impact canada

Summary Report

# Effects of the COVID-19 Pandemic on Routine Childhood Immunizations: Tracking Parental Attitudes and Behaviours

Behavioural Science Office (BeSciO) | Public Health Agency of Canada (PHAC)
Vaccine Behaviour and Confidence (VBAC) | PHAC
Impact and Innovation Unit (IIU)| Privy Council Office (PCO)

Government of Canada | Gouvernement du Canada

Canada

**Effects of the COVID-19 Pandemic on Routine Childhood Immunizations: Tracking Parental Attitudes and Behaviours.**



For more information, contact:

Impact Canada, Privy Council Office
85 Sparks Street, Room 1000
Ottawa ON Canada K1A 0A3
info@pco-bcp.gc.ca



Cette publication est également disponible en français : *Effets de la pandémie de COVID-19 sur l'administration des vaccins aux enfants selon les calendriers d'immunisation: Suivi des attitudes et des comportements des parents*.

ISBN: 978-0-660-69732-1
CP22-213/2024E-PDF

# Contents

# Key Insights

- Up to 25% of Canadian parents and caregivers surveyed reported missing or delaying a routine immunization for their child(ren) since the pandemic began.
- Most parents intend to catch up. To facilitate catch up, parents indicated interest in convenience through greater availability and accessibility of immunization services, such as through local pharmacies.
- Parents with greater levels of vaccine confidence were less likely to miss or delay their child's routine immunization. However, experience with barriers to vaccination substantially increased the risk of missing or delaying a child's immunization regardless of the parent's level of vaccine confidence.
- Results suggest that uptake of routine childhood vaccinations may be increased by providing more convenient and accessible immunization services and addressing common and pandemic-related barriers to vaccination.

# Background

Routine childhood immunizations (RCIs) are critical for protecting the health and well-being of children in Canada. Parental confidence and uptake in RCIs has increasingly become a topic of concern since the start of the COVID-19 pandemic. According to a report published in July 2022 by WHO and UNICEF, during the pandemic global routine vaccine coverage among children showed the largest decline observed in the past 30 years.

For many Canadian parents, the pandemic interfered with access to RCI services. What's more, the topic of vaccination has been given unprecedented centrality because of the pandemic, potentially polarizing opinions. Our teams at the Public Health Agency of Canada (PHAC) and the Privy Council Office (PCO) hypothesized that the pandemic has had a meaningful impact on vaccine timeliness – the extent to which children are up to date on all of their recommended immunizations. This survey also explored attitudes related to RCIs and estimated the impact of barriers to vaccination on missed or delayed immunizations.

# Methodology

A national, bilingual, and regionally representative online survey was administered in January 2023 to 2,036 respondents with at least one child under 18 years of age. The regional and demographic information for the parents is shown in Table 1.

**Table 1 - Demographic information for the parents in this sample, displayed nationally and regionally.**

| | Canada (n=2036) | BC/YK (n=236) | AB/NT (n=181) | MB/ SK/NU (n=238) | ON (n=626) | QC (n=520) | ATL (n=235) |
|---|---|---|---|---|---|---|---|
| **Age** | | | | | | | |
| 18-34 years | 656 (32%) | 68 (29%) | 62 (34%) | 85 (36%) | 186 (30%) | 168 (32%) | 87 (37%) |
| 35-54 years | 1275 (63%) | 153 (65%) | 110 (61%) | 143 (60%) | 403 (64%) | 330 (63%) | 136 (58%) |
| 55 years and older | 105 (5%) | 15 (6%) | 9 (5%) | 10 (4%) | 37 (6%) | 22 (4%) | 12 (5%) |
| **Sex** | | | | | | | |
| Female | 1284 (63%) | 141 (60%) | 138 (76%) | 159 (67%) | 403 (64%) | 276 (53%) | 167 (71%) |
| Male | 752 (37%) | 95 (40%) | 43 (24%) | 79 (33%) | 223 (36%) | 244 (47%) | 68 (29%) |
| **Gender** | | | | | | | |
| Female | 1265 (62%) | 140 (59%) | 138 (76%) | 156 (66%) | 398 (64%) | 269 (52%) | 164 (70%) |
| Male | 739 (36%) | 91 (39%) | 41 (23%) | 81 (34%) | 216 (35%) | 242 (47%) | 68 (29%) |
| Other | 32 (2%) | 5 (2%) | 2 (1%) | 1 (0%) | 12 (2%) | 9 (2%) | 3 (1%) |
| **Education level** | | | | | | | |
| High school or less | 372 (18%) | 31 (13%) | 33 (18%) | 52 (22%) | 111 (18%) | 91 (18%) | 54 (23%) |
| College/trades | 497 (25%) | 42 (18%) | 49 (27%) | 65 (27%) | 141 (23%) | 128 (25%) | 72 (31%) |
| University / post-graduate | 1156 (57%) | 161 (69%) | 98 (54%) | 121 (51%) | 371 (60%) | 297 (58%) | 108 (46%) |
| **Employment status** | | | | | | | |
| Employed full-time (working 35 or more hours per week) | 1278 (64%) | 146 (63%) | 94 (53%) | 162 (70%) | 390 (64%) | 355 (69%) | 131 (57%) |
| Employed part-time (working less than 35 hours per week) | 183 (9%) | 27 (12%) | 26 (15%) | 15 (6%) | 62 (10%) | 31 (6%) | 22 (10%) |

