



# Impact of the COVID-19 pandemic on routine childhood immunisation in Colombia

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## ABSTRACT

**Objective** To assess the impact of the COVID-19 pandemic on routine childhood vaccination coverage in Colombia by age group, rural/urban residence, state and vaccine type.

**Design** Ecological study of official monthly vaccination records.

**Setting** Vaccination records from the Colombian Ministry of Health (March–October 2019 and 2020).

**Participants** Aggregated data for Colombian children (<12 months, n=676 153; 12–23 months, n=700 319; and 5 years, n=734 295) participating in the Expanded Program on Immunization.

**Main outcome measures** Proportion of eligible population receiving vaccination.

**Results** Vaccination coverage showed an overall decline of approximately 14.4% from 2019 to 2020 (2019 coverage=76.0, 2020 coverage=61.6%). The greatest reduction in proportion vaccinated was observed in children <12 months of age for pneumococcal vaccine (second dose) (2019 coverage=81.4%; 2020 coverage=62.2%; 2019–2020 absolute difference, 19.2%; 95% CI 14.8% to 23.7%). For children aged 12–23 months, the proportion vaccinated for yellow fever declined by 16.4% (12.4% to 20.9%) from 78.3% in 2019 to 61.8% in 2020. Among children 5 years of age, the biggest decrease occurred for the oral polio vaccine (second dose), with a difference of 11.4% (7.1% to 15.7%) between 2019 and 2020 (73.1% and 61.7% for 2019 and 2020). We observed a statistically significant effect on vaccine coverage in rural versus urban areas for children <12 months and 5 years of age.

**Conclusions** Reduced uptake of immunisations during the COVID-19 pandemic poses a serious risk of vaccine-preventable disease outbreaks. Colombia and other middle-income countries need to continue to monitor immunisation programme coverage and disease outbreaks at the national and subnational levels and undertake catch-up vaccination activities.

## INTRODUCTION

The WHO and the Pan-American Health Organization adopted a strategic immunisation plan for 2014–2020 aimed at improving vaccination coverage in all countries of the Americas. The strategy was designed to completely interrupt poliovirus transmission and ensure virus containment; eliminate measles, rubella and neonatal tetanus; and control other vaccine-preventable diseases guided by the principle that ‘the entire population must

## What is already known on this topic?

- Inequalities in access to healthcare services between socioeconomic groups might be intensified by the COVID-19 pandemic.
- To effectively control and reduce the risk of outbreaks of vaccine-preventable diseases, countries must maintain high immunisation rates as a public health priority.
- Low-income to middle-income nations face greater difficulties in achieving optimal vaccination coverage.

## What this study adds?

- The finding of lower vaccine uptake indicates the need for urgent immunisation catch-up programmes in Colombia.
- Rural areas are disproportionately affected, with greater differences in vaccine coverage between 2019 and 2020 and must be a focus of vaccination efforts.

have access’.<sup>1</sup> In response, Colombia developed yearly programmes and a comprehensive multi-year national immunisation plan to achieve those objectives, including a 95% vaccination coverage goal for each vaccine. Periodic monitoring of vaccination coverage, disease trend surveillance, and other programmatic indicators have been implemented at the national and state levels to continuously evaluate vaccination plans.<sup>2</sup> However, the 2020 COVID-19 pandemic created barriers for the national health system to maintain scheduled mass immunisations; thus, lags were expected in the provision of and access to health services.<sup>3</sup> For low-income and middle-income countries, the effects of these disruption may be even more detrimental to achieving optimal immunisation coverage for poor households and remote or rural areas.<sup>4,5</sup> Although inequities are decreasing in Latin America,<sup>6</sup> infectious outbreaks such as COVID-19 have the potential to affect what has been achieved by diverting health resources from preventive healthcare and through lockdown measures that contribute to reducing normal delivery of vaccines, especially in remote areas.

The first case of COVID-19 in Colombia was reported on 6 March 2020; approximately a year



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later (as of 20 March 2021), over two million COVID-19 cases were registered.<sup>7</sup> Government public health measures started by mid-March of 2020 and included a nationwide lockdown, isolation, social distancing and school closures. The lockdown ended in September 2020, but other infection control measures remained.<sup>8</sup>

In Colombia, where 23% of the population live in rural areas and where there are high levels of socioeconomic and health inequities,<sup>9</sup> populations face severe disparities and barriers to accessing healthcare services.<sup>10</sup> General health services and many activities affecting healthcare access (eg, transportation) were affected by the pandemic due to lockdown and isolation measures issued by the government at the national level, despite WHO recommendations regarding vaccination programmes<sup>11</sup> and continuous efforts from local governments to guarantee universal access. Consequently, immunisation coverage may have decreased during the pandemic, with potentially differential impacts between urban and rural populations.<sup>4 12</sup> However, data regarding immunisation coverage through the pandemic have not been systematically reported. Therefore, we aimed to assess the impact of the COVID-19 pandemic on routine childhood vaccination coverage in Colombia, overall and according to rural or urban residence, state and vaccine type.

## METHODS

### Settings

Data for vaccination coverage for children <5 years of age were extracted from the official records of the Expanded Program on Immunization from the Colombian National Ministry of Health (at the state level) between March and October 2019 and during the same period in 2020; these periods were chosen because the isolation measures imposed by the national government due to the COVID-19 pandemic started in March 2020 and ended by 1 September 2020.<sup>13</sup> No individual-level data were used; instead, state-level coverage levels were analysed. The databases of the immunisation programme are updated by trained nurses through an informatics system and contain vaccination data from every child in the country. Accuracy and completeness of the data are assessed through a continuous quality data review.<sup>14</sup> Coverage rates were calculated as the proportion of the number of doses administered and total inhabitants (official population data by year) of each age group (<12 months, 12–23 months and 5 years).<sup>15</sup> Month-by-month relative differences in vaccination coverage were calculated between 2019 and 2020. Negative values indicate an increase in coverage rates in 2020 vs 2019 (online supplemental table A1).

### Vaccines

Vaccines included in the Colombian Expanded Program on Immunization during the study period for children <12 months were the BCG, hepatitis B, inactivated polio vaccine (IPV), oral polio vaccine (OPV)+IPV, pentavalent (three doses), rotavirus (two doses), seasonal influenza (two doses) and pneumococcal vaccines (two doses); the pentavalent vaccine, which contains diphtheria, pertussis and tetanus (DPT), *Haemophilus influenzae* type b and hepatitis B vaccines. The hepatitis B vaccine is first administered as a monovalent vaccine at birth and is subsequently given as part of the pentavalent vaccine at 2, 4 and 6 months of age. At 12–23 months, the vaccine schedule includes measles, mumps and rubella (MMR), varicella, pneumococcal reinforcement, hepatitis A and yellow fever vaccines, as well as OPV and DPT first doses. For 5-year-old children, the schedule includes boosters for MMR and second boosters

for DPT and OPV.<sup>16</sup> Except for the two doses of the seasonal influenza vaccine, all vaccines were included in these analyses. The seasonal influenza vaccine was excluded since it is mainly delivered in yearly campaigns and not month by month.<sup>17</sup>

### Statistical analysis

To estimate changes in vaccination coverage, we calculated absolute differences between 2019 and 2020 coverage rates during the study period. According to official reports, 2019 can be assumed to be a typical year in terms of immunisation processes.<sup>18</sup> The vaccination figures analysed in the current study were stratified by geographical regions according to their physical, cultural and climatic characteristics, as reported elsewhere: Amazon, Andean, Bogotá, Caribbean, Eastern Plains and Pacific regions<sup>19</sup> (online supplemental table A2). Official counts of people residing in rural areas within each state and region<sup>20</sup> were used to establish the referent for the rural population (ie, for calculating proportions). A two-level multilevel linear regression model was used to assess the effect of rural residence on absolute differences in vaccination coverage between 2019 and 2020; geographical area was considered a level 2 variable, and rural residence was considered a level 1 variable. We evaluated data on rural residence and vaccination coverage clustered by geographical region. P values of <0.05 were considered the threshold for statistical significance. All analyses were carried out via Stata V.16.<sup>21</sup>

## RESULTS

A total of 2 128 642 children were included in 2019, with the following distribution: <12 months (n=680 127), 12–23 months (n=702 452) and 5 years (n=746 063). A total of 2 110 767 children were included in 2020, with the following distribution: 676 153 (<12 months), 700 319 (12–23 months) and 734 295 (5 years) (online appendix table A2). For 2019, the coverage achieved for October was 78.7% (95% CI 77.7% to 79.8%) in children <12 months, 77.1% (95% CI 75.8% to 78.4%) in children 12–23 months and 73.6% (95% CI 71.8% to 75.4%) for children 5 years of age. For the same period in 2020, the achieved coverage rates were 61.1% (95% CI 59.4% to 62.7%), 61.8% (95% CI 60.0% to 63.7%) and 63.2% (95% CI 58.9% to 67.3%), respectively. When considering all vaccines at all ages, the average absolute difference between years was 14.4% (95% CI 12.3% to 16.6%).

We observed absolute differences in the coverage by region between years (F-test  $p < 0.001$ ), in descending order: Amazon (25.2%, 95% CI 22.84% to 27.8%), Eastern Plains (19.4%, 95% CI 17.7% to 21.05%), Pacific (19.3%, 95% CI 17.8% to 20.7%), Andean (15.6%, 95% CI 14.3% to 16.8%), Caribbean (9.1%, 95% CI 8.1% to 10.2%) and Bogotá (6.6%, 95% CI 5.2% to 8.0%).

When examining data for specific vaccines, age groups and across regions, the vaccines that decreased the least and the most, respectively, between 2019 and 2020 were the hepatitis B (absolute difference in coverage of 13.1%) and pneumococcal (second dose) (absolute difference in coverage of 19.2%) vaccines for children <12 months. For children 12–23 months of age, the smallest absolute difference was found for the varicella vaccine (14.6%) and the largest difference was found for the yellow fever vaccine (16.4%). For 5-year-old children, the smallest and largest absolute differences were found for the DPT second booster (10.2%) and the OPV second booster (11.4%). Absolute differences in vaccine coverage for each vaccine are presented in tables 1–3. Effects of rural residence on absolute

**Table 1** Percentages of vaccination coverage in 2019 and 2020 and absolute differences between years by region in children <12 months of age (2019, n=680 127; 2020 n=676 153)

Vaccine	Year Diff	Region						Total
		Amazon	Andean	Bogotá	Caribbean	Eastern Plains	Pacific	
BCG	2019	82.1	73.7	84.6	75.8	83.9	69.0	76.5
	2020	53.8	60.0	77.9	69.5	63.1	55.4	62.3
	Diff	28.3	13.7	6.7	6.3	20.8	13.6	14.2
Hepatitis B	2019	73.4	73.3	84.7	74.5	76.0	65.1	73.2
	2020	48.0	59.8	78.1	68.6	59.5	51.6	60.1
	Diff	25.5	13.5	6.6	5.9	16.5	13.6	13.1
IPV	2019	84.8	78.2	73.9	82.2	89.5	77.8	81.6
	2020	54.6	62.8	65.9	71.5	65.4	57.2	63.9
	Diff	30.2	15.4	8.0	10.7	24.1	20.6	17.7
OPV+IPV	2019	78.2	80.1	75.2	80.2	77.1	74.3	78.6
	2020	46.8	61.9	65.8	69.0	58.4	49.4	59.8
	Diff	31.4	18.2	9.4	11.2	18.7	24.8	18.8
Penta first dose	2019	84.5	78.2	74.0	82.3	89.1	77.1	81.5
	2020	54.9	62.9	65.9	71.9	66.4	57.6	64.2
	Diff	29.6	15.3	8.1	10.5	22.7	19.5	17.2
Penta second dose	2019	82.7	79.3	75.3	82.4	86.3	76.0	81.1
	2020	50.7	62.6	65.7	71.4	63.2	53.4	62.4
	Diff	32.1	16.7	9.6	11.1	23.1	22.6	18.7
Penta third dose	2019	78.5	80.1	75.2	80.3	77.2	74.0	78.6
	2020	46.9	61.9	65.8	69.6	58.6	49.7	60.1
	Diff	31.6	18.2	9.4	10.7	18.6	24.3	18.6
Rota first dose	2019	77.6	77.4	72.4	78.9	79.5	71.4	77.2
	2020	48.7	61.5	65.1	67.6	58.0	51.1	59.7
	Diff	28.9	15.9	7.3	11.2	21.5	20.3	17.5
Rota second dose	2019	77.0	78.8	72.3	79.8	79.9	71.9	77.8
	2020	47.3	61.8	65.1	68.4	59.5	50.0	59.8
	Diff	29.7	17.0	7.2	11.4	20.4	21.9	18.0
Pneumococcal first dose	2019	84.5	79.1	76.5	83.2	90.8	77.0	82.2
	2020	54.8	62.9	67.4	72.0	64.3	57.1	64.0
	Diff	29.7	16.2	9.1	11.2	26.5	19.9	18.2
Pneumococcal second dose	2019	82.3	79.8	76.3	82.9	87.7	75.5	81.4
	2020	50.5	62.6	67.2	70.7	63.5	52.9	62.2
	Diff	31.9	17.2	9.1	12.1	24.2	22.6	19.2

BCG, Bacillus Calmette-Guérin; Diff, 2019–2020 difference; IPV, inactivated polio vaccine; OPV, oral polio vaccine; Penta, pentavalent vaccine; Rota, rotavirus.

differences in coverage between years were mainly observed in children <12 months and children 5 years of age. The BCG and hepatitis B vaccines showed the greatest differences in coverage proportions when comparing rural and urban areas, with estimated effects (betas) of 0.453 (95% CI 0.21 to 0.68) and 0.490 (95% CI 0.24 to 0.73), respectively (table 4). Taking the BCG vaccine as an illustrative example, it is expected that for each percentage increase in the proportion of coverage in the rural population, the difference in coverage between years increased by 0.453 percentage units.

