

Improving Children's Health through Interventions:

A Quasi-Experiment of GAVI

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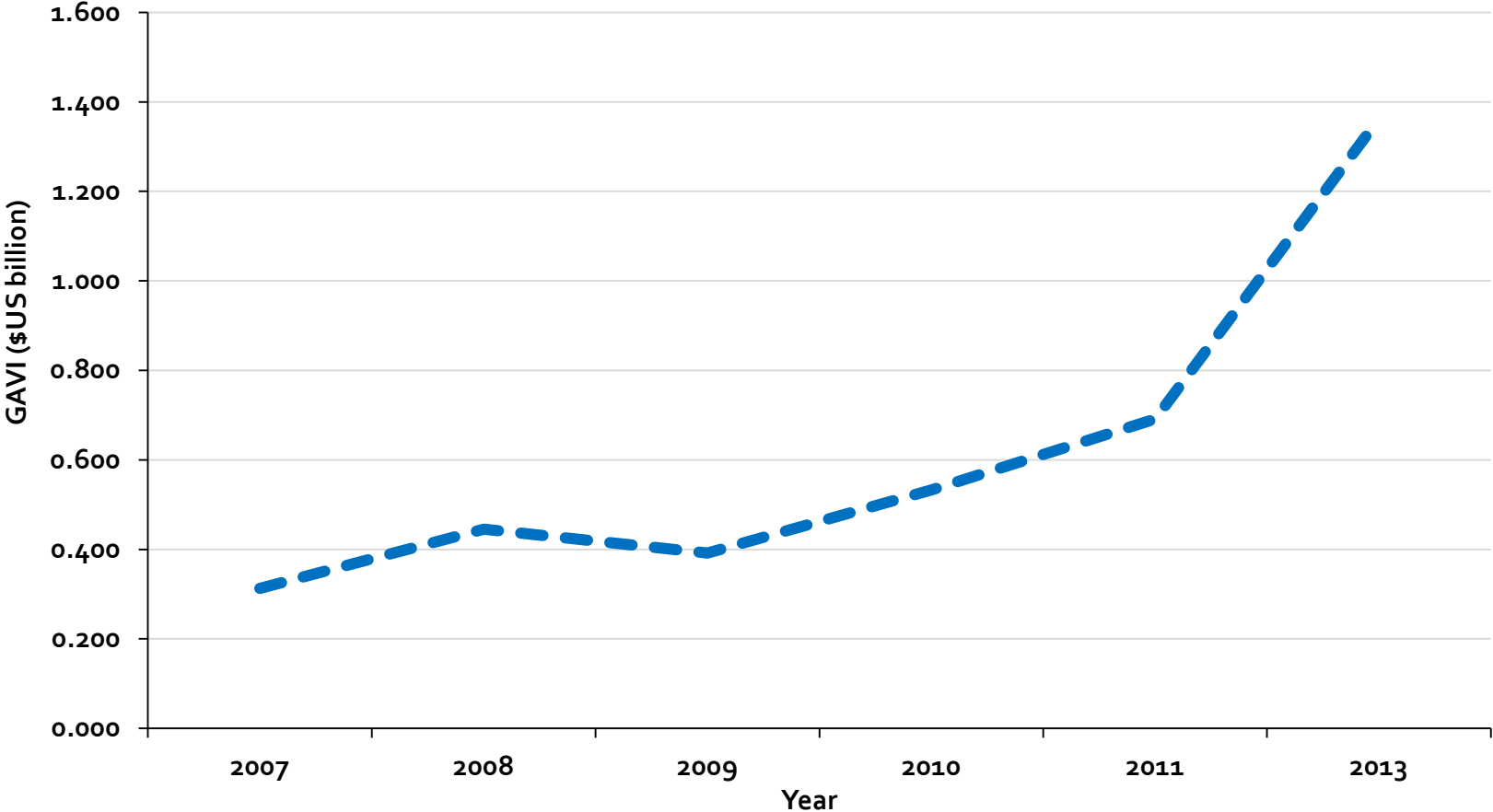


University of
South Australia

GAVI, created in 2000, is an international organization which aims bringing together public and private sectors to create equal access to new and underused vaccines for children living in the poorest countries.

It is funded by government donors, the Bill and Melinda Gates Foundation, International Finance Facility for Immunization, GAVI Matching Fund, and Pneumococcal AMC (Godal, 2000).

