

Abstract

Between 2015 and 2020, overall vaccination against diphtheria, tetanus, and pertussis (DTP) decreased from 90% to 76% across countries and territories in Latin America. To better evaluate this effect at the country-level, National Immunization Technical Advisory Groups (NITAGs) will be assessed given their role in soliciting recommendations that guide evidence-based decision-making for in-country immunization programs. Their effectiveness may be estimated through changes in country-level programs, including changes in vaccination coverage after establishing a NITAG. Given the recent decline in coverage and the use of DTP vaccination as a common indicator of health program performance, this vaccine has been used as a measure of the effectiveness of NITAGs. This project estimates time-series panel models of DTP vaccine coverage before and after implementation of NITAGs with country-level fixed effects. It controls for secular changes over time and includes a model to estimate effects of time (measured as decades) on the association between DTP coverage and a country's implementation of a NITAG. The analytic sample includes 31 countries and territories with data between 1980-2019. Key findings indicate that having an established NITAG results in about 5% greater DTP vaccine coverage when accounting for time, and that the greatest proportion of the variance in DTP vaccine coverage may be attributed to a country's fixed effect. Data from this linear regression suggest that NITAGs have an influential capacity in the establishment and improvement of policies related to DTP vaccine uptake in Latin America. These findings justify the technical role of NITAGs and may be used to recommend mandatory DTP-containing vaccinations to countries and territories without them across the Americas.

Research Question

To what degree do NITAGs impact DTP vaccine uptake in Latin America?

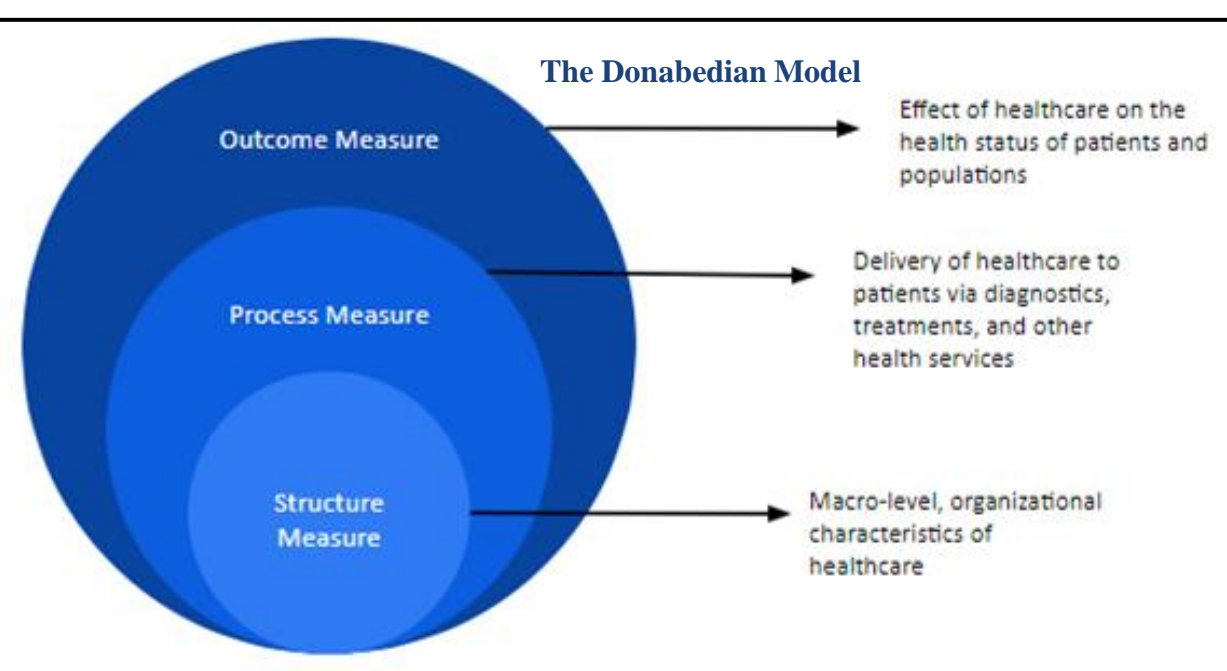
Objective

To analyze the impact of having a NITAG on DTP vaccine uptake in 31 Latin American, Central American, and Caribbean countries

Purpose

To observe whether countries with a NITAG have a higher vaccine coverage rate than countries without a NITAG

Conceptual Framework & Data



Data provided by the NITAG Resource Center and the WHO Global Health Observatory includes a country's NITAG status and DTP coverage between 1980-2019.

