and services. COVID-19 was officially detected in Malaysia in March 2020 and persisted over several years. The loss of life, stress on the health system, and stringent mobility restrictions periodically paralysed economic activity. Households adjusted to "new normal" measures, including the temporary closure of non-essential sectors, reduced operating hours, and working from home.

Data from the Ministry of Health (KKM) show cases rising from early 2020 to a peak in 2021, followed by a decline from 2022 as vaccination coverage expanded. The easing in infections facilitated a phased economic reopening; however, the economic scarring remained visible. One major channel was inflation: supply disruptions, higher logistics costs, and import dependence placed upward pressure on prices, eroding purchasing power and raising living costs. These pressures were particularly acute for low-income households already affected by job loss or reduced earnings.

GDP dynamics mirrored these stresses. Department of Statistics Malaysia (DOSM) figures show a contraction in 2020, partial recovery in 2021, and renewed headwinds in 2022 amid inflationary pressures and global uncertainty. The pandemic therefore affected both public health and the foundations of economic activity. Inequality also matters for poverty outcomes. Malaysia's Gini coefficient was 0.407 in 2019 and edged down to 0.404 in 2022 (Department of Statistics Malaysia 2025). Although the reduction is small, the still-elevated level suggests persistent income gaps that limit households' ability to absorb shocks. Figure 1 shows the hardcore poverty rates across states in Malaysia and can be seen that the hardcore poverty surged in all Malaysian states in 2020, particularly high rates for Kelantan and Sabah, reflecting COVID-19's economic shock. By 2022, rates declined substantially nationwide, indicating partial recovery, though some states, notably Sabah, maintained comparatively higher poverty levels.

Inflation trends varied across states. In 2021, price growth moderated in some states amid price controls and fiscal support (Department of Statistics Malaysia 2022). In 2022, inflation rose again, reflecting global spillovers and recovering domestic demand after reopening (Bank Negara Malaysia 2023). States reliant on services and tourism—such as Sabah—and certain east-coast states like Kelantan appeared more affected than more industrialised states such as Selangor and Johor (Department of Statistics Malaysia 2022).

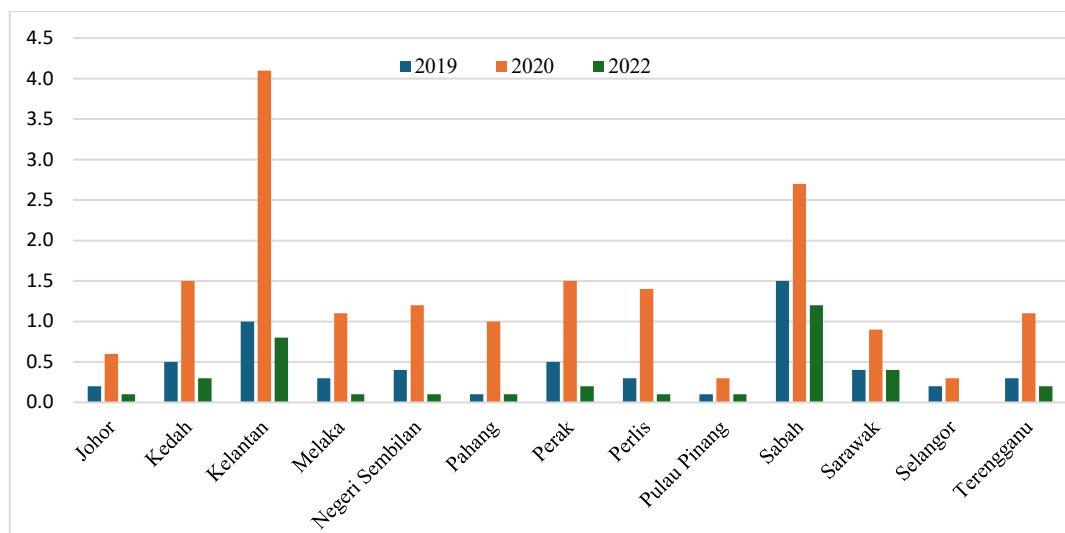


FIGURE 1. Hardcore poverty in Malaysia.
Source: Department of Statistics Malaysia (2025)

In sum, COVID-19 amplified poverty risks in Malaysia through higher prices, interrupted growth, and the distributional pressures captured by the Gini coefficient. This study evaluates these dynamics for each state from 2019 to 2023. A clearer understanding of these trends can inform more precise policy design by government and civil-society actors. It also highlights the value of continuous monitoring of key indicators—such as inflation and GDP—so that future crises can be addressed swiftly and comprehensively.