## DISCUSSION

This study found that Colombia's vaccination coverages of routine childhood immunisations were affected during the COVID-19 pandemic. A 14.4% reduction was estimated in immunisation coverage among Colombian children in 2020 compared with the same period in 2019. The greatest declines in coverage were observed among children <12 months who are living in rural areas. Certain regions, such as the Amazon, Eastern Plains and Pacific regions, showed statistically significant reductions in coverage compared with other regions. It

is likely that measures such as isolation and lockdown during the pandemic as well as the changes in public health priorities contributed to the observed reduction in vaccination coverage.

Others have previously reported that those living in less deprived areas may be less affected by emergency situations<sup>22</sup> and may be less vulnerable to health service disruptions caused by disease outbreaks, natural disasters or protracted armed conflict.<sup>23</sup> Given this, there may be a differential effect on uptake of vaccinations through the pandemic based on pre-existing vulnerabilities. This is particularly important in the Colombian context, given that 5% reductions in mass immunisations have been associated with a threefold increase in cases of vaccine-preventable diseases.<sup>24</sup>

Beyond the increase in global morbidity and mortality and disruptions to the economic and social well-being of individuals and communities across the world,<sup>25</sup> the COVID-19 pandemic and associated restrictions have contributed to the delay in the provision of non-vital medical services such as vaccination. Risk-benefit analysis has shown that the deaths prevented by sustaining routine childhood immunisations far outweigh the excess risk of COVID-19 deaths associated with visits to vaccination clinics,

**Table 2** Percentages of vaccination coverage in 2019 and 2020 and absolute differences between years by region in children 12–23 months of age (2019, n=702 452; 2020, n=700 319)

Vaccine	Year Diff	Region						Total
		Amazon	Andean	Bogotá	Caribbean	Eastern Plains	Pacific	
MMR	2019	80.3	80.8	78.0	79.8	83.3	76.7	80.0
	2020	57.7	64.1	70.9	72.6	64.6	57.1	65.1
	Diff	22.6	16.7	7.1	7.2	18.8	19.6	14.9
Varicella	2019	80.0	80.0	79.1	78.1	82.4	76.5	79.1
	2020	56.5	63.7	71.4	72.0	62.6	57.7	64.5
	Diff	23.5	16.3	7.7	6.1	19.8	18.9	14.6
Pneumococcal reinf.	2019	78.4	80.0	74.3	78.4	79.7	75.0	78.4
	2020	56.1	63.4	69.5	71.1	61.6	55.4	63.6
	Diff	22.3	16.6	4.8	7.3	18.1	19.7	14.7
Hepatitis A	2019	80.8	81.4	79.3	79.9	82.3	76.7	80.2
	2020	57.6	64.2	71.5	72.7	65.4	57.3	65.3
	Diff	23.2	17.2	7.8	7.2	16.9	19.4	14.9
Yellow fever	2019	81.6	79.0	69.8	77.3	85.5	71.1	78.3
	2020	58.4	61.4	63.4	66.6	65.4	52.3	61.8
	Diff	23.3	17.6	6.4	10.8	20.1	18.8	16.4
OPV first reinf	2019	67.6	79.7	70.8	75.3	74.5	67.3	73.8
	2020	50.1	61.7	63.9	64.6	56.0	48.6	58.4
	Diff	17.5	17.9	6.9	10.8	18.5	18.7	15.4
DPT first reinf	2019	67.6	79.9	70.8	75.2	74.5	66.9	73.8
	2020	49.7	62.0	63.8	64.3	55.9	48.7	58.3
	Diff	17.9	18.0	7.0	10.9	18.6	18.2	15.5

Diff, 2019–2020 difference; DPT, diphtheria, pertussis and tetanus; MMR, measles, mumps and rubella; OPV, oral polio vaccine; reinf, reinforcement.

especially for children.<sup>26</sup> As such, efforts are needed to guarantee continuity in vaccine uptake, given that lockdown and isolation measures have negatively impacted national coverage during 2020, especially among rural populations. Although there have been successful efforts to reduce rural/urban inequalities,<sup>6</sup> new vaccination agendas (including those proposed for COVID-19 containment) must include special actions to overcome lags in routine childhood immunisation for at-risk regions.

As measures to control the spread of the virus are gradually lifted, some settings (eg, schools and childcare centres) reopen, and social activities increase, transmission of the SARS-CoV-2 virus is expected to rise. In such circumstances, and given that confinement has been associated with rapid decreases in other infectious diseases,<sup>27</sup> an increase in the number of cases of vaccine-preventable conditions in

children who missed vaccinations during the pandemic is expected, thereby posing a twofold challenge to public health systems.

Factors associated with the lag in vaccination processes likely include public actions (ie, isolation and infection control measures), individual characteristics such as poverty/socioeconomic status or cultural traits,<sup>28</sup> and misinformation on diseases and vaccinations, including people's concerns about contagion and the safety of vaccines and their potential side effects (which has increased during pandemic times).<sup>29</sup> These threats affect conventional vaccination programmes operating in the midst of new vaccination processes against COVID-19<sup>30</sup> and need to be considered in the near future to reactivate normal immunisation processes. We considered that mass communication and health education strategies aimed

**Table 3** Percentages of vaccination coverage in 2019 and 2020 and absolute differences between years by region in children 5 years of age (2019, n=746 063; 2020, n=734 295)

Vaccine	Year Diff	Region						Total
		Amazon	Andean	Bogotá	Caribbean	Eastern Plains	Pacific	
MMR reinf	2019	70.7	77.6	81.4	72.4	72.8	68.6	73.2
	2020	53.3	67.9	80.5	65.5	59.8	53.2	62.2
	Diff	17.4	9.7	0.9	6.9	13.0	15.4	10.9
OPV second reinf	2019	70.3	77.4	80.4	72.5	72.4	69.0	73.1
	2020	53.0	66.9	79.0	65.5	59.2	52.2	61.7
	Diff	17.4	10.5	1.4	7.0	13.3	16.8	11.4
DPT second reinf	2019	70.4	77.3	80.7	72.2	72.4	68.6	72.9
	2020	53.0	68.1	82.8	66.5	60.0	53.3	62.7
	Diff	17.4	9.2	-2.1	5.6	12.4	15.3	10.2

Diff, 2019–2020 difference; DPT, diphtheria, pertussis and tetanus; MMR, measles, mumps and rubella; OPV, oral polio vaccine; reinf, reinforcement.

**Table 4** Effect of rural residence on absolute differences in vaccination coverage

Age group	Vaccine	Effect on vaccination proportions (betas)*	95% CI
<12 months	BCG	0.453	0.218 to 0.689
	Hepatitis B	0.490	0.248 to 0.732
	IPV	0.361	0.156 to 0.565
	OPV+IPV	0.269	0.062 to 0.476
	Penta first dose	0.368	0.173 to 0.562
	Penta second dose	0.388	0.192 to 0.584
	Penta third dose	0.290	0.089 to 0.491
	Rota first dose	0.373	0.182 to 0.563
	Rota second dose	0.359	0.163 to 0.555
	Pneumococcal first dose	0.332	0.139 to 0.524
Pneumococcal second dose	0.387	0.189 to 0.586	
12–23 months	MMR	0.142	−0.048 to 0.334
	Varicella	0.208	−0.007 to 0.423
	Pneumococcal reinf	0.167	−0.031 to 0.366
	Hepatitis A	0.162	−0.040 to 0.366
	Yellow fever	0.120	−0.083 to 0.325
	OPV first reinf	0.103	−0.082 to 0.290
	DPT first reinf	0.126	−0.059 to 0.312
5 years	MMR reinf	0.253	0.057 to 0.449
	OPV second reinf	0.224	0.016 to 0.433
	DPT second reinf	0.284	0.083 to 0.485

\*Multilevel model effects clustering by region. States were the unit of analysis.

DPT, diphtheria, pertussis and tetanus; IPV, inactivated polio vaccine; MMR, measles, mumps and rubella; OPV, oral polio vaccine; Penta, pentavalent vaccine; Reinf, reinforcement; Rota, rotavirus.

at the general population are recommended to address these concerns.

We acknowledge some study limitations. Official records were used in this study. Due to the mandatory nature of the vaccination notification and the periodic data quality assessments that are applied, we considered this study used the best information source for the country; however, the opportunity to update datasets can be delayed in remote/rural areas due to isolation measures and therefore differential bias in coverage reporting could be expected; nonetheless, there are no precise data reported on the delay of the information. Inequity measures other than rural population proportion were not evaluated due to insufficient data availability. However, rural residence has previously been associated with low socioeconomic indicators, such as poverty and reduced educational attainment in Colombia<sup>31</sup> and in other contexts such as the USA.<sup>32</sup> Our results must be considered in the context of similar resource-limited settings.

Our findings demonstrate a reduction in vaccination coverage during the COVID-19 pandemic in Colombia, with greater impacts on rural and younger children. Further research is needed to assess the downstream implications on spread of vaccine-preventable diseases and potential reduced opportunity for comprehensive care of infants and young children that often accompany vaccination efforts.

**Contributors** JM-M conceived the study and performed the analysis and interpretation of the data. JCRS and CLBC contributed towards the acquisition of data for the work. JM-M, SMB, JCRS, CLBC, PB-L and JADH-V drafted the manuscript and revised it critically for important intellectual content.

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**Data availability statement** Data are available upon reasonable request from the Colombian Ministry of Health and Social Protection. Restrictions apply to the availability of these data, which were used under licence for this study. Data are available from the authors with the permission of the Ministry of Health and Social Protection.

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#### REFERENCES

- 1 Pan American Health Organization. [PAHO / WHO participated in the meeting of the Expanded Program on Immunizations - EPI Colombia] [Spanish], 2015. Available: [https://www.paho.org/col/index.php?option=com\\_content&view=article&id=2315:titulo-la-opsoms-participo-en-la-reunion-del-pai&Itemid=551](https://www.paho.org/col/index.php?option=com_content&view=article&id=2315:titulo-la-opsoms-participo-en-la-reunion-del-pai&Itemid=551)
- 2 Ministerio de Salud y Protección Social. [Guidelines for the evaluation of coverage, opportunity and complete vaccination scheme] [Spanish], 2011. Available: <https://www.minsalud.gov.co/Lineamientos/Lineamiento%20para%20la%20evaluaci%C3%B3n%20de%20coberturas.pdf>