Methodology

Test				
Time-series panel models				
Model	Model 1	Model 2	Model 3	Model 4
Variable(s)	NITAG → DTP coverage	Time → DTP coverage	NITAG + Time → DTP coverage	NITAG*Time → DTP coverage

Results

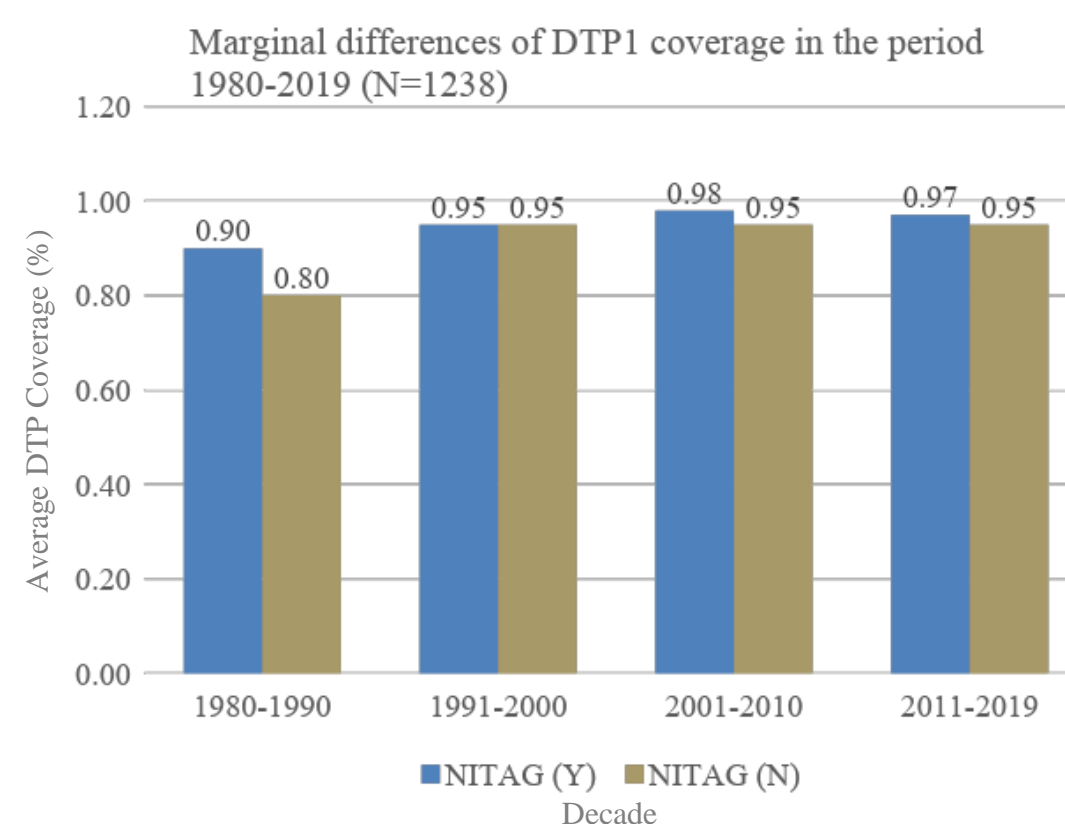
Table 1. OLS regression of DTP1 coverage (%) on decade of NITAG establishment and having a NITAG in the period 1980-2021 (N=1238)

	Model 1	Model 2	Model 3	Model 4
NITAG (Ref: No NITAG est.)				
NITAG est.	0.089***		0.033***	0.097*
Decade of NITAG est. (Ref: 1980-1990)				
1991-2000		0.144***	0.142***	0.146***
2001-2010		0.144***	0.136***	0.134***
2011-2021		0.147***	0.130***	0.131***
NITAGs * decade				
NITAGs est. 1991-2000				-0.101*
NITAGs est. 2001-2010				-0.054
NITAGs est. 2011-2021				-0.064
Constant	0.880	0.791	0.790	0.789
R2 within	0.08	0.33	0.34	0.34
R2 between	0.01	0.00	0.01	0.02
RMSE	0.12	0.11	0.11	0.11
Panel variance	0.07	0.06	0.07	0.07
rho	0.31	0.34	0.35	0.35