Health-targeted aid through GAVI (\$US billion)

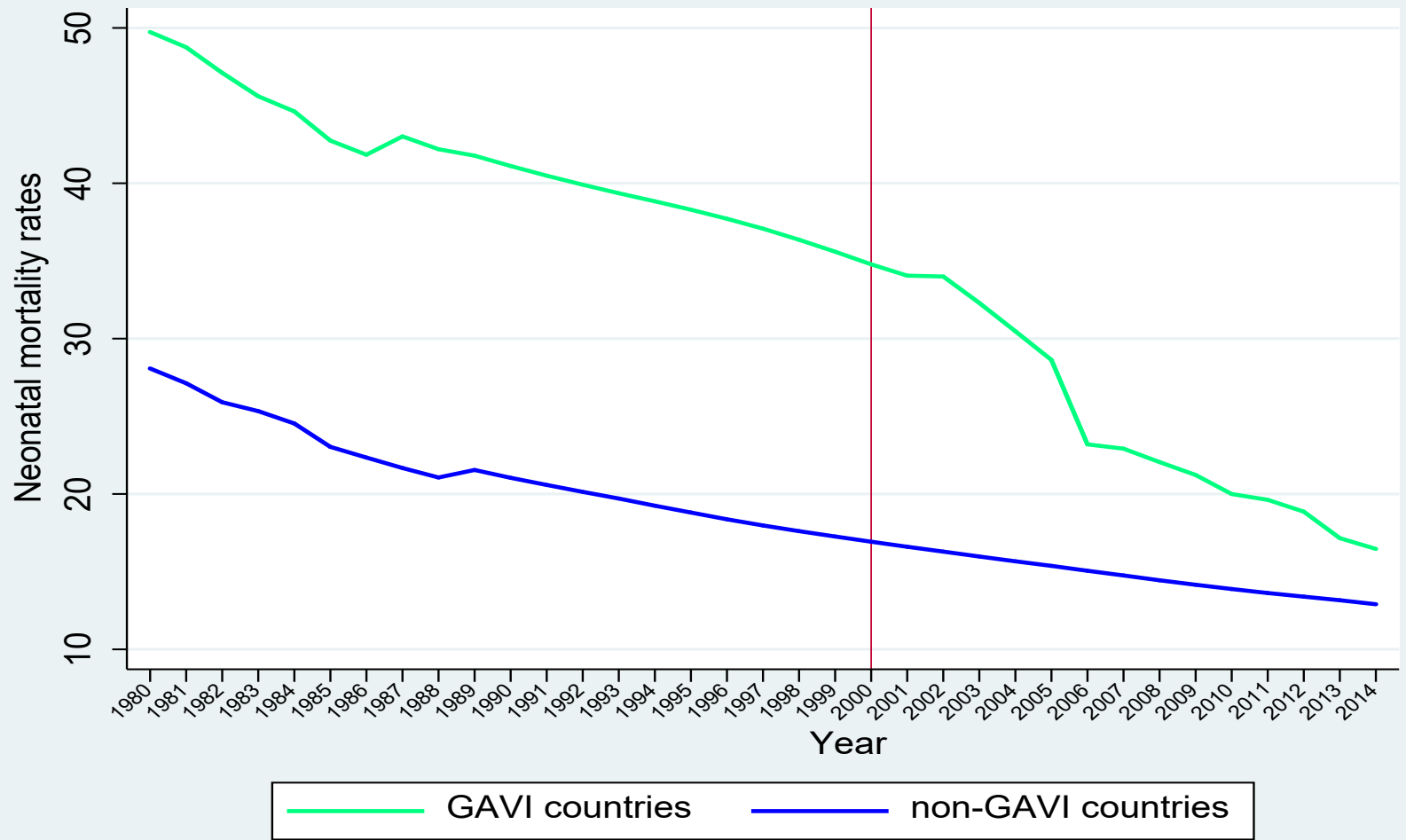


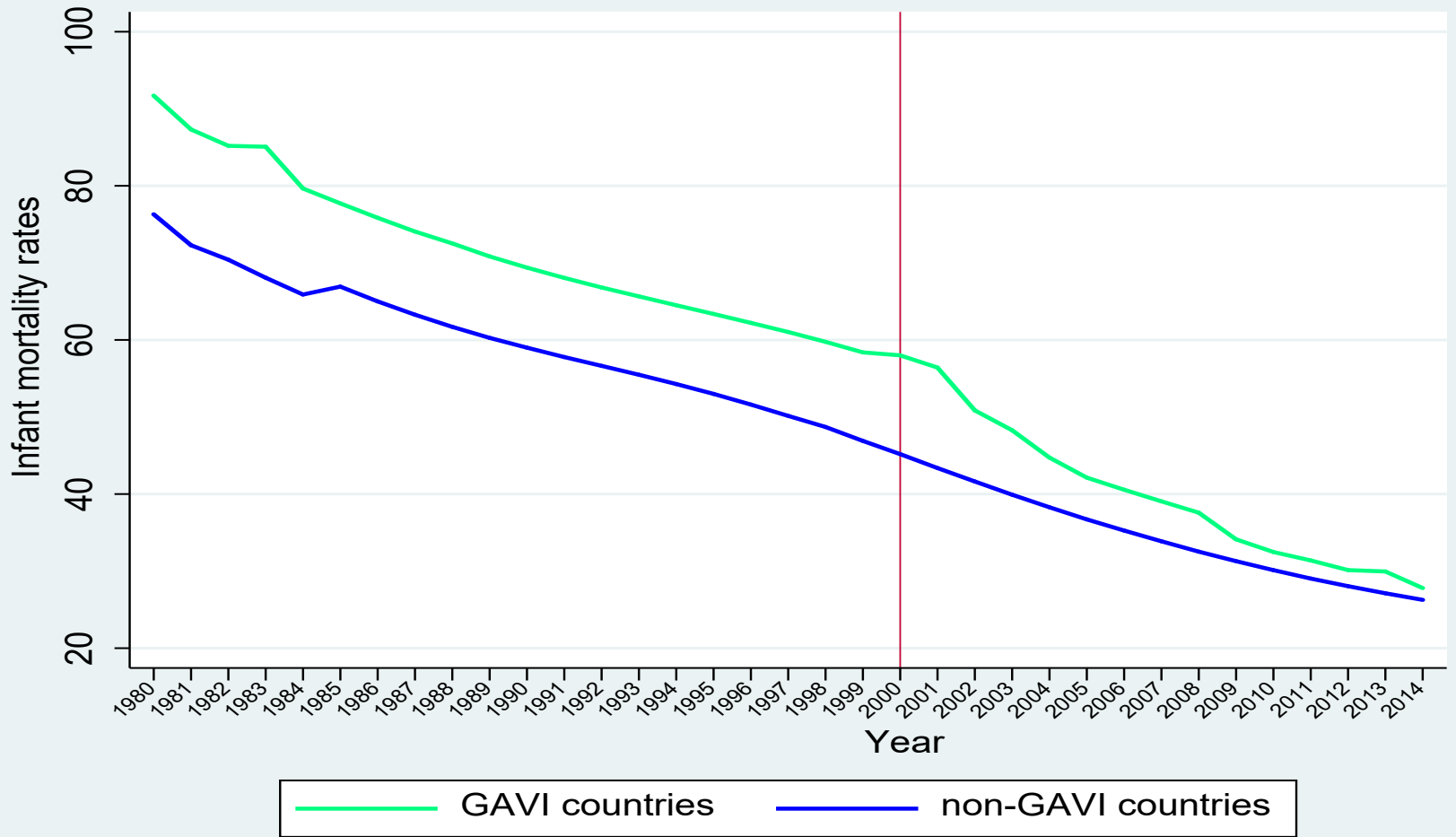
Year	Health-targeted aid through GAVI (\$US billion)
2007	0.313
2008	0.445
2009	0.392
2010	0.533
2011	0.691
2013	1.362