- 3 Elston JWT, Moosa AJ, Moses F, *et al.* Impact of the Ebola outbreak on health systems and population health in Sierra Leone. *J Public Health* 2016;38:673–8.
- 4 Spencer N, Nathawad R, Arpin E, *et al.* Pandemics, epidemics and inequities in routine childhood vaccination coverage: a rapid review. *BMJ Paediatr Open* 2020;4:e000842.
- 5 Chopra M, Bhutta Z, Chang Blanc D, *et al.* Addressing the persistent inequities in immunization coverage. *Bull World Health Organ* 2020;98:146–8.
- 6 Colomé-Hidalgo M, Campos JD, AG deM. *Monitoring inequality changes in full immunization coverage in infants in Latin America and the Caribbean*. 44. Revista Panamericana de Salud Pública, 2020.
- 7 Pan American Health Organization. Cumulative COVID-19 cases reported by countries and territories in the Americas. Available: <https://who.maps.arcgis.com/apps/webappviewer/index.html?id=2203b04c3a5f486685a15482a0d97a87&extent=-20656313.6818%2C-3596894.4332%2C1611932.8945%2C7390469.7606%2C102100&site=paho>
- 8 Government of Colombia. [COVID-19 Decree] [Spanish]. Available: <https://coronaviruscolombia.gov.co/Covid19/decretos.html>
- 9 Rivera F, Rivera F. Health opportunities in Colombia. *Lecturas de Economía* 2017;2017:125–64.
- 10 Mosquera PA, Hernández J, Vega R, *et al.* The impact of primary healthcare in reducing inequalities in child health outcomes, Bogotá-Colombia: an ecological analysis. *Int J Equity Health* 2012;11:66.
- 11 Organization WH. *Framework for decision-making: implementation of mass vaccination campaigns in the context of COVID-19: interim guidance, 22 May 2020*. World Health Organization, 2020.
- 12 Saxena S, Skirrow H, Bedford H. Routine vaccination during covid-19 pandemic response. *BMJ* 2020;369:m2392.
- 13 Ministerio del Interior. [Decree 457 from 2020] [Spanish], 2020. Available: <https://dapre.presidencia.gov.co/normativa/normativa/DECRETO%20457%20DEL%2022%20DE%20MARZO%20DE%202020.pdf>
- 14 Ministerio de Salud y Protección Social – República de Colombia. [Guidelines for Management and Administration of the Expanded Immunization Program - 2019] [Spanish], 2018. Available: <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/PP/ET/lineamientos-gestion-administracion-pai.pdf>
- 15 Ministerio de Salud y Protección Social. Circular externa 0039 de 2013. Meta programática, Programa Ampliado de Inmunizaciones - PAI; 2013.
- 16 Ministerio de Salud y Protección Social. [Colombia Vaccination Scheme] [Spanish], 2019. Available: <https://www.minsalud.gov.co/sites/rid/Lists/BibliotecaDigital/RIDE/VS/PP/ET/ficha-esquema-vacunacion-vf2.pdf>
- 17 Alcaldía de Santiago de Cali. [New influenza vaccine will arrive between April and May] [Spanish], 2020. Available: <https://www.cali.gov.co/salud/publicaciones/152538/nueva-vacuna-contra-la-influenza-llegara-entre-abril-y-mayo/>
- 18 Pan American Health Organization, World Health Organization. [EPI Country Report Colombia 2019] [Spanish], 2020. Available: [https://www.paho.org/hq/index.php?option=com\\_docman&view=download&category\\_slug=perfiles-paises-im-1809&alias=4802-colombia-perfil-pais-802&Itemid=270\(=en](https://www.paho.org/hq/index.php?option=com_docman&view=download&category_slug=perfiles-paises-im-1809&alias=4802-colombia-perfil-pais-802&Itemid=270(=en)
- 19 Ministerio de Ambiente y Desarrollo Sostenible. [National Circumstances] [Spanish], 1999. Available: [https://www.minambiente.gov.co/images/cambioclimatico/pdf/Segunda\\_comunicacion/2%C2%AA\\_Comicaci%C3%B3n\\_Cap%C3%ADtulo\\_\\_1.pdf](https://www.minambiente.gov.co/images/cambioclimatico/pdf/Segunda_comunicacion/2%C2%AA_Comicaci%C3%B3n_Cap%C3%ADtulo__1.pdf)
- 20 Agencia de Desarrollo Rural. [RURAL STATISTICAL BULLETIN] [Spanish], 2018. Available: <http://www.centir.adr.gov.co/pdf/boletin.pdf>
- 21 StataCorp. *Stata statistical software: release 16*. College Station, TX: StataCorp LLC, 2019.
- 22 de Souza CDF, do Carmo RF, Machado MF. The burden of COVID-19 in Brazil is greater in areas with high social deprivation. *J Travel Med* 2020;27. doi:10.1093/jtm/taaa145. [Epub ahead of print: 09 Nov 2020].
- 23 Grundy J, Biggs B-A. The impact of conflict on immunisation coverage in 16 countries. *Int J Health Policy Manag* 2019;8:211–21.
- 24 Lo NC, Hotez PJ. Public health and economic consequences of vaccine hesitancy for measles in the United States. *JAMA Pediatr* 2017;171:887–92.
- 25 Moghadas SM, Vilches TN, Zhang K, *et al.* The impact of vaccination on COVID-19 outbreaks in the United States. *medRxiv* 2020.
- 26 Abbas K, Procter SR, van Zandvoort K, *et al.* Routine childhood immunisation during the COVID-19 pandemic in Africa: a benefit-risk analysis of health benefits versus excess risk of SARS-CoV-2 infection. *Lancet Glob Health* 2020;8:e1264–72.
- 27 Adlhoch C, Pebody R. What to expect for the influenza season 2020/21 with the ongoing COVID-19 pandemic in the world health organization European region. *Euro Surveill*;252020.
- 28 Adamu AA, Jalo RI, Habonimana D, *et al.* COVID-19 and routine childhood immunization in Africa: Leveraging systems thinking and implementation science to improve immunization system performance. *Int J Infect Dis* 2020;98:161–5.
- 29 Paguio JA, Yao JS, Dee EC. Silver lining of COVID-19: heightened global interest in pneumococcal and influenza vaccines, an infodemiology study. *Vaccine* 2020;38:5430–5.
- 30 European Centre for Disease Prevention and Control. Overview of COVID-19 vaccination strategies and vaccine deployment plans in the EU/EEA and the UK, 2020. Available: [https://www.ecdc.europa.eu/sites/default/files/documents/Overview-of-EU\\_EEA-UK-vaccination-deployment-plans.pdf](https://www.ecdc.europa.eu/sites/default/files/documents/Overview-of-EU_EEA-UK-vaccination-deployment-plans.pdf)
- 31 Parra-Peña RI, Ordóñez LA, Acosta CA. [Poverty, gaps and rurality in Colombia] [Spanish], 2013.
- 32 Singh GK, Siahpush M. Widening rural-urban disparities in all-cause mortality and mortality from major causes of death in the USA, 1969-2009. *J Urban Health* 2014;91:272–92.

## Appendix

Table A1. Monthly relative differences in percentages of vaccine coverage between 2019 and 2020\*

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneumo ccal 1st dose	Pneumo ccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo ccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Amazonas	March	30.73	32.49	32.16	30.04	32.16	35.89	30.33	31.49	34.62	32.16	36.29	17.41	23.96	13.22	15.32	17.03	25.11	26.07	1.91	2.39	4.33
Antioquia	March	23.61	23.04	25.20	26.00	25.49	26.92	26.00	26.69	28.19	25.78	27.13	25.30	-18.71	28.45	25.10	26.95	35.82	36.19	16.96	16.96	17.70
Arauca	March	33.81	32.73	20.48	18.60	20.14	17.26	18.60	21.63	16.55	19.93	17.53	16.79	15.79	16.85	16.41	15.99	35.00	35.23	12.02	11.11	12.38
Atlántico	March	2.27	4.65	20.90	-22.75	-22.29	-13.68	-21.18	17.65	17.69	-15.68	-11.28	-23.67	-20.35	-16.67	-23.53	-22.81	-11.48	-16.57	-26.54	-37.04	-27.11
Barranquilla	March	-10.67	-10.24	4.74	8.84	3.66	3.04	8.84	3.33	1.92	3.90	3.37	3.59	4.00	-8.65	4.82	2.39	2.16	3.42	-5.68	-5.24	-5.15
Bogotá D.C	March	6.80	6.40	7.96	6.09	8.37	7.33	6.09	8.52	5.83	9.40	7.63	3.00	3.38	12.44	2.69	3.78	24.81	24.81	1.61	-0.81	1.19
Bolívar	March	-33.33	-37.21	15.70	20.44	18.47	17.21	20.00	17.37	15.52	17.55	17.62	17.09	17.17	20.27	17.30	19.59	26.14	28.00	4.55	3.55	5.08
Cartagena	March	-1.33	0.00	2.19	8.19	2.19	4.78	8.19	2.65	3.05	0.74	3.36	4.40	3.66	21.52	2.92	4.78	31.48	32.35	1.73	0.87	1.72
Boyacá	March	18.92	18.64	25.69	24.51	25.69	26.69	25.39	26.29	27.44	25.69	26.97	23.27	23.67	26.85	23.36	23.27	30.37	30.00	15.10	15.45	15.45
Caldas	March	32.44	32.14	34.47	36.67	34.04	38.87	36.40	34.89	38.46	36.51	40.40	38.96	39.44	38.15	38.93	39.20	41.34	41.83	25.23	24.11	21.52
Caquetá	March	17.53	18.29	23.35	15.72	23.35	15.42	15.72	24.49	14.29	23.64	15.00	10.80	11.20	11.33	10.16	10.80	29.21	29.21	14.48	14.03	14.41
Casanare	March	18.61	17.54	21.96	24.30	21.96	21.37	24.30	23.62	22.61	22.57	21.76	19.37	19.76	19.69	19.69	19.69	25.48	25.48	15.64	15.64	15.64
Cauca	March	14.92	14.61	25.35	-16.77	-26.06	-30.77	-21.29	20.91	17.86	-26.06	-31.69	-34.25	-46.90	-18.24	-35.42	-34.69	-10.90	-13.46	-33.33	-37.96	-36.23
Cesar	March	17.95	18.58	23.81	23.11	23.29	20.69	23.11	22.26	14.56	24.07	20.96	15.08	13.77	25.20	14.69	12.96	31.85	32.10	9.55	8.22	7.31
Choco	March	20.10	15.44	26.12	34.96	26.12	32.49	34.96	26.54	31.60	25.84	31.03	17.57	17.57	16.74	16.19	17.12	36.59	36.59	8.50	8.50	8.50
Córdoba	March	58.97	59.35	42.22	42.99	42.22	42.24	42.99	42.27	41.67	42.98	42.31	41.30	39.30	43.05	41.30	41.05	46.19	45.99	37.09	36.15	36.45
Cundinamarca	March	34.88	35.66	31.74	34.78	32.03	32.93	34.78	32.46	33.61	31.47	32.65	34.66	34.80	36.25	34.27	34.52	41.06	41.29	28.39	27.23	27.73
Guainía	March	58.90	56.49	51.76	55.93	51.76	51.09	55.93	50.78	49.51	51.89	50.22	38.33	40.09	39.13	38.89	40.00	66.23	66.23	32.34	31.93	27.71
Guaviare	March	27.16	28.22	36.02	39.53	36.02	42.32	39.53	36.51	42.51	36.02	42.52	25.91	25.00	27.45	25.61	26.21	42.22	42.22	13.07	13.50	12.63
Huila	March	9.13	9.13	16.94	20.08	16.53	15.32	20.40	17.36	15.32	16.80	15.26	14.46	15.35	12.86	15.29	14.81	18.15	18.15	10.61	9.80	10.20
La Guajira	March	13.48	11.89	15.33	12.33	16.17	18.15	13.18	17.56	14.45	15.89	15.02	9.09	9.58	13.22	4.98	9.50	42.46	40.33	19.19	15.74	16.49
Magdalena	March	8.24	9.04	17.11	12.45	19.85	15.73	15.42	16.67	12.35	18.05	13.13	8.86	8.51	0.00	8.97	8.90	28.68	26.98	18.31	8.49	7.73
Santa Marta	March	-3.54	-2.22	-5.26	-6.35	-5.24	-17.57	-12.83	-9.95	-13.70	-3.57	-15.56	-8.96	-13.37	-11.89	-15.50	-15.05	15.38	16.59	-22.22	-34.44	-12.64
Meta	March	9.84	10.33	21.29	23.75	21.29	20.80	24.48	21.49	20.41	21.83	21.03	20.16	20.00	19.52	20.80	20.00	29.01	29.01	13.27	14.41	11.82
Nariño	March	21.36	20.79	23.98	25.75	24.32	25.11	25.75	23.83	25.22	26.32	25.11	25.97	27.43	22.91	24.00	27.43	27.87	27.87	16.82	16.82	15.60
Norte de Santander	March	-0.90	-1.37	21.43	22.80	21.07	19.19	23.41	21.43	18.70	22.49	19.19	19.44	14.15	43.36	17.84	20.00	38.49	38.34	22.62	20.81	21.72