LITERATURE REVIEW

Poverty can be understood through absolute, hardcore and relative concepts, and in Malaysia it is often shaped by movements in inflation, gross domestic product and the distribution of income as proxied by the Gini coefficient. Public policy can influence these macroeconomic drivers through direct transfers as well as development and operating expenditure, which in turn affects poverty outcomes. The theoretical lens for this study is the Kuznets Curve, which posits an inverted U relationship between income per capita and inequality (Figure 4.2). In the early stages of development, rising income is associated with widening inequality, but after a turning point further growth corresponds with narrowing inequality. This framework supports an integrated view of growth, distribution and poverty in Malaysia's states (Kuznets 1955).

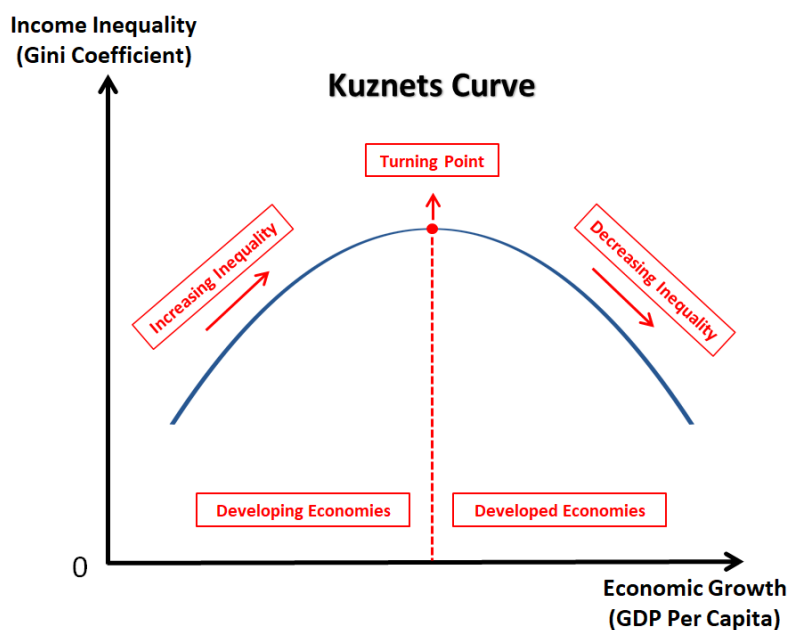


FIGURE 2. Kuznet curve
Source: Economics online (2025)

International evidence indicates that COVID-19 amplified poverty risks through employment losses, food insecurity and the difficulty of meeting essential bills (International Labour Organization 2021). Job loss is identified as a primary mechanism pushing low income households into poverty and highlights the need for responsive social protection that can stabilise incomes during shocks (Meehan & Shanks 2024). Policy design also interacts with structural constraints. In China, green finance has been shown to mitigate energy poverty and to support a greener recovery, although effects are weaker where energy poverty is initially high, which implies the need for complementary measures to improve access and affordability (Zhao et al. 2022). Broader macroeconomic disruptions were evident in several developing economies. In Nigeria, sharp contractions in GDP coincided with significant losses in services and agriculture and a rise in poverty, underscoring the value of targeted investment in key sectors to limit long run scarring during and after crises (Andam et al. 2020).

Distributional pressures intensified during the pandemic. Evidence from Europe suggests that COVID-19 widened income gaps and generated adverse social and political repercussions, which complicates recovery and the targeting of assistance to vulnerable groups (Hallaert 2020). Price dynamics also mattered for welfare. Inflation during the pandemic period disproportionately eroded purchasing power among low income populations, particularly in economies with weaker safety nets and higher import dependence, which reduced real incomes even when nominal support was provided (Decerf et al. 2021). These findings point to a consistent set of empirical expectations. Economic growth is typically associated with lower poverty, while higher inequality is linked to higher poverty. The net effects of COVID-19 cases and inflation can be ambiguous because they depend on the balance between negative shocks and the cushioning provided by policy responses, such as targeted transfers, temporary price controls and job retention schemes. Within this conceptual and empirical context, the present study treats poverty as the dependent variable and examines its relationship with four main covariates, namely reported COVID-19 cases, GDP, inflation and the Gini coefficient, in order to assess how state level poverty in Malaysia evolved during 2019 to 2023 and which levers appear most relevant for post pandemic reduction strategies (Andam et al. 2020; Decerf et al. 2021; Meehan & Shanks 2024; Zhao et al. 2022).