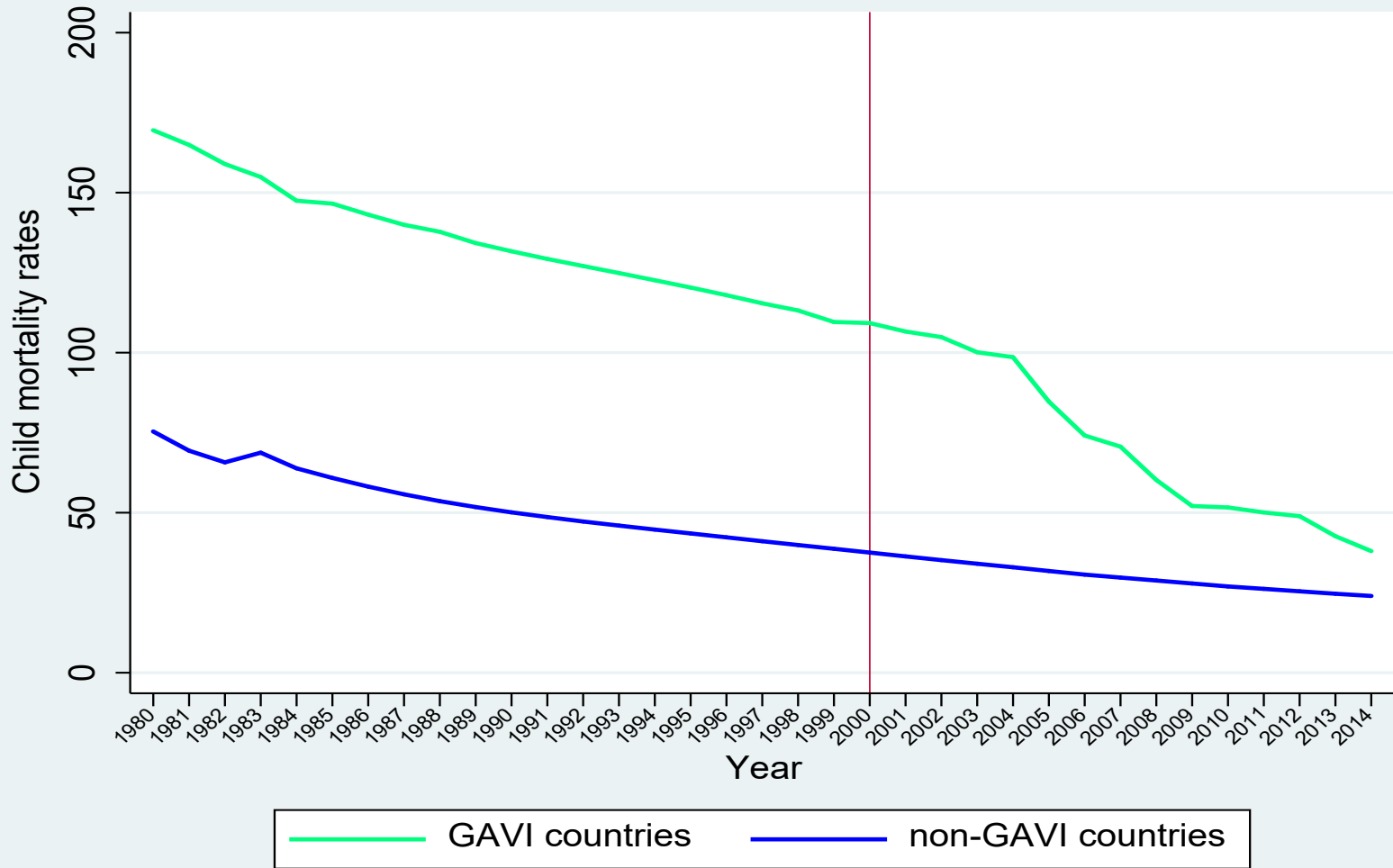


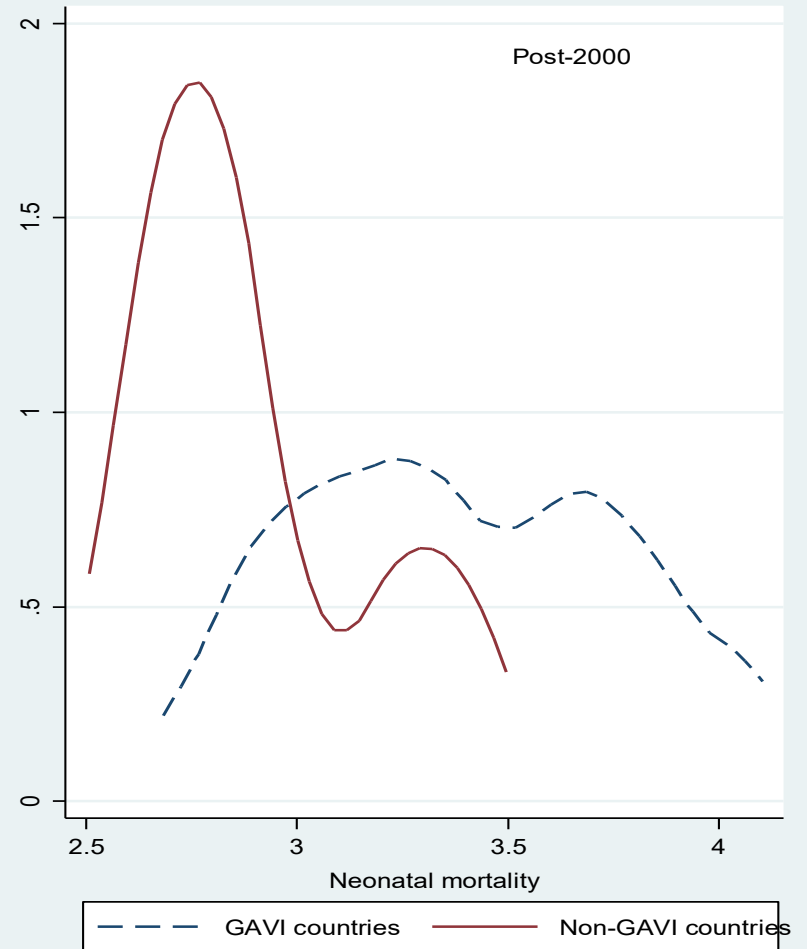