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo coccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo coccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Putumayo	March	28.57	26.79	30.80	35.83	30.80	32.02	35.83	31.56	31.73	31.08	32.02	29.69	29.80	28.46	28.57	29.18	40.45	40.45	22.32	22.32	22.22
Quindío	March	20.00	18.95	24.22	24.10	23.92	25.38	24.50	23.90	25.76	25.95	26.97	26.42	26.97	33.10	25.67	26.22	35.47	35.47	11.34	11.34	12.13
Risaralda	March	21.09	20.55	27.84	31.62	28.24	29.56	31.50	27.13	27.27	27.84	28.21	25.87	27.72	30.31	29.01	27.34	34.77	36.84	22.27	12.66	13.36
San Andrés Isla	March	5.46	9.19	17.60	10.50	17.17	25.55	9.22	16.81	25.56	18.99	25.55	23.53	24.89	38.59	23.01	23.01	45.52	46.26	19.50	19.17	18.49
Santander	March	8.17	7.66	10.41	7.62	9.13	11.71	10.38	7.94	10.55	9.13	12.11	12.89	14.10	16.67	10.96	11.84	19.57	22.92	8.33	4.52	3.94
Sucre	March	22.18	20.73	17.63	17.27	17.63	17.16	16.91	17.59	12.37	17.91	17.16	4.98	5.41	15.33	5.73	4.98	19.30	18.95	-4.29	-4.72	-4.72
Tolima	March	7.77	8.37	16.67	14.11	17.05	13.83	15.26	16.86	13.15	16.60	14.17	14.66	15.09	22.14	15.41	14.61	26.30	26.71	3.62	3.62	3.62
Valle del Cauca	March	16.97	20.45	29.84	29.57	27.82	28.06	29.13	33.60	33.99	34.51	38.76	33.20	32.16	34.01	34.13	33.33	32.16	35.25	31.08	28.98	31.12
Buenaventura	March	40.65	38.86	46.84	46.77	46.64	45.41	46.77	47.12	43.15	46.35	42.58	30.70	28.70	43.96	30.92	33.18	58.47	58.30	28.99	25.45	28.31
Vaupés	March	52.41	45.99	45.58	47.01	42.55	54.25	53.64	43.28	54.86	44.22	55.26	56.36	58.33	56.73	57.32	54.78	40.00	40.00	48.94	53.19	50.00
Vichada	March	52.76	62.94	30.77	38.85	30.98	26.25	38.13	38.22	23.70	31.72	21.29	13.75	35.14	17.61	21.23	23.42	52.91	53.18	1.87	0.93	8.18
Amazonas	April	29.93	31.47	37.96	32.45	38.08	37.81	32.67	37.75	36.96	37.96	38.01	25.35	28.88	21.03	23.34	24.49	22.73	23.95	9.70	9.70	11.90
Antioquia	April	24.43	24.59	26.75	28.26	26.83	29.88	29.01	27.41	31.16	27.27	29.13	30.12	3.42	34.28	31.40	31.55	35.63	34.89	27.70	26.44	26.85
Arauca	April	30.13	29.81	19.80	22.13	19.75	14.91	22.40	20.58	14.68	20.35	16.06	11.81	11.05	12.13	12.85	11.20	23.96	23.74	3.58	3.23	3.20
Atlántico	April	13.77	15.05	-7.94	-9.27	-7.94	-2.91	-5.45	18.54	18.31	-5.84	-0.71	-3.25	-0.80	1.52	-1.59	-2.40	1.50	-1.17	-5.83	-13.33	-6.50
Barranquilla	April	-5.90	-5.57	6.53	7.62	5.70	6.61	7.90	5.46	6.07	7.69	9.30	10.27	10.64	12.25	13.68	9.09	11.51	13.68	14.73	15.67	15.79
Bogotá D.C	April	8.08	7.78	10.00	7.59	10.00	9.12	7.28	10.51	7.46	11.29	9.29	7.37	7.59	17.35	6.71	7.89	16.84	16.55	9.69	7.21	8.95
Bolívar	April	-5.15	-5.19	15.56	16.67	17.39	15.08	16.05	16.94	14.42	17.45	15.90	18.83	19.28	22.95	19.29	21.20	23.89	23.25	12.55	11.44	13.50
Cartagena	April	1.96	2.61	5.73	11.94	5.16	9.50	11.29	6.49	9.12	4.60	9.22	14.15	14.01	31.39	14.24	14.69	28.47	29.05	15.81	15.46	15.65
Boyacá	April	23.15	22.73	23.95	25.07	23.95	26.15	25.07	24.47	26.38	24.18	26.36	23.17	23.40	25.15	23.01	23.40	25.80	25.51	15.79	13.93	15.17
Caldas	April	33.22	33.44	29.18	33.65	28.85	33.75	33.65	30.72	33.44	31.09	35.09	35.60	36.20	35.40	35.33	35.49	35.76	35.71	31.63	30.33	28.52
Caquetá	April	18.82	18.43	25.00	17.16	25.00	21.05	17.16	25.08	19.68	25.00	20.74	13.69	13.99	14.45	13.29	13.95	21.00	21.00	20.68	20.68	20.95
Casanare	April	16.19	15.71	20.77	22.59	20.77	19.53	22.59	22.02	21.28	21.24	20.35	21.41	21.70	21.55	21.70	21.64	25.29	25.29	19.03	19.03	19.28
Cauca	April	13.64	13.08	16.95	19.22	16.89	16.39	17.59	16.72	16.67	16.33	16.11	16.03	10.29	23.55	15.26	8.65	23.87	22.58	18.27	16.33	16.94
Cesar	April	18.57	18.86	22.91	22.09	22.70	21.72	22.09	23.25	19.14	27.54	25.94	18.58	17.35	28.31	21.52	17.55	28.44	27.19	21.05	17.61	16.61
Choco	April	21.56	16.50	27.63	35.42	27.63	32.79	35.42	27.72	32.13	27.33	31.91	19.71	19.71	18.88	18.80	19.35	20.59	20.59	13.78	13.78	14.21
Córdoba	April	70.00	70.56	44.63	44.07	44.63	43.97	44.07	44.67	43.71	45.00	44.52	44.15	43.14	46.84	44.67	44.15	46.84	46.18	41.79	40.86	41.28
Cundinamarca	April	37.14	37.36	30.16	34.53	30.16	31.79	34.83	30.79	32.09	30.29	31.79	35.65	36.25	39.25	35.58	35.84	39.38	39.08	34.91	33.75	34.06
Guainía	April	57.89	56.32	55.01	54.85	55.01	49.84	54.85	54.20	49.83	54.70	50.31	40.00	41.20	40.66	40.91	41.83	54.08	54.08	36.75	36.48	34.47



State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneumo cocal 1st dose	Pneumo cocal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo cocal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Guaviare	April	33.05	32.65	39.63	42.29	39.63	43.75	42.29	38.33	43.73	39.63	43.90	27.89	27.00	29.19	27.89	27.89	44.60	44.32	27.46	27.72	27.46
Huila	April	9.84	9.87	13.69	18.71	13.42	15.08	18.71	14.06	15.08	13.33	14.72	16.51	17.50	14.69	17.13	16.51	14.86	14.86	14.69	14.06	14.38
La Guajira	April	16.85	14.24	20.40	16.34	21.00	22.25	16.34	20.53	18.50	20.00	18.97	16.11	15.95	19.43	10.74	16.11	22.69	24.11	22.85	22.93	23.86
Magdalena	April	10.98	10.50	19.61	14.33	19.61	18.73	14.91	18.71	17.48	20.72	18.56	14.72	14.81	7.98	14.33	14.72	23.68	23.68	20.77	13.68	14.18
Santa Marta	April	2.60	2.96	1.52	1.46	1.52	-6.02	-1.45	-0.99	-2.91	3.56	-2.80	3.50	0.36	6.42	-1.11	0.00	18.25	21.27	-2.58	-11.86	4.80
Meta	April	11.89	12.00	20.96	22.96	21.19	22.22	23.20	20.92	21.23	21.76	22.32	22.46	22.32	22.12	22.46	22.32	25.08	25.55	21.38	21.17	19.46
Nariño	April	24.29	23.36	25.52	27.12	25.43	26.14	27.12	25.27	26.25	25.68	26.38	26.00	26.00	24.58	25.50	25.91	24.58	24.58	19.38	19.10	19.31
Norte de Santander	April	-1.02	-1.71	22.53	22.36	22.25	20.95	23.12	22.48	20.00	23.67	20.95	22.42	20.22	42.59	20.89	23.12	31.71	31.36	28.67	27.99	28.23
Putumayo	April	29.15	27.37	32.05	35.91	32.05	32.65	35.91	32.01	32.34	32.54	32.65	30.21	30.29	29.02	29.76	29.53	36.70	36.70	22.30	22.30	22.15
Quindío	April	20.06	19.82	21.79	22.80	21.56	23.10	23.33	21.45	23.26	23.77	24.43	27.07	27.20	31.11	26.09	26.63	30.08	30.08	14.66	14.56	15.21
Risaralda	April	22.19	22.39	26.13	30.79	26.73	28.08	30.70	26.38	27.06	27.00	28.13	28.02	29.71	34.62	29.71	29.63	35.88	37.22	29.80	22.52	23.45
San Andrés Isla	April	12.36	13.90	12.97	8.84	12.63	22.60	7.59	12.24	21.97	14.43	22.60	21.68	22.80	33.67	21.22	21.22	31.49	32.53	19.59	19.32	18.77
Santander	April	10.11	9.71	14.33	16.28	13.44	15.96	17.88	11.74	14.90	13.40	16.23	22.54	23.66	26.86	21.68	21.77	24.09	24.50	25.09	22.06	21.05
Sucre	April	22.98	21.81	20.42	20.05	20.21	19.19	19.84	20.00	15.03	20.63	19.65	11.40	11.24	21.41	12.24	11.66	21.53	20.98	3.06	2.71	2.72
Tolima	April	8.70	8.82	14.41	14.94	14.41	13.77	15.50	14.29	13.51	14.07	14.29	17.19	17.58	23.05	17.82	17.19	21.22	22.79	12.03	12.88	12.93
Valle del Cauca	April	20.34	22.68	33.13	33.14	31.52	32.63	33.13	35.98	37.43	36.87	40.41	37.39	37.01	41.77	38.18	37.46	38.11	39.76	40.06	38.84	39.31
Buenaventura	April	42.86	39.44	51.76	52.21	51.12	50.68	52.21	51.81	48.51	51.46	48.78	41.10	40.14	53.20	41.49	43.05	54.44	53.94	44.44	42.61	43.42
Vaupés	April	56.92	50.25	62.89	48.00	59.83	51.01	53.93	59.73	51.83	60.33	53.81	65.69	67.16	64.21	66.91	65.68	49.69	48.13	57.40	59.06	58.33
Vichada	April	50.97	60.55	38.89	36.16	38.74	33.04	35.59	44.29	31.05	39.92	28.57	15.57	39.52	22.83	28.87	26.92	45.83	45.83	1.37	0.00	5.37
Amazonas	May	30.49	32.52	35.54	35.29	35.54	39.39	35.29	36.34	37.24	36.03	40.24	23.96	27.30	20.93	23.36	23.59	25.85	26.50	14.96	15.47	16.62
Antioquia	May	24.87	24.80	25.31	27.83	24.69	27.83	27.94	25.51	29.38	24.82	27.27	27.56	6.41	30.71	28.64	28.85	32.24	31.41	25.68	23.84	24.39
Arauca	May	28.99	28.51	31.76	28.23	31.57	28.13	28.23	32.02	27.67	32.08	29.12	24.00	23.73	23.81	24.63	23.74	29.46	29.31	23.30	23.04	23.38
Atlántico	May	17.10	18.21	-2.51	1.47	-2.51	4.18	3.72	18.73	20.37	-1.24	5.49	6.99	7.88	12.01	6.40	6.69	13.35	11.24	5.00	-0.94	3.70
Barranquilla	May	5.02	4.57	8.78	11.51	8.33	10.45	11.93	8.86	9.84	9.82	12.69	14.63	14.50	18.72	17.24	13.90	17.35	19.49	20.30	20.76	21.55
Bogotá D.C	May	8.35	8.33	10.48	9.47	10.72	11.17	9.47	10.66	10.22	11.95	11.25	8.72	9.11	16.67	7.53	9.34	15.95	15.95	9.90	7.87	9.02
Bolívar	May	-6.13	-6.21	16.45	16.84	17.53	15.63	16.36	17.30	14.55	17.78	16.30	17.63	18.73	22.19	18.49	20.26	22.61	22.31	12.50	11.04	11.38
Cartagena	May	3.85	3.84	5.50	13.67	5.49	10.05	13.64	6.88	9.79	5.23	9.79	15.46	15.18	33.33	14.67	15.94	31.47	31.73	19.94	19.14	19.77
Boyacá	May	24.56	24.30	25.66	27.94	25.90	26.91	27.94	25.97	26.93	25.66	27.08	24.14	24.38	23.74	24.07	24.32	24.59	24.35	14.25	12.72	13.74
Caldas	May	34.84	35.01	29.63	34.59	29.37	34.92	34.59	31.13	34.51	31.35	35.98	34.08	34.73	33.42	34.09	34.57	34.92	34.99	28.76	28.04	26.06