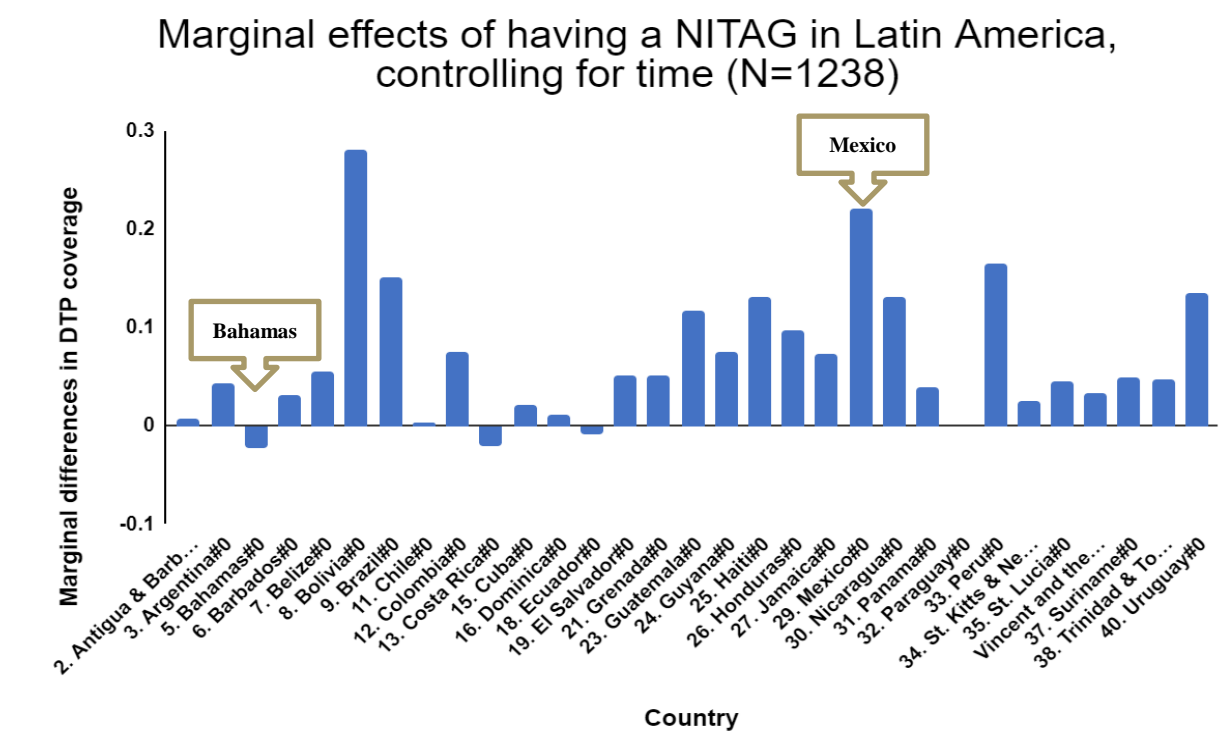
Source: compiled by author using data from WHO Global Health Observatory, 1980-2021

Note: * p<0.05, **p<0.01, ***p<0.001

- NITAGs are associated with higher DTP vaccine coverage, but time was found to explain much of this association
- The greatest proportion of variance in DTP vaccine coverage may not be attributed to NITAGs
- The marginal impact of having a NITAG was found to decrease over time; the difference decreases and gains more parity across the decades
- Historical bases such as “La Década Perdida” (“The Lost Decade”) may play a role in observed changes to the marginal trend



Conclusion



NITAGs have played an important role in DTP vaccine coverage over time in Latin America

- Time appears to be advantageous for older NITAGs which made more percentage point gains in DTP vaccine coverage when compared with newer NITAGs
- Not all countries in the analytic sample benefitted from having a NITAG in the same way
- In addition to country-level variations including the burden of DTP-related disease, population size, and NITAG preparedness, there is a potential value added in having a long-standing NITAG
- NITAGs were found to have a positive association with DTP vaccine coverage across all tested regression models
- Having a NITAG predicts an overall greater percentage point gain in DTP vaccine coverage over time when compared with not having a NITAG
- A positive association between NITAGs and vaccine acceptance is implied

These findings justify the technical role of NITAGs and may be used to recommend mandatory DTP-containing vaccinations to countries and territories without them across the Americas

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