METHODOLOGY

This study uses a balanced panel design that combines the time dimension with cross-sectional variation across Malaysian states for the period covering the pandemic shock and the early recovery. The dependent variable is the state poverty rate, measured as the incidence of poverty in percent. The core covariates are reported COVID-19 cases, gross domestic product, inflation, and the Gini coefficient. All data are obtained from the Department of Statistics Malaysia (2025). To reduce skewness and improve interpretability, COVID-19 cases and gross domestic product are expressed in natural logarithms, and a squared income term is included to capture the non-linear relationship between income and distribution that is consistent with the Kuznets hypothesis. In compact form, the estimating equation can be written as

$$POV_{it} = \beta_0 + \beta_1 COVID_{it} + \beta_2 GDPS_{it} + \beta_3 INF_{it} + \beta_4 GINI_{it} + \varepsilon_{it}$$

Where POV_{it} denotes hardcore poverty GINI index, $COVID_{it}$ denote dummy variable representing COVID-19, $GDPS_{it}$ denote state level gross domestic product, INF_{it} denote state inflation level, $GINI_{it}$ denote state gini coefficient for hardcore poverty, and ε_{it} denote error term. State-level poverty, inflation and the Gini coefficient are compiled from official statistical releases, and COVID-19 data are drawn from national public health reporting. Descriptive statistics and a correlation matrix are first used to examine variable distributions and simple associations.

Estimation proceeds with standard static panel estimators. Pooled ordinary least squares provides a baseline. The fixed effects estimator accommodates time-invariant unobservables that may be correlated with the regressors and is appropriate when heterogeneity across states is a central concern, while the random effects estimator is efficient under the assumption that the unobserved effect is orthogonal to the regressors (Gujarati 2004; Wooldridge 2010). Model selection follows established diagnostics. The restricted F-test is used to compare fixed effects to pooled ordinary least squares. The Breusch and Pagan Lagrange Multiplier test is used to compare random effects to pooled ordinary least squares. The Hausman test distinguishes between fixed and random effects based on the consistency of the random effects estimator under the orthogonality assumption (Gujarati 2004; Wooldridge, 2010). Additional checks include tests for heteroskedasticity and serial correlation in the idiosyncratic error term. Where these are detected, statistical inference relies on robust standard errors clustered at the state level. The set-up aligns the statistical approach with the study's objective, which is to identify the partial association between pandemic intensity, macroeconomic conditions and distributional pressures with state poverty while controlling for time-invariant differences across states and common shocks across years.

RESULTS AND DISCUSSION

The COVID-19 pandemic had a profound impact on poverty rates and economic performance across Malaysian states. As shown in Figure 3, poverty rates experienced a sharp increase in 2020 and 2021, particularly in Sabah, Terengganu, and Selangor. This surge is likely driven by a reduction in income sources, especially among individuals employed in informal sectors. Economic growth indicators, represented by LGDP and LGDP², declined markedly in 2020, with recovery by 2023 being uneven across states. The fluctuating waves of COVID-19 transmission placed additional strain on both the economy and the healthcare system.

