

Supplementary Materials

Table S1. Two-way fixed-effects regression of TB incidence (per 100,000), Liberia and Sierra Leone, 2000–2022 (Driscoll-Kraay SEs)

Predictor	B	SE (DK)	<i>t</i>	<i>p</i>
TB-HIV co-infection (%)	-1.760	0.454	-3.880	<0.001
Health expenditure per capita (US\$)	0.014	0.138	0.105	0.917
GDP per capita (2015 US\$)	-0.145	0.018	-7.903	<0.001
Conflict events (count)	-0.047	0.035	-1.364	0.173

Note: Models include country and year fixed effects. Standard errors are Driscoll-Kraay (HC1), estimated with a Bartlett kernel and plug-in bandwidth. Sample: Liberia and Sierra Leone, 2000–2022 (N = 46). *p*-values in this table use the asymptotic normal reference; interpretation emphasizes coefficients and Driscoll-Kraay 95% confidence intervals, which can be computed as $B \pm 1.96 \times SE$ from the reported standard errors.

A two-way fixed-effects model examined associations between the tuberculosis incidence rate, per 100,000 population, and selected covariates for Liberia and Sierra Leone from 2000 to 2022 (N = 46 country-year observations). TB-HIV co-infection (percent) was negatively associated with TB incidence ($b = -1.760$, $SE = 0.454$, $t = -3.880$, $p < 0.001$). Health expenditure per capita (US dollars) was not statistically significant ($b = 0.014$, $SE = 0.138$, $t = 0.105$, $p = 0.917$). GDP per capita (2015 US dollars) showed an inverse association ($b = -0.145$, $SE = 0.018$, $t = -7.903$, $p < 0.001$). Conflict events (count) were not statistically significant ($b = -0.047$, $SE = 0.035$, $t = -1.364$, $p = 0.173$). Models included country and year fixed effects; inference used Driscoll-Kraay (HC1) standard errors with a Bartlett kernel and plug-in bandwidth.

Table S2. Two-way fixed-effects regression of TB incidence (per 100,000) in Liberia and Sierra Leone, 2016–2022, including TB-HIV testing coverage; Driscoll-Kraay standard errors

Predictor	B	SE (DK)	<i>t</i>	<i>p</i>
TB-HIV co-infection (%)	0.139	0.163	0.852	0.394
Health expenditure per capita (US\$)	0.089	0.011	7.942	<0.001
GDP per capita (2015 US\$)	-0.099	0.011	-9.173	<0.001
Conflict events (count)	-0.001	0.006	-0.237	0.812
TB-HIV testing coverage (%)	0.087	0.022	3.883	<0.001

Note: Models include country and year fixed effects. Standard errors are Driscoll-Kraay (HCl), estimated with a Bartlett kernel and plug-in bandwidth. Sample: Liberia and Sierra Leone, 2016–2022 (N = 14). *p*-values in this table use the asymptotic normal reference; interpretation emphasizes coefficients and Driscoll-Kraay 95% confidence intervals, which can be computed as $B \pm 1.96 \times SE$ from the reported standard errors.

A two-way fixed-effects model examined associations between the tuberculosis incidence rate, per 100,000 population, and selected covariates for Liberia and Sierra Leone from 2016 to 2022 (N = 14 country-year observations). In this specification, the TB-HIV testing coverage variable is included. TB-HIV co-infection (percent) was not significantly associated with TB incidence ($b = 0.139$, $SE = 0.163$, $t = 0.852$, $p = 0.394$). Health expenditure per capita (US dollars) showed a positive association ($b = 0.089$, $SE = 0.011$, $t = 7.942$, $p < 0.001$). GDP per capita (2015 US dollars) showed an inverse association ($b = -0.099$, $SE = 0.011$, $t = -9.173$, $p < 0.001$). Conflict events (count) were not statistically significant ($b = -0.001$, $SE = 0.006$, $t = -0.237$, $p = 0.812$). TB-HIV testing coverage (percent) was positively associated with TB incidence ($b = 0.087$, $SE = 0.022$, $t = 3.883$, $p < 0.001$). Models included country and year fixed effects; inference used Driscoll-Kraay (HCl) standard errors with a Bartlett kernel and plug-in bandwidth.

Table S3. Two-way fixed-effects model (country and year); outcome is TB incidence rate (per 100,000), 2016–2022. Sample excludes TB–HIV testing coverage. Standard errors: Driscoll-Kraay (HCl).