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo cccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo cccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Caquetá	May	18.97	18.94	23.93	17.75	23.93	23.90	17.75	23.81	23.04	23.93	23.41	14.18	14.42	14.69	13.66	14.39	20.27	20.27	21.10	20.82	21.53
Casanare	May	16.96	15.38	21.19	23.39	21.19	20.47	23.57	22.25	22.27	21.56	21.48	20.48	20.90	20.70	20.71	20.67	24.77	24.77	16.58	16.58	16.79
Cauca	May	12.79	13.33	18.21	20.52	17.93	17.33	19.27	17.88	17.62	17.71	17.33	16.02	10.91	21.67	15.40	10.87	22.14	20.68	18.52	16.98	17.68
Cesar	May	20.72	20.90	20.92	22.87	20.74	22.85	22.70	20.69	20.13	24.08	25.42	16.95	15.96	26.23	18.59	16.54	25.97	25.49	24.10	18.01	16.94
Choco	May	21.99	17.72	29.29	38.75	28.88	35.01	38.75	28.27	32.85	28.81	34.76	23.50	23.56	22.67	23.14	23.22	24.06	24.06	21.54	21.54	21.76
Córdoba	May	11.18	10.65	13.39	14.40	13.39	13.16	14.40	13.69	13.10	14.09	13.84	16.30	15.26	17.99	16.58	16.08	17.51	17.46	15.71	14.57	15.10
Cundinamarca	May	27.14	27.27	29.92	33.65	29.92	32.01	33.65	30.77	32.33	30.47	31.76	33.50	34.95	37.91	33.25	34.78	38.18	38.33	33.76	32.82	33.00
Guainía	May	58.27	57.60	54.95	57.53	54.95	55.60	57.78	54.63	54.17	54.88	56.16	39.62	40.71	38.80	39.22	40.85	54.28	54.28	31.76	31.56	29.15
Guaviare	May	31.31	30.62	38.77	42.98	38.77	41.05	42.98	37.82	40.98	38.77	41.30	27.58	26.62	28.57	27.92	27.58	37.85	37.38	25.00	25.00	24.78
Huila	May	12.21	11.98	14.10	18.43	13.88	16.09	18.43	14.65	16.34	14.03	16.26	16.54	17.38	14.86	16.41	16.54	14.96	14.96	14.14	13.89	13.89
La Guajira	May	18.86	15.53	21.11	20.88	21.75	23.01	20.88	20.34	19.53	21.27	20.43	19.33	20.43	19.68	14.47	19.57	20.86	25.08	21.13	24.11	24.62
Magdalena	May	13.33	12.50	18.94	15.72	18.94	18.34	15.97	18.07	16.78	19.63	18.43	14.93	15.21	11.82	14.39	15.14	22.31	23.00	19.71	14.73	13.12
Santa Marta	May	3.34	3.12	1.46	-0.55	1.21	-5.26	-5.06	-0.53	-2.54	2.39	-0.96	2.74	1.69	6.19	0.00	1.65	16.22	19.36	2.37	-5.03	8.25
Meta	May	8.72	8.07	18.78	22.81	18.98	20.96	23.00	18.84	19.85	19.42	21.29	20.24	19.90	20.14	20.48	20.14	22.31	23.66	21.49	21.32	20.22
Nariño	May	24.93	24.29	26.10	28.01	26.10	26.72	28.08	26.14	26.68	26.30	26.91	26.93	26.93	25.88	26.61	26.86	26.08	25.88	20.50	20.22	20.39
Norte de Santander	May	-0.82	-1.37	20.63	22.43	20.18	21.30	22.80	21.36	20.65	21.74	20.90	20.98	20.17	38.51	19.13	21.55	28.29	28.29	28.49	28.02	27.55
Putumayo	May	28.23	27.35	33.10	35.05	33.10	33.88	35.05	33.09	33.41	33.25	33.88	29.41	30.12	28.51	29.45	29.21	35.07	35.07	24.59	26.58	26.25
Quindío	May	19.51	19.27	22.76	24.46	22.03	24.47	26.57	21.71	24.76	24.12	25.29	28.87	28.74	30.93	27.93	31.34	30.32	30.32	15.75	13.35	15.71
Risaralda	May	21.41	21.62	25.78	28.57	26.02	25.88	28.11	26.41	25.60	27.46	26.62	26.43	28.11	31.75	27.10	28.21	32.42	33.71	27.54	21.60	22.92
San Andrés Isla	May	15.68	16.22	19.17	19.55	18.89	22.38	18.53	19.03	21.22	20.27	22.38	23.26	23.82	27.60	22.22	22.22	27.55	28.22	13.14	12.89	12.39
Santander	May	10.66	10.34	13.03	17.41	12.57	14.62	18.95	10.44	13.76	11.97	14.58	20.92	21.77	26.34	20.47	20.25	23.90	24.02	25.21	21.94	21.07
Sucre	May	22.92	21.97	20.04	19.26	19.87	18.14	19.26	20.81	18.80	20.65	18.93	11.00	13.29	18.28	12.41	11.22	18.14	17.70	1.96	1.95	1.68
Tolima	May	8.36	8.75	10.67	14.29	10.64	14.11	14.73	10.53	14.35	10.62	14.49	14.92	14.99	19.44	15.19	14.88	18.14	19.45	11.85	12.26	12.53
Valle del Cauca	May	19.06	20.94	30.98	32.55	29.85	31.82	32.38	33.50	35.34	33.65	36.99	35.52	35.01	41.08	36.27	35.19	37.38	38.16	41.89	39.80	39.90
Buenaventura	May	39.50	37.88	50.39	52.51	50.38	51.35	52.80	51.16	49.41	50.39	50.41	45.16	43.97	53.97	45.13	46.11	54.95	54.69	49.66	46.45	48.06
Vaupés	May	62.06	58.36	64.91	54.82	62.67	59.11	57.56	61.51	58.30	62.50	60.29	69.69	71.10	69.08	70.00	69.34	53.88	52.71	66.81	67.09	66.52
Vichada	May	50.97	57.41	46.96	37.18	46.19	37.42	36.75	49.83	33.60	47.20	34.98	20.00	40.33	25.97	29.35	26.48	42.86	42.86	13.98	12.66	16.67
Amazonas	June	30.36	32.18	35.25	35.90	34.81	39.51	35.88	35.80	37.33	35.25	39.79	23.44	26.16	21.19	22.40	23.13	20.40	21.61	13.15	13.58	14.60
Antioquia	June	24.89	25.33	28.39	31.88	26.78	30.72	31.12	27.14	32.19	25.05	28.66	26.61	9.14	30.90	27.79	27.78	33.69	30.92	27.36	23.27	23.52

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		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneumo cocal 1st dose	Pneumo cocal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo cocal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Arauca	June	27.79	27.42	30.87	27.95	30.71	27.10	27.82	31.61	26.60	30.94	27.76	21.86	21.47	22.00	22.18	21.64	29.59	29.59	23.68	23.46	23.91
Atlántico	June	23.43	23.23	5.64	9.43	3.08	8.05	9.68	20.94	23.23	5.04	10.76	13.41	13.48	17.50	13.66	12.29	18.61	17.77	13.23	9.55	12.97
Barranquilla	June	2.75	2.16	8.02	10.28	7.27	9.16	10.46	8.09	8.63	9.28	11.64	12.53	12.18	23.24	14.74	11.72	18.94	20.46	22.15	21.81	22.78
Bogotá D.C	June	8.60	8.38	10.18	10.35	10.38	11.79	10.15	10.16	10.43	11.62	11.42	8.46	8.97	14.88	7.05	9.19	14.45	14.68	8.42	6.05	7.46
Bolívar	June	-9.55	-9.64	16.33	16.67	16.85	15.29	16.04	17.17	14.60	17.48	16.21	16.74	17.08	19.87	17.52	18.38	20.13	19.66	12.34	10.61	11.39
Cartagena	June	1.31	1.09	4.53	14.56	4.32	10.06	14.35	6.98	10.04	4.49	10.00	13.63	13.14	29.63	13.29	13.79	27.87	28.03	20.39	19.70	20.24
Boyacá	June	24.47	24.03	24.44	25.40	24.44	24.06	25.40	24.74	24.25	24.59	24.40	21.44	21.44	22.09	21.15	21.40	22.42	22.22	10.48	8.95	9.83
Caldas	June	34.16	34.30	30.20	31.70	29.75	32.77	31.98	31.54	33.05	32.24	34.32	32.06	32.63	31.59	32.33	32.21	32.56	32.78	22.57	22.22	21.48
Caquetá	June	18.33	17.96	10.19	5.73	10.19	12.41	6.22	24.26	23.86	10.17	11.92	-1.68	-1.68	-1.16	-1.95	-1.92	4.00	4.26	3.29	3.01	3.80
Casanare	June	16.28	14.59	17.59	19.75	17.59	19.09	19.75	18.89	20.79	18.09	19.92	18.52	18.72	18.35	18.72	18.69	23.11	23.11	12.95	11.64	13.14
Cauca	June	11.08	11.55	17.05	20.35	16.59	15.51	18.86	17.02	15.95	16.59	15.88	15.47	10.72	19.47	14.95	11.74	20.09	19.03	16.96	15.44	16.26
Cesar	June	18.76	18.94	20.15	21.71	19.85	22.02	21.71	20.74	20.53	21.50	24.64	14.26	13.19	22.11	14.69	13.71	21.86	21.44	22.95	16.90	16.20
Choco	June	22.49	16.72	28.63	40.40	28.63	37.42	40.18	28.39	33.81	28.71	37.14	24.28	24.50	24.03	24.71	24.28	21.94	21.94	22.54	22.22	22.88
Córdoba	June	8.99	8.53	12.82	14.25	12.59	12.72	14.03	13.33	12.73	13.19	13.11	14.29	14.12	15.81	14.75	14.09	15.59	15.14	14.22	13.29	13.70
Cundinamarca	June	27.80	28.03	30.18	32.52	30.11	30.80	32.32	30.73	31.06	30.35	30.59	32.37	33.26	35.46	31.80	33.26	35.50	35.85	31.91	30.17	30.64
Guainía	June	59.00	58.61	53.67	54.30	53.67	56.22	55.98	52.77	55.19	53.62	56.60	37.99	38.17	36.33	38.36	39.56	50.29	51.82	34.15	35.73	33.65
Guaviare	June	29.66	29.10	40.26	40.88	40.26	40.93	41.00	40.19	41.02	40.63	41.59	33.13	32.12	34.71	33.54	33.13	32.25	32.25	22.36	22.36	22.17
Huila	June	11.52	11.14	12.33	16.46	12.33	13.22	16.46	13.44	13.25	12.66	13.16	13.20	13.91	12.12	13.45	12.99	12.21	12.21	10.70	10.48	10.68
La Guajira	June	19.67	16.77	21.16	23.25	21.19	23.87	22.63	20.33	20.52	21.23	22.04	17.11	18.09	21.51	13.74	17.11	19.58	23.40	18.54	20.94	21.84
Magdalena	June	11.44	10.99	16.50	14.84	16.50	17.14	14.66	15.64	14.29	16.96	16.51	11.21	11.25	8.68	10.52	11.39	17.68	18.45	16.99	12.80	11.65
Santa Marta	June	5.92	5.35	1.23	2.68	0.62	-3.27	-0.90	-0.89	-1.53	2.42	0.00	-0.70	-1.44	4.18	-2.66	-0.69	10.40	13.53	2.03	-3.72	7.06
Meta	June	10.08	9.16	18.26	23.31	16.32	19.35	21.19	17.06	18.45	16.77	20.16	17.55	17.28	17.03	18.37	17.44	19.39	19.91	17.16	16.14	14.87
Nariño	June	25.00	24.11	12.36	14.92	12.36	14.02	14.92	26.32	27.33	12.57	14.47	12.27	12.27	13.21	12.33	12.23	13.17	12.90	6.08	6.06	6.06
Norte de Santander	June	-1.61	-2.33	18.60	22.11	18.41	20.88	22.77	20.04	20.24	19.37	20.84	19.29	17.76	35.10	16.81	19.79	25.41	25.24	25.93	25.12	25.12
Putumayo	June	28.25	26.85	31.94	33.61	31.34	33.40	33.40	31.21	33.06	31.61	33.40	28.31	28.92	27.54	27.79	28.29	31.85	31.85	23.04	24.77	24.49
Quindío	June	17.62	16.87	19.58	21.95	18.53	21.52	25.05	18.91	22.06	20.57	22.42	26.17	25.96	28.77	25.00	29.74	28.18	28.32	11.59	7.05	11.01
Risaralda	June	22.46	22.29	25.10	27.22	24.69	23.84	26.57	25.63	24.59	26.40	25.15	23.84	26.03	30.24	24.13	25.59	29.46	30.73	22.88	17.39	19.15
San Andrés Isla	June	17.33	18.23	19.77	20.68	19.53	19.88	20.47	20.14	18.66	20.69	19.88	19.82	20.23	26.79	18.92	19.14	26.13	27.01	3.54	3.30	2.81
Santander	June	10.84	10.79	12.87	16.25	12.24	13.75	17.57	11.14	13.03	12.16	13.72	17.22	18.78	23.63	17.63	16.85	21.90	21.78	23.46	20.67	19.05