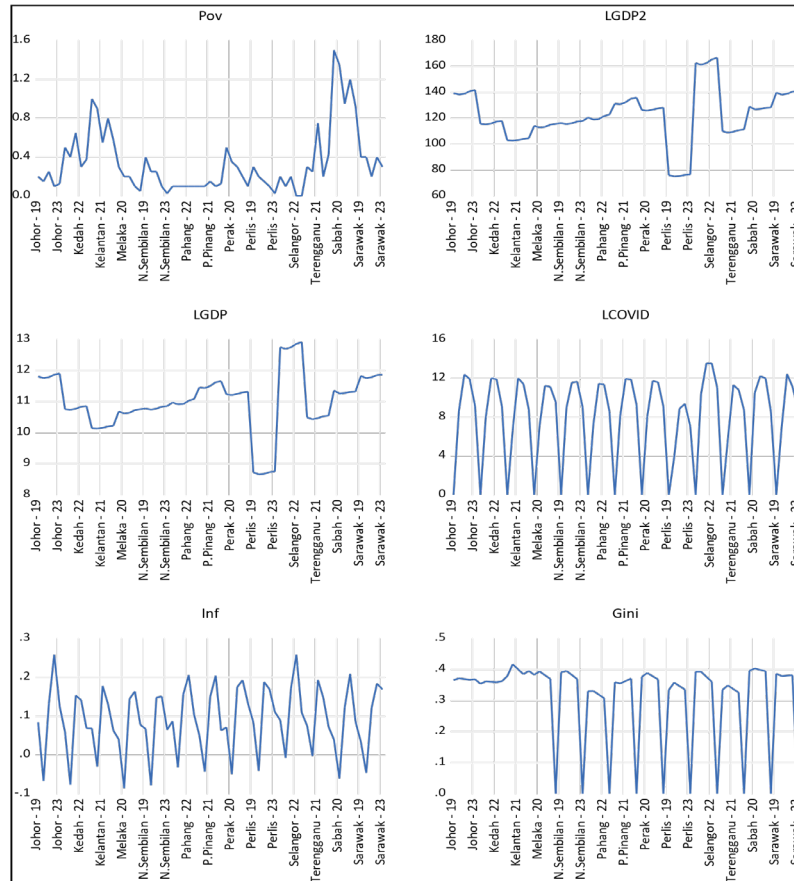


FIGURE 3. Trend chart of variables in the model

Inflation (INF) demonstrated relatively minor fluctuations during the study period (Figure 3), while the Gini coefficient displayed minimal variation, potentially reflecting the mitigating effect of government interventions such as subsidies and social protection measures. These patterns indicate that the pandemic influenced multiple dimensions of socio-economic performance, highlighting the importance of targeted post-pandemic recovery policies.

TABLE 2. Descriptive statistics results

	POV	LGDP	LGDP ²	LCOVID	INF	GINI
Mean	0.340	11.014	122.195	7.910	0.091	0.312
Median	0.200	10.976	120.465	9.116	0.089	0.367
Maximum	1.500	12.914	166.779	13.539	0.258	0.417
Minimum	0	8.663	75.048	0	-0.085	0
Standard Deviation	0.330	0.945	20.355	4.441	0.087	0.136
Skewness	1.720	-0.570	-0.223	-0.930	-0.383	-1.816
Kurtosis	5.557	3.980	3.692	2.451	2.387	4.472
Observation	65	65	65	65	65	65

The descriptive statistics in Table 2 show that poverty rates (POV) have moderate variability (mean = 0.340, standard deviation = 0.330), with most states recording low rates but a few experiencing high poverty. LGDP and LGDP² exhibit negative skewness, indicating that the majority of states fall within higher-income levels. LGDP has a negative association with poverty, while LGDP² has a positive association, suggesting a non-linear relationship consistent with the Kuznets Curve hypothesis. LCOVID shows the highest standard deviation (4.441),

reflecting considerable variation in pandemic severity across states. Inflation and the Gini index are relatively stable overall, but some states report notable inequality and exceptional shocks.

The correlation matrix in Table 3 indicates that poverty is weakly and negatively correlated with LCOVID, LGDP, LGDP², and INF, with the strongest positive correlation observed with the Gini index (0.242). This suggests that poverty is more closely linked to income inequality than to other macroeconomic indicators, although the magnitude of these correlations remains modest.

	POV	LGDP	LGDP ²	LCOVID	INF	GINI
POV	1.000					
LGDP ²	-0.111		1.000			
LGDP	-0.091	1.000	0.997			
LCOVID	-0.125	0.182	0.182	1.000		
INF	-0.133	0.089	0.099	0.437	1.000	
GINI	0.242	-0.003	-0.008	-0.091	-0.078	1.000

The panel regression results in Table 4 provide deeper insights into these relationships. Based on the restricted F-test and Hausman test, this study found that random is the best model in explaining the relationship. In addition, this study found that there are heteroscedasticity and autocorrelation problem in the model, thus we extend our analysis to random effect model with robust standard error and focus the discussion of our results to the robust standard error. In the model, LGDP is positively and significantly associated with poverty, while LGDP² is also positively related. This pattern suggests the presence of a non-linear relationship between economic growth and poverty, but inconsistent with the Kuznets Curve, as the shape shows U-shaped relationship. This suggests that, over the period, economic growth has been accompanied by worsening poverty, and the rate of worsening accelerates as income rises. This could occur if the benefits of growth are concentrated among higher-income groups, with minimal or negative trickle-down effects, possibly due to widening inequality, structural unemployment, or regional disparities.