Variable	Estimate	SE (DK)	<i>t</i>	<i>p</i>
TB-HIV co-infection (%)	-0.377	0.335	-1.124	0.261
Health expenditure per capita (US\$)	0.093	0.010	8.982	<0.001
GDP per capita (2015 US\$)	-0.085	0.020	-4.306	<0.001
Conflict events (count)	-0.014	0.013	-1.077	0.282

Note: Dependent variable is TB incidence rate (per 100,000 population). Models include country and year fixed effects. Standard errors are Driscoll-Kraay (HCl), estimated with a Bartlett kernel and plug-in bandwidth. Sample includes 14 country-year observations for Liberia and Sierra Leone (2016–2022). Covariates: TB–HIV co-infection (%), health expenditure per capita (US\$), GDP per capita (2015 US\$), and conflict events (count). *p*-values in this table use the asymptotic normal reference; interpretation emphasizes coefficients and Driscoll-Kraay 95% confidence intervals, which can be computed as $B \pm 1.96 \times SE$ from the reported standard errors.

Supplementary Table S3 presents re-estimated results from the primary two-way fixed-effects model using data from 2016 to 2022. In this specification, the TB–HIV testing coverage variable is excluded. The analysis applies Driscoll-Kraay (HCl) standard errors and includes country and year fixed effects. TB–HIV co-infection (percent) was not significantly associated with TB incidence per 100,000 population ($b = -0.377$, $SE = 0.335$, $t = -1.124$, $p = 0.261$). Health expenditure per capita (US dollars) showed a positive association with TB incidence per 100,000 population ($b = 0.093$, $SE = 0.010$, $t = 8.982$, $p < 0.001$). GDP per capita (2015 US dollars) showed an inverse association ($b = -0.085$, $SE = 0.020$, $t = -4.306$, $p < 0.001$). Conflict events (count) were not statistically significant ($b = -0.014$, $SE = 0.013$, $t = -1.077$, $p = 0.282$). Overall, the pattern is broadly consistent with the primary specification.

Table S4. Two-way fixed-effects regression of TB mortality among HIV-negative persons (per 100,000), Liberia and Sierra Leone, 2000–2022.

Variable	Estimate	SE (DK)	<i>t</i>	<i>p</i>
TB-HIV co-infection (%)	-2.138	0.377	-5.665	<0.001
Health expenditure per capita (US\$)	0.101	0.128	0.792	0.438
GDP per capita (2015 US\$)	-0.075	0.014	-5.437	<0.001
Conflict events (count)	-0.041	0.018	-2.245	0.038

Note: Outcome is TB mortality rate (excluding HIV) per 100,000 population. Models include country and year fixed effects. Standard errors are Driscoll-Kraay (HCl) with a Bartlett kernel and plug-in bandwidth. Sample: Liberia and Sierra Leone, 2000–2022 (N = 46 country-year observations). Covariates: TB-HIV co-infection (%), health expenditure per capita (US dollars), GDP per capita (2015 US dollars), and conflict events (count). *p*-values in this table use the asymptotic normal reference; interpretation emphasizes coefficients and Driscoll-Kraay 95% confidence intervals, which can be computed as $B \pm 1.96 \times SE$ from the reported standard errors. Significance stars are based on the asymptotic normal reference ($\dagger p < 0.10$, $p < 0.05$, $p < 0.01$, $p < 0.001$).

A two-way fixed-effects model examined associations between the tuberculosis mortality rate (excluding HIV), per 100,000 population, and selected covariates for Liberia and Sierra Leone from 2000 to 2022 (N = 46 country-year observations). TB-HIV co-infection (percent) was negatively associated with TB mortality ($b = -2.138$, $SE = 0.377$, $t = -5.665$, $p < 0.001$). Health expenditure per capita (US dollars) was not statistically significant ($b = 0.101$, $SE = 0.128$, $t = 0.792$, $p = 0.428$). GDP per capita (2015 US dollars) showed an inverse association ($b = -0.075$, $SE = 0.014$, $t = -5.437$, $p < 0.001$). Conflict events (count) were negatively associated with TB mortality ($b = -0.041$, $SE = 0.018$, $t = -2.245$, $p = 0.025$). Models included country and year fixed effects; inference used Driscoll-Kraay (HCl) standard errors with a Bartlett kernel and plug-in bandwidth.