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		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo cccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo cccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Sucre	June	23.75	23.49	27.17	27.42	25.85	25.89	25.23	27.73	28.17	28.76	28.62	17.44	18.69	23.05	22.31	17.61	25.33	22.72	13.44	11.53	11.56
Tolima	June	6.97	7.07	9.05	12.73	9.26	11.66	13.14	9.57	11.50	9.22	11.99	11.04	11.29	15.02	11.67	10.84	13.89	15.04	10.28	10.67	10.49
Valle del Cauca	June	20.32	22.22	31.50	34.25	30.99	33.53	34.46	34.01	36.35	34.00	37.65	35.77	35.40	41.32	36.16	35.29	36.96	38.79	40.25	38.91	39.02
Buenaventura	June	38.48	37.96	47.52	52.08	47.64	50.34	52.32	49.76	48.88	46.31	47.85	43.48	42.27	51.16	41.89	44.32	52.34	51.81	50.44	46.99	48.34
Vaupés	June	61.20	57.95	63.47	52.35	61.80	59.09	53.75	56.19	56.69	59.22	58.84	65.20	68.34	66.67	65.92	64.16	49.08	47.21	63.26	63.52	61.03
Vichada	June	52.39	57.84	50.10	37.81	48.98	40.48	37.01	51.90	39.35	50.20	40.74	26.11	42.40	30.94	31.64	28.12	44.10	44.64	22.53	21.69	25.25
Amazonas	July	21.30	22.42	26.83	29.03	26.05	32.87	28.66	27.11	30.19	26.05	33.27	13.17	15.44	11.51	11.82	13.40	5.26	5.76	-0.48	0.24	0.48
Antioquia	July	25.05	25.84	27.69	30.70	27.03	29.78	31.29	28.57	32.40	25.70	27.95	26.73	12.63	30.55	28.04	28.07	32.31	30.51	27.64	24.62	24.67
Arauca	July	19.82	19.31	29.45	28.41	29.32	27.45	28.41	30.44	27.18	29.62	28.42	22.17	21.68	22.34	22.97	21.82	27.17	27.05	21.43	21.05	21.50
Atlántico	July	24.04	23.93	10.97	15.86	7.59	11.03	12.93	22.18	24.45	9.15	13.28	17.50	15.68	20.04	17.87	15.76	21.32	19.92	16.53	13.07	15.88
Barranquilla	July	4.75	4.58	7.82	5.80	7.18	7.37	6.79	7.72	7.08	8.68	10.28	9.27	8.98	19.28	11.15	8.73	14.95	16.82	22.76	22.85	23.80
Bogotá D.C	July	8.21	8.02	12.45	12.73	12.45	13.67	12.73	11.35	10.53	12.62	12.38	10.81	11.19	14.40	8.46	11.19	14.98	15.18	8.70	1.99	8.04
Bolívar	July	-10.40	-10.98	17.05	15.51	17.52	15.20	15.33	18.13	14.34	17.56	15.69	15.27	16.70	17.84	15.94	16.70	18.74	18.35	12.90	10.64	11.32
Cartagena	July	1.29	1.10	5.27	12.57	5.10	7.57	12.39	8.32	8.22	5.06	8.18	10.51	10.27	26.51	10.34	10.84	25.28	25.28	19.92	19.33	19.96
Boyacá	July	24.14	23.67	25.04	25.68	25.04	24.75	25.80	25.48	24.83	25.17	24.92	21.30	21.30	21.91	21.09	21.26	22.60	22.30	10.56	9.29	10.02
Caldas	July	33.72	33.72	32.14	32.97	31.77	32.30	33.15	33.27	32.48	33.83	33.45	30.90	31.46	30.67	31.42	31.10	31.72	31.50	22.06	21.73	22.08
Caquetá	July	17.59	17.49	11.57	11.90	11.57	12.55	12.27	23.69	22.37	11.57	12.35	2.80	3.19	3.29	2.83	2.99	6.59	6.59	8.58	8.35	9.17
Casanare	July	16.06	14.63	17.53	20.75	17.36	19.29	20.75	18.99	21.48	18.07	20.00	19.44	19.62	19.02	19.62	19.41	22.39	22.39	12.74	11.81	10.69
Cauca	July	10.85	11.06	18.30	22.41	16.76	17.02	20.37	17.55	17.28	16.96	17.33	16.30	12.27	18.98	15.86	13.50	19.32	18.06	17.64	16.35	17.23
Cesar	July	18.51	18.73	20.03	20.10	19.90	19.72	20.10	21.33	20.19	21.27	22.78	11.52	10.61	18.17	13.59	11.39	18.21	18.18	21.76	16.70	15.91
Choco	July	20.38	15.30	28.40	39.22	28.06	36.89	39.03	28.54	33.62	28.13	36.76	22.87	22.91	22.41	23.48	22.87	21.66	21.39	24.59	24.59	25.13
Córdoba	July	9.21	8.60	15.55	16.29	15.72	13.79	16.29	16.10	14.40	16.21	14.29	16.93	15.85	19.14	17.12	16.57	18.81	18.44	18.24	17.47	17.80
Cundinamarca	July	25.36	25.63	29.61	32.13	29.61	29.68	32.25	30.19	30.00	29.94	29.80	31.77	32.29	33.93	31.22	32.64	34.04	34.34	29.44	28.11	28.52
Guainía	July	57.42	59.12	52.08	57.19	51.04	54.50	57.51	51.51	54.23	50.83	54.09	32.62	33.69	31.42	32.23	33.74	47.77	48.41	32.13	32.91	31.47
Guaviare	July	31.52	31.60	35.33	39.53	35.33	37.90	39.64	36.32	37.89	35.66	38.63	25.71	24.73	27.16	26.11	25.75	31.53	31.53	22.78	22.57	22.62
Huila	July	10.82	10.65	12.80	17.23	12.80	13.77	17.23	13.94	13.64	13.26	13.72	13.92	14.52	11.98	14.13	13.90	12.19	12.03	10.79	10.61	10.91
La Guajira	July	20.00	16.98	21.05	23.71	21.38	23.68	23.54	20.35	20.38	21.52	22.27	16.81	17.64	19.96	14.80	17.13	19.52	22.69	23.26	23.48	25.96
Magdalena	July	6.81	6.55	13.94	12.72	15.42	13.83	13.81	14.31	10.89	14.68	12.67	8.97	8.67	3.63	7.84	8.64	13.12	14.44	16.12	12.22	10.46
Santa Marta	July	7.76	7.47	2.95	2.43	2.60	-3.87	-0.57	1.68	-2.24	3.60	-1.07	-4.61	-3.46	4.17	-4.53	-5.24	10.00	12.65	5.33	0.48	9.98

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo coccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo coccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Meta	July	10.84	10.42	17.16	22.18	15.88	18.47	21.29	17.09	17.41	16.55	19.17	18.54	18.13	18.31	19.10	18.59	19.07	19.52	17.65	16.26	15.13
Nariño	July	23.29	22.79	25.49	27.53	25.49	26.11	27.39	26.31	26.09	25.58	26.25	25.34	24.71	25.69	25.10	25.10	25.44	25.44	19.32	19.12	19.25
Norte de Santander	July	-1.38	-2.19	18.51	22.69	18.18	19.77	23.41	19.86	19.45	19.02	19.31	20.14	16.87	33.83	17.20	20.56	25.15	24.55	26.61	25.93	26.92
Putumayo	July	26.89	25.75	33.50	34.74	32.88	34.06	34.68	32.81	33.79	32.94	34.23	29.12	29.76	28.86	28.55	29.21	33.27	33.27	26.54	28.06	27.82
Quindío	July	15.51	14.85	19.03	21.63	17.99	19.54	20.39	19.57	21.01	20.42	21.18	22.70	22.70	23.52	22.18	24.70	22.50	23.78	6.31	5.56	6.98
Risaralda	July	22.17	21.92	24.43	25.72	23.86	22.93	24.70	24.87	24.40	25.85	24.58	23.54	25.58	29.06	23.25	25.37	27.56	28.94	19.96	15.50	17.48
San Andrés Isla	July	17.66	18.07	20.78	19.32	19.61	19.60	18.66	20.12	19.45	20.39	19.24	12.25	12.55	22.26	11.86	11.66	21.17	22.14	2.73	2.31	1.48
Santander	July	10.04	9.82	14.04	17.65	12.36	12.81	17.80	11.26	12.02	11.90	12.40	16.92	18.55	20.83	17.08	16.60	20.26	20.00	23.27	20.16	18.61
Sucre	July	22.75	22.54	23.86	23.92	23.21	23.27	22.87	24.67	25.52	24.07	24.27	16.67	17.39	21.47	19.04	16.81	23.15	20.79	14.81	13.04	13.23
Tolima	July	7.22	7.32	11.92	15.49	12.10	11.84	15.83	12.59	12.06	12.21	12.46	12.50	12.84	14.58	13.01	12.78	14.04	15.19	10.19	10.71	10.36
Valle del Cauca	July	19.61	21.05	33.16	35.74	31.11	33.16	34.74	34.03	36.08	33.96	35.65	35.94	35.23	41.31	36.16	35.02	37.46	38.26	40.43	38.35	38.88
Buenaventura	July	37.75	36.65	47.98	53.43	46.70	50.10	52.70	49.28	49.25	45.45	48.08	44.16	43.13	47.80	42.86	44.87	49.01	48.26	51.74	47.98	48.98
Vaupés	July	58.42	58.41	61.62	55.99	60.94	62.73	56.67	57.54	57.91	59.81	61.78	63.28	66.32	66.26	64.96	63.54	50.14	49.03	63.33	63.07	62.07
Vichada	July	49.34	54.71	50.37	34.34	46.72	35.44	31.63	48.48	33.74	47.87	36.76	23.49	36.07	27.94	27.45	24.93	34.90	35.23	20.89	20.56	23.44
Amazonas	August	29.35	32.40	33.72	37.73	33.00	38.54	37.27	34.46	36.51	33.11	38.85	23.62	25.50	21.88	22.64	24.20	14.05	13.64	10.75	10.40	11.11
Antioquia	August	26.68	25.97	27.85	32.88	27.19	30.26	32.52	29.25	33.44	26.76	29.03	26.75	14.71	30.61	27.94	27.47	32.11	29.87	27.68	23.74	24.21
Arauca	August	20.43	20.00	28.95	27.50	28.92	27.17	27.50	30.14	27.03	28.95	27.71	21.17	20.84	21.42	21.86	20.97	27.81	27.71	19.10	18.93	19.33
Atlántico	August	25.57	25.23	30.39	31.85	23.78	24.55	24.41	26.74	28.15	26.98	29.75	29.07	29.86	32.66	32.77	28.01	30.63	29.84	26.92	23.73	26.37
Barranquilla	August	5.95	5.80	6.48	3.77	5.47	4.76	5.10	5.82	4.65	7.68	8.12	7.42	7.15	16.22	9.03	6.81	12.13	13.93	19.27	19.33	20.26
Bogotá D.C	August	8.21	7.90	11.97	13.16	12.12	13.22	13.01	11.02	10.33	12.40	12.38	10.77	11.55	13.41	8.59	11.39	13.92	14.09	8.29	2.50	7.57
Bolívar	August	-14.14	-15.09	16.44	15.14	16.86	14.21	15.12	17.64	13.77	17.06	14.80	13.85	15.16	16.58	14.48	15.14	16.48	16.29	11.11	9.07	9.51
Cartagena	August	0.64	0.64	4.68	11.16	4.52	5.71	11.00	8.20	6.90	4.79	6.40	7.12	6.70	22.55	7.25	7.43	21.20	21.33	16.12	15.79	16.19
Boyacá	August	24.13	24.01	24.70	24.36	24.70	23.91	24.25	25.11	24.01	24.81	23.91	19.78	19.78	21.05	19.58	19.75	21.80	21.65	8.67	7.38	8.03
Caldas	August	32.44	32.55	30.40	31.82	30.40	31.72	31.82	31.73	31.12	32.46	31.99	29.57	29.92	31.62	29.11	29.76	30.46	30.17	22.53	22.24	21.61
Caquetá	August	17.50	17.34	23.56	24.35	23.56	24.88	24.47	24.96	24.56	23.80	24.57	15.99	16.15	16.62	15.91	16.12	20.17	20.34	22.88	22.84	23.37
Casanare	August	14.90	13.32	16.26	20.12	16.10	16.94	20.24	18.00	19.70	16.74	17.84	18.99	18.99	18.68	19.14	19.08	22.85	22.85	12.93	12.93	13.98
Cauca	August	10.70	11.32	15.48	20.39	14.94	15.94	19.09	16.15	16.52	14.94	16.36	15.58	11.91	17.95	15.20	13.41	18.26	17.28	15.63	14.19	15.27
Cesar	August	15.83	16.00	20.50	20.14	20.50	19.00	20.14	21.75	19.71	21.64	21.17	11.80	10.85	16.87	12.97	11.68	17.16	17.29	21.00	16.21	15.95