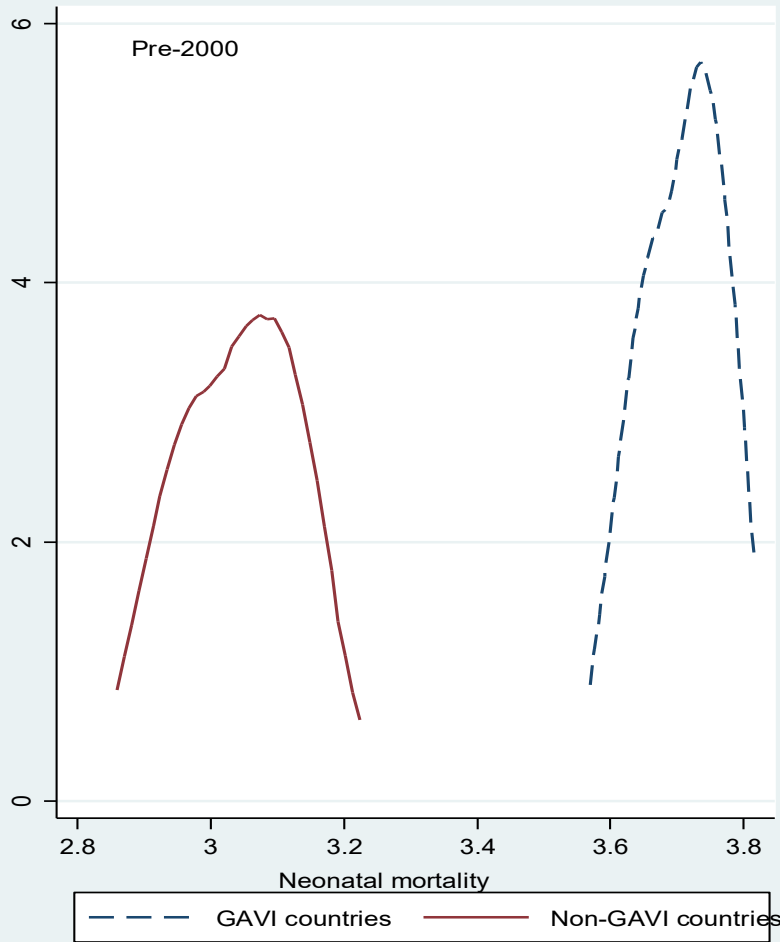
Statistics of health outcomes pre and post GAVI