Variables	Pooled Model	Fixed Effect Model	Random Effect Model	Random Effect Model with Robust Standard Error
Constant	-5.548 (0.117)	26.158 (0.277)	-4.053 (0.553)	2.517 (0.277)
LGDP	1.084* (0.1023)	-4.178 (0.314)	0.837 (0.510)	0.481* (0.314)
LGDP ²	-0.054* (0.079)	0.164 (0.362)	-0.041 (0.481)	0.0224* (0.362)
LCOVID	0.049 (0.252)	0.020 (0.371)	0.018 (0.389)	0.020 (0.371)
INF	-0.912 (0.253)	-0.345 (0.453)	-0.423 (0.275)	0.333 (0.453)
GINI	0.246 (0.451)	0.084 (0.646)	0.197 (0.178)	0.106* (0.646)
R ²	0.174	0.894	0.152	0.152
Restricted F-Test			19.287*** (0.000)	
Hausman Test			3.681 (0.596)	
Breusch Pagan LM Test		53.871***		0.000
Heteroscedasticity Test		106.083		0.000

Notes: *, **, and *** denote significant level at 10%, 5% and 1%, respectively.

According to Kuznets' theory, early economic growth can increase inequality and poverty, but as the economy matures, poverty declines due to structural improvements in education, employment opportunities, and resource distribution. The positive coefficient on LGDP in this study indicates that economic growth in some Malaysian states has not been equitably distributed, limiting its poverty-reducing effect for low-income groups. The negative sign on LGDP², despite being statistically insignificant, hints at a possible reversal in poverty trends at higher growth levels, aligning with the inverted-U relationship proposed by Kuznets. These findings are consistent with Rambe et al. (2022), who observed that growth alone does not guarantee poverty reduction without deliberate income redistribution policies.

The Gini index shows a positive and significant association with poverty in the REM robust model, underscoring that widening income disparities directly exacerbate poverty. This finding supports the conclusions of Deininger and Squire (1998) and Alesina and Rodrik (1994), who emphasised that high inequality hinders poverty reduction and poses risks to long-term economic stability. LCOVID, representing COVID-19 case numbers, has a positive but statistically insignificant relationship with poverty, suggesting that the government's

emergency interventions, such as cash transfers, subsidies, and social safety nets, likely cushioned the pandemic's direct impact on poverty levels. This aligns with Bassier and Budlender (2023), who found that timely emergency support can mitigate income shocks for vulnerable households.

Inflation (INF) exhibits a positive but statistically insignificant association with poverty, possibly due to the government's price controls and subsidy programmes that reduced cost-of-living pressures. While economic theory predicts that inflation erodes purchasing power, particularly for the poor, such policy measures can diminish its observable impact, as similarly found in Easterly and Fischer (2001).

CONCLUSION

In conclusion, the COVID-19 pandemic had a significant impact on poverty rates in Malaysia between 2019 and 2023. The panel model analysis indicates that LGDP and LGDP² is positively and significantly associated with poverty. This contradicts the Kuznets Curve hypothesis. The findings imply that during the study period and across the examined states, economic growth has coincided with an increase in poverty levels, with the pace of this increase accelerating as income rises. This pattern may reflect a situation where the gains from growth are disproportionately captured by higher-income groups, resulting in limited or even adverse spillover effects for lower-income populations. Such an outcome is often linked to rising income inequality, structural unemployment, and uneven regional development (Ravallion 2016; Bourguignon 2004).

The Gini coefficient is positively and significantly related to poverty, highlighting that income inequality plays a critical role in worsening socio-economic conditions during a crisis. Variables such as LCOVID and INF do not exhibit statistically significant effects; however, this may be due to the mitigating influence of policy interventions such as cash assistance, loan moratoriums, and price controls, which successfully reduced direct pressure on low-income households. Although issues of autocorrelation and heteroskedasticity were detected in the model, these were addressed using the robust standard errors approach. The Hausman test and restricted F-test results support the use of the random effects model, indicating that inter-state differences are important in explaining variations in poverty.

Accordingly, this study recommends that national economic policies prioritise inclusive growth, reducing inequality, and strengthening social protection. Inclusive growth can be achieved by creating jobs and income gains in lagging regions through labour-absorbing investment, MSME upgrading and skills programmes. Policies in reducing inequality include better-targeted cash transfers, wage support and affordable essential services such as education, childcare, health and public transport. In addition, by strengthening social protection, policymakers can broaden the social protection coverage by including informal workers, adequate benefit levels, and shock-responsive delivery that can scale quickly through digital identification and electronic payment systems. To prepare for future crises, policy responsiveness and data-driven monitoring should be enhanced to limit poverty impacts. Future research could add social variables such as education, health and digital access to deepen understanding of poverty dynamics.

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