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo coccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo coccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Choco	August	14.23	13.33	21.42	37.20	21.11	32.85	37.02	25.34	30.64	21.20	32.91	16.64	16.81	16.31	18.62	16.61	16.23	15.99	16.43	16.43	16.71
Córdoba	August	14.34	13.70	15.40	15.68	15.40	13.27	15.82	16.25	13.67	15.66	13.71	16.27	15.19	18.03	16.47	15.99	17.73	17.41	17.49	16.31	16.75
Cundinamarca	August	26.37	26.30	29.25	31.91	29.36	30.17	31.87	29.92	30.40	29.77	30.13	31.25	31.80	33.33	30.54	31.91	33.65	33.91	28.14	26.81	27.19
Guainía	August	55.60	56.86	51.71	57.43	50.68	53.67	57.56	51.60	52.98	50.90	52.58	34.07	35.43	32.91	33.16	34.78	45.63	46.10	33.64	33.89	32.07
Guaviare	August	30.34	29.49	36.41	40.97	36.41	41.37	40.97	36.44	40.81	36.55	41.51	28.97	28.32	30.14	29.00	29.02	32.93	32.93	25.41	25.36	25.41
Huila	August	10.75	10.46	12.42	15.53	12.42	13.04	15.53	13.58	13.11	12.80	13.00	14.24	14.63	13.20	14.44	14.22	13.21	13.21	10.63	10.31	10.73
La Guajira	August	19.81	17.17	20.40	23.25	20.58	22.66	22.95	20.00	19.94	20.69	21.65	16.31	16.90	19.26	13.98	16.44	18.44	21.04	24.59	23.74	26.19
Magdalena	August	7.20	7.01	13.14	11.39	14.43	12.56	12.35	13.48	10.08	13.64	11.52	7.23	7.12	1.94	6.21	7.09	10.82	12.03	10.78	10.60	8.51
Santa Marta	August	9.56	9.19	12.04	10.28	11.75	4.88	9.04	11.18	7.45	12.86	8.24	6.58	8.53	11.11	6.62	6.91	15.82	17.88	15.25	9.73	18.32
Meta	August	10.47	9.97	16.07	21.14	15.25	17.62	20.66	16.38	16.72	15.93	17.94	18.49	18.40	18.47	18.76	18.40	19.15	19.67	17.36	16.25	15.13
Nariño	August	22.38	22.50	24.57	26.87	24.57	25.81	26.75	25.70	26.13	24.83	26.06	24.71	24.54	25.00	24.79	24.63	24.78	24.78	18.54	18.37	18.48
Norte de Santander	August	-3.32	-4.06	17.27	23.00	16.98	18.63	23.49	18.67	18.83	17.61	18.08	20.68	12.64	32.49	17.70	20.80	25.18	24.51	26.71	26.29	27.15
Putumayo	August	24.09	23.17	32.55	34.91	32.45	32.79	34.70	32.42	32.58	32.89	32.79	29.88	30.28	29.54	28.84	29.95	32.65	32.54	27.17	28.48	28.27
Quindío	August	17.66	16.82	17.85	19.72	17.27	18.75	19.56	18.80	20.06	19.69	20.03	20.46	20.46	22.95	19.84	21.30	22.09	23.10	6.49	5.33	8.25
Risaralda	August	21.83	21.50	24.81	25.63	25.04	23.99	25.41	24.92	23.74	25.26	24.18	23.26	25.58	27.88	23.04	25.44	27.23	27.97	18.53	14.67	15.32
San Andrés Isla	August	17.24	17.59	20.51	17.25	20.17	21.33	16.99	20.07	21.19	20.85	20.85	13.47	13.75	22.45	13.13	12.96	22.39	22.95	6.55	6.19	5.49
Santander	August	10.04	9.66	13.07	15.80	12.24	11.86	16.61	11.15	11.51	11.84	11.84	17.33	19.12	21.06	17.77	17.48	20.36	20.30	22.18	19.12	17.45
Sucre	August	20.99	20.92	22.93	25.03	22.51	24.79	24.35	23.98	26.21	23.01	25.83	15.38	15.57	19.30	16.59	15.51	20.68	18.82	12.61	11.05	11.24
Tolima	August	5.75	5.82	10.82	13.91	11.11	11.21	14.22	11.55	11.72	11.37	11.76	13.04	13.23	13.99	13.36	13.00	12.97	14.14	10.61	10.41	10.73
Valle del Cauca	August	19.62	21.03	32.57	35.58	30.44	32.63	34.64	34.40	36.35	34.13	35.98	35.18	34.36	41.72	36.07	34.15	36.62	38.02	39.84	36.68	38.10
Buenaventura	August	36.44	35.37	46.83	53.78	45.62	49.74	53.58	48.91	49.05	45.29	47.49	45.55	44.91	47.53	44.39	46.33	48.39	47.72	50.65	47.26	48.13
Vaupés	August	60.19	59.32	58.46	50.65	57.55	59.09	53.15	61.79	59.28	56.31	57.71	57.45	60.80	60.21	59.30	57.72	45.21	45.15	59.05	58.75	57.60
Vichada	August	44.60	51.13	47.50	32.44	43.37	37.44	30.33	46.24	34.85	44.82	37.93	23.78	31.07	28.48	27.80	25.64	34.13	34.13	21.79	21.10	23.35
Amazonas	Septem ber	29.35	31.91	32.39	37.00	31.93	38.24	36.71	33.12	36.41	32.04	38.53	21.88	23.41	20.67	20.72	22.66	11.38	11.41	10.37	9.90	10.55
Antioquia	Septem ber	25.39	24.93	25.93	30.64	25.34	28.65	30.19	27.81	30.95	25.89	28.09	24.14	14.54	28.32	25.77	24.93	30.69	27.67	25.26	19.58	20.03
Arauca	Septem ber	21.29	20.76	28.26	27.01	28.22	25.87	27.01	29.24	26.06	28.04	26.21	19.08	18.66	19.32	19.82	18.89	26.18	26.18	16.24	15.95	16.47
Atlántico	Septem ber	24.41	24.66	24.72	27.87	20.71	22.05	21.32	23.93	25.10	22.77	26.88	23.53	24.28	29.11	24.76	22.73	27.68	25.27	20.00	16.14	19.86
Barranquilla	Septem	6.17	6.15	3.85	1.63	3.06	2.54	3.11	3.22	2.43	5.62	5.98	2.61	2.07	10.22	4.80	2.06	7.10	8.85	7.95	8.11	9.06

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old			
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo coccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo coccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.	
	mber																						
Bogotá D.C	Septem ber	9.47	9.31	11.18	12.43	11.31	13.11	12.30	10.48	10.28	11.97	12.06	9.42	10.25	10.74	7.03	10.24	11.21	11.37	4.59	-0.28	4.12	
Bolívar	Septem ber	-15.81	-17.08	14.03	13.04	14.41	13.08	12.89	15.20	12.81	14.69	13.72	11.31	12.54	13.72	11.87	12.78	13.28	13.25	6.78	4.98	5.18	
Cartagena	Septem ber	1.38	1.24	2.66	8.53	2.52	4.30	8.38	7.05	5.92	2.91	5.07	2.81	2.10	18.09	3.15	3.09	16.92	17.20	9.65	9.34	9.89	
Boyacá	Septem ber	23.92	23.67	24.15	24.16	24.25	23.99	24.16	24.66	24.12	24.22	23.99	19.52	19.52	20.81	19.60	19.61	21.46	21.18	6.87	5.72	6.29	
Caldas	Septem ber	31.90	31.90	29.82	32.13	29.97	32.86	32.13	31.31	32.52	32.22	33.38	30.79	30.95	31.03	30.11	30.67	30.27	29.78	21.92	21.16	21.86	
Caquetá	Septem ber	16.85	16.97	21.06	22.09	21.06	23.33	22.09	23.03	23.09	21.41	23.06	13.75	14.03	14.71	13.40	13.87	17.73	17.85	18.89	18.89	19.63	
Casanare	Septem ber	15.02	13.90	14.88	19.46	14.88	16.17	19.46	16.74	18.88	15.69	16.96	17.71	17.49	17.66	17.74	17.69	21.14	21.14	10.88	10.14	11.26	
Cauca	Septem ber	9.82	10.20	14.11	20.15	13.66	15.84	18.83	15.19	16.67	13.79	16.22	14.31	10.64	16.92	13.97	12.35	17.19	16.19	13.14	11.84	12.95	
Cesar	Septem ber	16.12	16.20	19.33	18.82	19.33	18.73	18.93	20.73	19.56	19.95	20.30	10.91	10.33	15.64	12.05	10.93	16.06	16.17	18.97	14.87	14.65	
Choco	Septem ber	12.52	12.96	19.97	37.08	19.45	32.62	36.62	24.53	31.01	20.36	33.14	16.54	16.59	15.84	19.00	16.12	16.63	16.20	15.88	15.67	16.12	
Córdoba	Septem ber	7.88	7.43	13.91	14.79	13.91	13.02	14.64	15.14	13.55	14.31	13.41	13.96	12.84	16.05	14.26	13.83	15.63	15.49	14.13	12.77	13.33	
Cundinamarca	Septem ber	24.34	24.56	28.95	30.79	29.05	29.44	30.75	29.69	29.81	29.52	29.54	29.95	30.71	32.19	29.30	30.77	32.58	32.82	25.59	24.17	24.62	
Guainía	Septem ber	50.85	54.47	48.81	56.82	48.12	52.25	57.18	51.34	52.95	47.83	52.39	33.51	36.81	32.81	33.82	34.86	42.64	43.19	38.80	39.10	36.86	
Guaviare	Septem ber	29.29	28.92	38.18	39.02	38.18	37.25	39.10	38.61	37.12	38.18	37.45	28.57	27.98	29.50	28.59	28.48	30.10	30.10	22.53	22.49	22.69	
Huila	Septem ber	11.51	11.26	11.88	14.85	11.88	12.89	14.99	12.79	13.24	11.95	12.98	12.98	13.31	12.43	13.03	12.96	12.57	12.57	8.04	7.77	8.01	
La Guajira	Septem ber	18.48	16.47	17.02	10.05	17.20	20.84	10.19	18.46	18.96	17.16	19.75	9.57	7.21	13.66	9.29	7.00	13.21	15.48	13.41	12.38	15.10	
Magdalena	Septem ber	-3.35	-3.84	10.04	7.81	11.14	10.96	8.59	10.54	8.68	10.64	10.00	2.60	2.62	-3.53	1.91	2.61	5.86	7.30	5.25	4.78	2.29	
Santa Marta	Septem ber	8.53	8.21	12.25	10.90	11.20	4.66	8.64	11.84	8.21	13.22	9.30	7.28	9.41	7.51	7.91	7.97	12.69	14.74	10.27	4.15	16.64	
Meta	Septem ber	10.47	10.03	14.17	18.78	13.71	15.35	18.23	14.98	14.69	14.19	15.66	16.37	16.44	16.49	16.74	16.53	17.26	18.01	13.84	12.57	11.99	
Nariño	Septem ber	22.73	22.92	23.05	26.07	23.05	25.15	26.11	23.97	25.81	23.29	25.38	23.34	23.19	23.88	23.33	23.27	23.57	23.57	17.38	17.23	17.45	
Norte de Santander	Septem ber	-4.62	-5.13	15.93	21.38	15.78	17.43	21.96	17.86	17.77	16.58	16.93	18.80	5.13	28.55	16.18	19.29	22.86	22.38	25.04	24.10	24.62	
Putumayo	Septem ber	23.56	22.93	30.60	33.51	30.60	32.72	33.47	31.01	32.40	31.14	32.59	27.64	27.99	27.43	26.18	27.69	30.32	30.32	23.37	24.57	24.50	
Quindío	Septem ber	15.43	14.89	15.54	18.19	15.42	18.32	18.05	16.93	19.78	17.79	19.75	18.98	18.71	21.79	18.41	19.56	20.52	21.82	4.66	3.94	6.47	
Risaralda	Septem ber	21.15	20.85	22.71	24.77	22.92	23.01	24.60	23.18	23.12	23.79	23.47	22.61	24.84	26.06	22.84	24.65	25.96	26.73	15.36	11.23	12.54	
San Andrés Isla	Septem ber	14.06	14.53	20.39	17.92	19.94	19.83	18.16	20.28	19.97	20.54	19.54	14.26	14.22	23.58	13.67	13.67	23.00	23.61	7.58	7.27	6.96	
Santander	Septem ber	9.49	8.04	10.96	13.16	10.08	11.09	14.48	9.52	10.92	10.02	11.06	15.42	17.30	18.71	14.79	15.43	18.21	17.99	17.85	14.93	13.33	
Sucre	Septem ber	19.07	19.05	20.84	21.95	20.59	21.86	21.57	22.38	23.26	21.05	22.46	14.10	13.88	16.82	14.89	14.21	17.56	16.26	9.61	8.70	8.85	