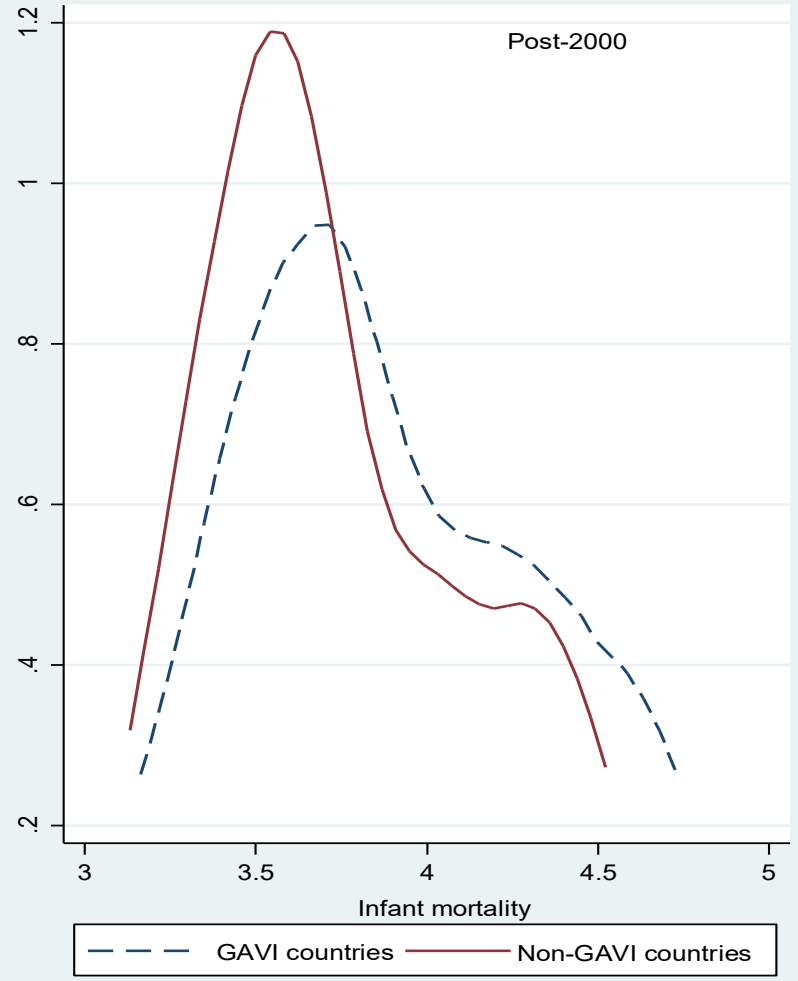
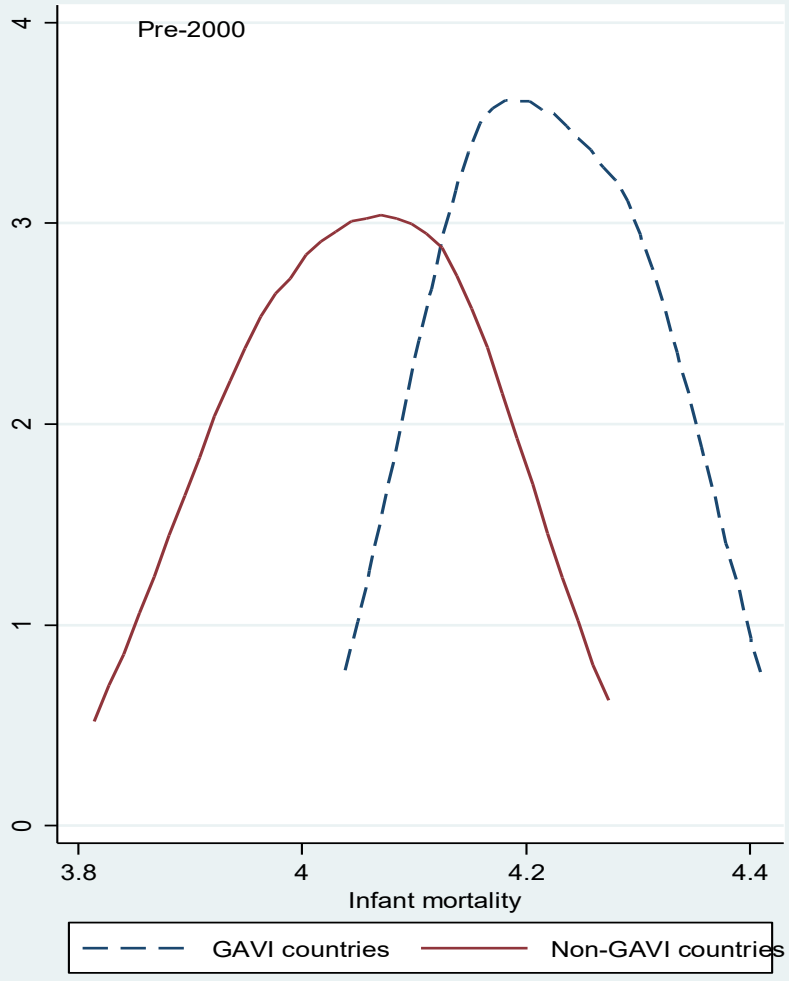
	Pre-2000			Post-2000		
	Non-GAVI countries	GAVI countries	Diff	Non-GAVI countries	GAVI countries	Diff
Neonatal mortality	19.99	39.65	-19.69	14.82	28.99	-14.18
Stunting	21.59	44.73	-23.138	18.47	33.51	-15.04
Infant mortality	56.72	67.35	-10.63	37.58	46.43	-8.85
Under-five mortality	48.16	127.59	-79.43	30.15	81.98	-51.83

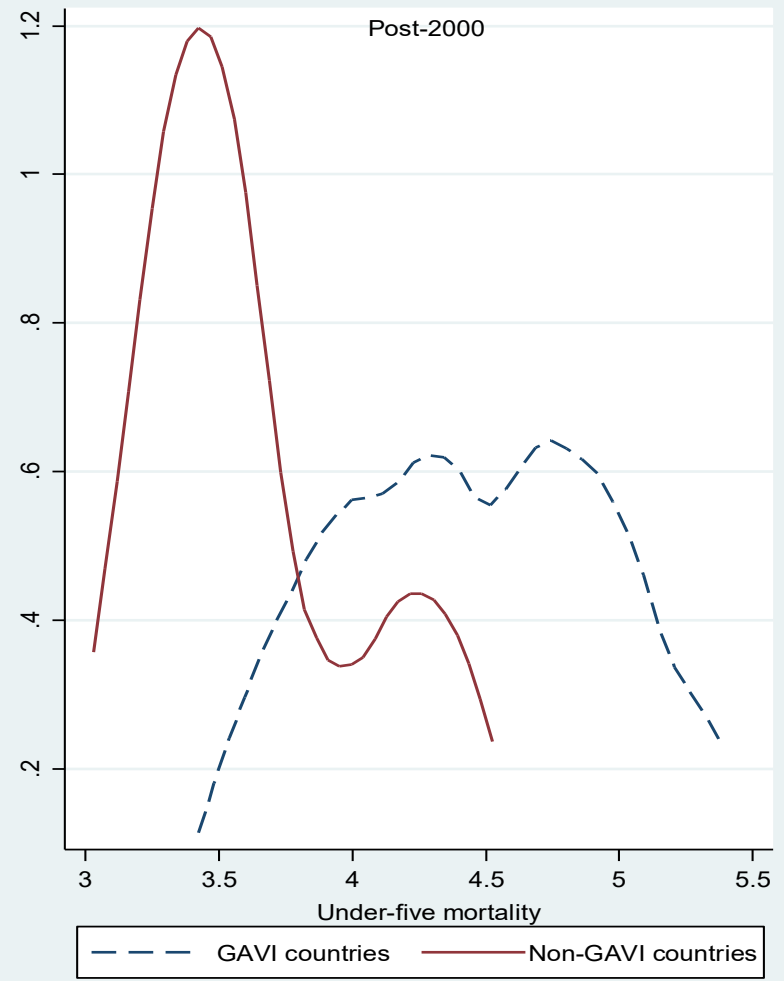
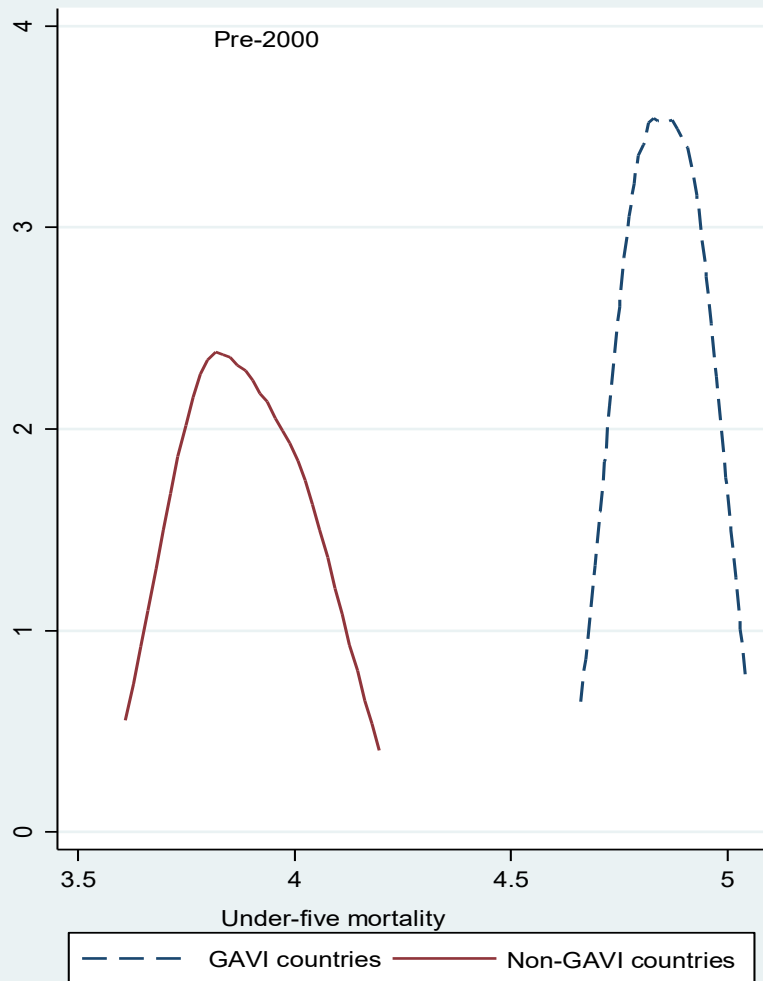