State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo ccocal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo ccocal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Tolima	Septem ber	3.65	3.54	7.33	9.66	7.46	8.32	9.67	8.12	9.03	7.57	8.95	9.09	9.38	9.96	9.50	9.20	9.56	10.52	5.39	5.09	5.08
Valle del Cauca	Septem ber	21.73	22.96	33.24	36.12	30.57	32.93	34.68	34.60	36.61	34.31	36.23	33.74	32.97	41.48	35.17	32.74	36.49	37.27	38.85	34.60	35.22
Buenaventura	Septem ber	35.53	34.52	45.18	53.81	44.38	49.23	53.14	48.04	49.16	44.23	47.30	45.79	45.37	46.33	44.98	46.48	46.86	46.55	49.14	45.75	46.50
Vaupés	Septem ber	53.90	58.06	50.39	56.21	48.01	56.72	57.47	55.56	57.33	48.79	56.19	51.18	55.18	53.49	55.26	52.85	39.96	41.39	50.56	50.47	49.42
Vichada	Septem ber	44.67	51.01	47.16	33.59	44.23	42.54	32.05	46.15	37.69	45.66	44.41	25.85	32.91	30.08	28.88	28.83	34.92	35.34	25.06	24.83	26.79
Amazonas	Octob er	29.34	31.46	30.12	36.29	29.57	34.68	36.00	31.82	33.71	29.66	35.06	21.34	22.41	20.54	20.10	21.93	8.69	8.87	6.40	5.98	6.55
Antioquia	Octob er	24.24	24.33	25.03	30.78	24.42	27.59	29.91	27.04	29.30	25.37	27.78	23.36	15.05	27.28	25.22	24.08	30.04	26.82	23.18	17.64	17.89
Arauca	Octob er	21.42	20.78	27.74	26.97	27.62	25.17	26.97	28.81	25.58	27.52	25.27	18.69	18.20	18.78	19.67	18.30	25.34	25.26	15.77	15.53	15.82
Atlántico	Octob er	7.25	7.52	15.59	22.90	12.14	15.91	15.27	16.24	18.56	14.32	20.16	15.17	17.13	21.91	15.49	14.23	21.49	18.90	11.82	8.12	10.65
Barranquilla	Octob er	4.81	4.80	2.98	0.62	2.27	2.42	1.97	2.53	2.20	5.03	5.77	0.98	0.37	8.95	2.69	0.73	6.02	7.73	0.40	0.81	1.73
Bogotá D.C	Octob er	7.92	7.79	10.83	12.50	10.95	12.75	12.50	10.08	9.96	11.90	11.93	9.10	9.73	9.17	6.46	9.84	9.75	9.89	1.74	-2.60	1.11
Bolívar	Octob er	-12.30	-13.13	12.75	12.04	13.11	12.79	11.78	13.96	12.73	13.36	13.37	9.61	11.32	12.21	9.99	10.94	11.70	11.55	3.69	1.78	2.24
Cartagena	Octob er	0.36	0.24	2.26	7.10	2.13	3.52	7.09	6.59	5.26	2.36	4.10	0.79	0.13	15.32	1.07	1.31	14.35	14.48	4.99	4.57	5.24
Boyacá	Octob er	24.00	23.58	24.21	24.40	24.30	24.06	24.40	24.48	24.21	24.27	24.06	19.54	19.42	20.98	19.62	19.52	21.44	21.41	7.50	6.48	6.86
Caldas	Octob er	32.10	32.27	30.76	34.11	30.28	33.38	34.36	32.11	33.72	32.82	34.51	32.85	33.17	32.13	32.46	32.81	31.71	31.35	21.78	21.11	22.69
Caquetá	Octob er	16.16	16.29	20.61	23.09	20.61	23.66	23.19	22.91	23.67	20.92	23.63	14.16	14.39	15.09	13.87	14.25	16.67	16.67	17.24	17.24	17.77
Casanare	Octob er	14.89	13.78	13.84	17.67	13.84	15.76	17.67	15.88	18.68	14.80	16.69	18.57	18.37	18.36	18.61	18.77	21.74	21.74	11.61	11.07	12.06
Cauca	Octob er	9.30	9.67	13.51	19.27	13.22	14.67	18.35	14.62	15.55	13.45	14.99	14.36	10.72	16.03	14.06	12.61	16.01	15.22	11.36	10.20	11.07
Cesar	Octob er	14.97	15.05	18.74	18.42	18.74	19.27	18.42	20.63	20.48	19.18	20.60	10.79	10.27	14.71	11.67	11.23	14.74	14.85	16.60	12.70	12.62
Choco	Octob er	7.38	10.47	15.20	33.66	14.95	26.93	33.38	21.81	27.02	15.35	27.23	9.47	9.35	8.96	12.89	9.19	12.62	12.23	5.02	4.65	4.97
Córdoba	Octob er	13.70	13.37	15.12	15.68	15.24	14.74	15.55	16.27	15.41	15.47	15.21	15.22	13.88	17.00	15.37	14.99	16.73	16.60	14.25	13.04	13.81
Cundinamarca	Octob er	28.78	29.00	29.15	31.10	29.24	29.55	31.10	29.76	30.01	29.62	29.60	29.27	29.87	31.44	28.71	30.13	31.93	32.40	24.63	23.51	23.68
Guainía	Octob er	50.73	53.93	47.97	56.09	47.32	51.30	56.46	50.28	52.40	46.97	51.97	32.32	35.17	31.27	32.58	33.25	42.36	42.76	41.07	41.26	39.16
Guaviare	Octob er	30.78	30.48	36.60	40.43	36.71	36.33	40.50	37.07	36.06	36.67	36.84	28.49	27.65	29.40	28.71	28.32	29.88	29.88	21.09	21.06	21.09
Huila	Octob er	11.23	11.11	11.61	15.09	11.61	12.79	15.09	12.43	12.99	11.68	12.76	13.26	13.67	12.13	13.43	13.24	12.37	12.24	8.30	7.93	8.40
La Guajira	Octob er	17.99	16.20	15.67	9.66	15.82	18.71	10.01	17.91	18.49	15.78	18.83	7.14	5.05	11.23	7.15	5.11	10.63	12.80	12.06	11.00	13.68
Magdalena	Octob er	0.95	0.65	8.54	6.56	9.55	9.78	7.51	9.10	8.43	8.98	9.01	0.00	0.00	-1.94	-0.66	-0.13	4.37	5.56	2.27	1.84	0.00
Santa Marta	Octob	8.94	8.79	11.20	10.45	10.35	5.11	8.27	10.94	8.70	12.29	9.39	4.77	7.48	-0.55	6.02	6.22	11.13	13.13	8.78	0.73	15.53



State	Month	Children under 12 months old											Children between 12 and 23 months old							Children of 5 years old		
		BCG	Hepat itis B	IPV	OPV + IPV	Penta 1st dose	Penta 2nd dose	Penta 3rd dose	Rota 1st dose	Rota 2nd dose	Pneu moco ccal 1st dose	Pneumo coccal 2nd dose	MMR	Varice lla	Yello w Fever	Pneumo coccal Reinf.	Hepat itis A	OPV 1st Reinf.	DPT 1st Reinf.	OPV 2nd Reinf.	DPT 2nd Reinf.	MMR Reinf.
Meta	October	11.78	12.00	2.86	15.86	0.12	12.19	15.37	15.35	15.00	13.03	11.48	14.90	15.56	16.11	16.40	6.49	16.56	17.02	12.85	9.75	11.19
Nariño	October	21.94	21.88	23.09	26.17	23.09	24.97	26.21	24.12	25.76	23.16	25.30	23.68	23.54	23.88	23.57	23.72	23.85	23.85	16.09	16.09	16.16
Norte de Santander	October	-4.67	-5.28	15.38	21.26	15.15	16.78	21.78	17.50	17.35	16.02	16.63	18.20	2.42	26.26	16.28	18.77	22.01	21.44	23.70	22.73	23.16
Putumayo	October	23.01	23.03	28.62	33.17	28.66	32.75	32.80	29.30	32.65	29.05	32.71	26.68	27.03	26.45	25.38	26.82	28.55	28.55	20.73	21.75	22.05
Quindío	October	13.72	12.91	14.67	18.37	14.54	17.78	18.14	16.39	19.30	17.25	19.38	19.26	18.81	22.03	18.88	19.53	21.23	22.43	4.79	3.52	6.27
Risaralda	October	20.80	20.79	22.24	24.67	22.33	22.96	24.52	22.90	22.41	23.68	23.65	22.59	24.83	25.12	22.52	24.60	25.15	25.91	12.60	9.02	10.56
San Andrés Isla	October	16.21	16.35	18.17	17.69	17.98	20.29	18.01	18.47	20.19	18.32	19.90	11.47	11.43	21.85	11.07	10.80	21.13	21.70	8.66	8.53	8.12
Santander	October	9.39	8.09	11.02	13.72	10.35	11.22	14.65	10.01	11.22	10.18	10.94	15.00	16.69	18.28	14.44	14.99	17.69	17.63	14.17	11.65	9.96
Sucre	October	17.54	17.50	19.21	22.81	19.38	20.87	22.59	20.83	22.35	19.52	21.54	13.32	12.89	16.26	14.22	13.32	16.20	15.27	7.12	6.58	6.58
Tolima	October	6.63	6.57	7.99	10.93	8.24	9.52	11.06	8.85	10.18	8.33	10.20	10.59	10.52	11.42	10.96	10.56	11.06	11.91	5.47	5.21	5.32
Valle del Cauca	October	22.02	22.89	36.36	37.49	32.13	34.38	36.09	34.91	36.50	33.89	36.22	34.82	34.47	42.22	36.39	34.54	39.08	38.38	41.06	35.86	35.96
Buenaventura	October	35.14	34.36	42.95	52.26	42.37	47.44	51.80	45.96	47.81	42.50	46.11	44.40	43.90	44.77	43.44	45.03	45.05	44.76	45.66	42.96	43.25
Vaupés	October	50.88	55.19	46.74	53.55	44.19	54.21	54.40	52.18	56.36	44.59	52.48	47.18	50.40	49.87	51.26	48.67	32.25	36.94	44.11	43.74	43.25
Vichada	October	53.75	53.70	56.69	43.11	54.46	54.78	42.49	52.92	48.91	56.12	56.69	39.05	46.64	41.87	39.73	41.02	41.29	42.01	38.79	37.72	37.46

\* Relative Coverage Difference = (2019 proportion coverage – 2020 proportion coverage) / 2019 proportion coverage

**Table A2.** Geographical distribution of children across regions and states by age group and rural population percentage in 2019 and 2020.

Region	State	Rural Population %	Less than 12 months old*		12 to 23 months old*		5 years old*	
			2019	2020	2019	2020	2019	2020
Amazon	Amazonas	62.5	1 611	1 587	1 668	1 682	1 870	1 872
	Caquetá	40.0	7 487	6 943	7 495	7 343	8 021	7 668
	Guainía	75.0	802	921	970	993	902	951
	Guaviare	41.7	1 316	1 367	1 328	1 409	1 604	1 544
	Putumayo	50.0	4 724	4 748	4 982	5 011	5 461	5 374
	Vaupés	60.0	789	753	817	790	785	814
Andean	Antioquia	21.4	74 381	75 375	77 622	78 005	84 171	82 581
	Boyacá	42.2	13 869	14 373	15 381	15 216	17 450	17 529
	Caldas	27.3	9 282	9 309	9 958	9 949	10 848	10 785
	Cundinamarca	32.0	33 896	34 712	35 671	36 531	37 992	39 059
	Huila	40.3	19 108	18 408	19 740	19 076	20 558	20 333
	Norte de Santander	20.9	22 545	23 389	22 922	23 933	23 003	23 786
	Quindío	12.1	5 600	5 497	5 784	5 704	6 398	6 248
	Risaralda	21.6	10 258	10 263	10 714	10 706	12 356	11 694
	Santander	23.9	30 892	29 492	31 319	30 104	32 843	31 878
Tolima	31.0	17 210	16 766	17 543	17 429	19 419	18 834	
Bogotá	Bogotá D.C.	0.2	98 914	96 506	99 134	99 059	104 159	100 822
Caribbean	Atlántico	4.3	40 205	41 190	42 228	42 477	44 054	43 431
	Bolívar	22.1	38 974	36 554	39 665	38 704	40 736	40 121
	Cesar	24.3	22 036	23 168	22 925	23 895	24 608	24 583
	Córdoba	46.9	30 290	28 893	30 629	29 500	31 706	30 360
	La Guajira	45.2	20 021	21 165	21 194	22 112	22 189	23 179

	Magdalena	25.4	25 296	24 965	26 005	25 847	27 510	26 925
	San Andres Island	25.0	853	787	871	805	922	899
	Sucre	31.8	14 028	14 354	14 828	15 078	16 825	15 899
	Arauca	37.0	4 287	5 212	4 492	5 392	4 811	5 197
Eastern plains	Casanare	24.3	6 513	6 629	6 661	6 831	7 297	7 296
	Meta	23.5	15 295	15 130	15 688	15 735	16 814	16 631
	Vichada	57.1	1 773	1 700	1 827	1 824	1 876	1 884
	Cauca	59.9	21 088	20 635	22 008	21 344	22 702	22 344
Pacific	Choco	51.0	10 459	9 768	11 791	10 426	12 901	11 032
	Nariño	49.7	20 024	19 577	20 729	20 225	22 304	21 542
	Valle del Cauca	12.4	56 301	56 017	57 863	57 184	60 968	61 200
	Total		<b>680 127</b>	<b>676 153</b>	<b>702 452</b>	<b>700 319</b>	<b>746 063</b>	<b>734 295</b>

\* Total population

Table A3. Crude effects of rural residence on the relative differences between years in vaccination coverage.

Age group	Vaccine	Effect on Vaccination Proportions (Betas)*	95%CI
< 12-months	BCG	0.469	0.239-0.699
	Hepatitis B	0.505	0.268-0.742
	IPV	0.361	0.157-0.565
	OPV + IPV	0.375	0.177-0.572
	Penta 1st dose	0.368	0.174-0.563
	Penta 2nd dose	0.402	0.209-0.596
	Penta 3rd dose	0.399	0.206-0.592
	Rota 1st dose	0.376	0.186-0.566
	Rota 2nd dose	0.384	0.193-0.576
	Pneumococcal 1st dose	0.332	0.139-0.525
Pneumococcal 2nd dose	0.388	0.189-0.586	
12 – 23 months old	MMR	0.202	0.018-0.386
	Varicella	0.248	0.040-0.456
	Pneumococcal Reinf.	0.219	0.028-0.411
	Hepatitis A	0.212	0.016-0.408
	Yellow Fever	0.135	-0.065-0.335
	OPV 1st Reinf.	0.115	-0.068-0.297
	DPT 1st Reinf.	0.138	-0.044-0.320
5 years old	MMR Reinf.	0.253	0.057-0.449
	OPV 2nd Reinf.	0.225	0.016-0.436
	DPT 2nd Reinf.	0.285	0.084-0.486

BCG, Bacillus Calmette-Guérin; CI: confidence interval; IPV, inactivated polio vaccine; OPV, oral polio vaccine; penta, pentavalent vaccine; rota, rotavirus; seasonal flu, seasonal influenza; MMR, measles, mumps, and rubella vaccine; DPT, diphtheria, pertussis, and tetanus; reinf., reinforcement.

\* The association between rurality and difference in coverage is not adjusted for any other variables – it is a crude association. States were the unit of analysis.