Empirical methodology

We used difference-in-difference estimation to analyse both short and long-term impacts of the GAVI intervention on children's health outcomes

Short-term health outcomes proxies (neonatal and infant mortality rates and stunting)

Long-term health outcomes proxy (under-five mortality rate)

$$CH_{it} = \beta(GAVI_i * Post_{1999_t}) + \phi HA_{it-1} + \varphi PCI_{it} + \tau X'_{it} + \alpha_i + \gamma_t + \varepsilon_{it}$$

CH_{it} is child health outcome

HA_{it-1} is lagged log health aid

PCI_{it} is log per capita income

X'_{it} shows other control variables including fertility rate, log of population, and CO₂ emissions in metric tons per capita

Main findings

	Neonatal mortality			Stunting		
GAVI*Post_1999	-0.113*** (0.012)	-0.107*** (0.013)	-0.076*** (0.014)	0.027 (0.042)	0.008 (0.047)	-0.001 (0.05)
HA_{it-1}	No	Yes	Yes	No	Yes	Yes
PCI_{it}	No	No	Yes	No	No	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Years fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	1656	1326	1281	309	264	257
R-Squared	0.945	0.951	0.953	0.916	0.922	0.920

	Infant mortality			Under-five mortality		
GAVI*Post_1999	-0.08*** (0.013)	-0.09*** (0.013)	-0.07*** (0.012)	-0.16*** (0.015)	-0.15*** (0.016)	-0.11*** (0.02)
HA_{it-1}	No	Yes	Yes	No	Yes	Yes
PCI_{it}	No	No	Yes	No	No	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Years fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	1714	1368	1323	1714	1714	1323
R-Squared	0.953	0.959	0.965	0.957	0.963	0.967

Robustness checks

The effect of GAVI across income groups

The impact of GAVI:	Below 25 th percentile value of PCI	Between 25 th and 75 th percentile value of PCI	Above 75 th percentile value of PCI
Neonatal mortality	-0.129*** (0.033)	-0.103*** (0.014)	-0.081*** (-3.17)
Stunting	-0.172*** (0.075)	0.052 (0.061)	0.207 (0.158)
GAVI*Post_1999	-0.048 (0.033)	-0.107*** (0.017)	0.045 (0.036)
Under-five mortality	-0.177*** (0.037)	-0.145*** (0.018)	-0.067** (0.033)

Falsification test

We redefined the pre-GAVI time period as 1960-1979 and post-GAVI time period as 1980-1999.

Variables	Neonatal	Stunting	Infant mortality	Under-five mortality
DID	-0.056 (0.036)	0.716 (0.857)	-0.183 (0.114)	-0.098 (0.070)
Controls, country and year fixed	Yes	Yes	Yes	Yes
N	614	120	614	614
R-Squared	0.982	0.96	0.984	0.980

Testing for omitted variable bias

We use the Oster (2017) to formally test for the relevance of unobservable variables such as health governance, institutional development, and health systems factors

We find that the effect of GAVI is not compromised by omitted variable bias.

GAVI improves children's health in developing countries through the following potential direct and indirect channels.

Its direct investment in vaccines and immunisation in recipient countries

It indirectly creates a competition for the demand for vaccines which reduce vaccine prices.

**It improves in global standards for
safe injection**

Contributions of the study

It supports the growing evidence that the effectiveness of foreign aid needs to be examined in a much-disaggregated approach.

Thanks