| | Canada (n=2036) | BC/YK (n=236) | AB/NT (n=181) | MB/ SK/NU (n=238) | ON (n=626) | QC (n=520) | ATL (n=235) |
|---|---|---|---|---|---|---|---|
| Leave of absence (i.e. maternity, parental, short-term disability, etc.,) | 61 (3%) | 8 (3%) | 2 (1%) | 10 (4%) | 16 (3%) | 15 (3%) | 10 (4%) |
| Not in the workforce and not looking for work (full-time homemaker, unemployed) | 194 (10%) | 24 (10%) | 30 (17%) | 21 (9%) | 54 (9%) | 37 (7%) | 28 (12%) |
| Retired | 26 (1%) | 0 (0%) | 2 (1%) | 0 (0%) | 9 (1%) | 9 (2%) | 6 (3%) |
| Self-employed | 98 (5%) | 14 (6%) | 7 (4%) | 11 (5%) | 36 (6%) | 20 (4%) | 10 (4%) |
| Student attending school full-time or part-time | 26 (1%) | 0 (0%) | 1 (1%) | 2 (1%) | 9 (1%) | 7 (1%) | 7 (3%) |
| Student employed full-time | 9 (0%) | 0 (0%) | 1 (1%) | 1 (0%) | 2 (0%) | 4 (1%) | 1 (0%) |
| Student employed part-time | 6 (0%) | 3 (1%) | 0 (0%) | 0 (0%) | 2 (0%) | 1 (0%) | 0 (0%) |
| Student looking for work | 2 (0%) | 0 (0%) | 0 (0%) | 1 (0%) | 0 (0%) | 0 (0%) | 1 (0%) |
| Student self-employed | 5 (0%) | 2 (1%) | 0 (0%) | 0 (0%) | 0 (0%) | 3 (1%) | 0 (0%) |
| Unemployed, but looking for work | 108 (5%) | 6 (3%) | 15 (8%) | 9 (4%) | 34 (6%) | 31 (6%) | 13 (6%) |
| **Household income** | | | | | | | |
| Under $20,000 | 96 (5%) | 11 (5%) | 8 (5%) | 12 (5%) | 31 (5%) | 24 (5%) | 10 (4%) |
| $20,000 to just under $40,000 | 229 (12%) | 26 (11%) | 19 (11%) | 17 (8%) | 69 (12%) | 64 (13%) | 34 (15%) |
| $40,000 to just under $60,000 | 288 (15%) | 22 (10%) | 21 (12%) | 34 (15%) | 71 (12%) | 85 (17%) | 55 (24%) |
| $60,000 to just under $80,000 | 292 (15%) | 38 (17%) | 28 (16%) | 37 (16%) | 90 (15%) | 65 (13%) | 34 (15%) |
| $80,000 to just under $100,000 | 343 (18%) | 39 (17%) | 32 (18%) | 41 (18%) | 104 (17%) | 96 (19%) | 31 (14%) |
| $100,000 to just under $150,000 | 443 (23%) | 52 (23%) | 38 (22%) | 57 (25%) | 143 (24%) | 106 (21%) | 47 (21%) |
| $150,000 to just under $200,000 | 184 (9%) | 26 (11%) | 24 (14%) | 21 (9%) | 57 (10%) | 41 (8%) | 15 (7%) |
| $200,000 to just under $250,000 | 44 (2%) | 7 (3%) | 2 (1%) | 4 (2%) | 17 (3%) | 14 (3%) | 0 (0%) |

| | Canada (n=2036) | BC/YK (n=236) | AB/NT (n=181) | MB/ SK/NU (n=238) | ON (n=626) | QC (n=520) | ATL (n=235) |
|---|---|---|---|---|---|---|---|
| $250,000 and above | 37 (2%) | 6 (3%) | 3 (2%) | 2 (1%) | 14 (2%) | 10 (2%) | 2 (1%) |
| **Household size** | | | | | | | |
| 1-2 | 351 (17%) | 43 (18%) | 28 (16%) | 31 (13%) | 117 (19%) | 85 (16%) | 47 (20%) |
| 3-4 | 1359 (67%) | 166 (71%) | 121 (67%) | 158 (67%) | 406 (65%) | 349 (68%) | 159 (68%) |
| 5+ | 316 (16%) | 25 (11%) | 31 (17%) | 48 (20%) | 102 (16%) | 83 (16%) | 27 (12%) |
| **Language spoken at home** | | | | | | | |
| English | 1629 (80%) | 228 (97%) | 173 (96%) | 231 (97%) | 583 (93%) | 200 (38%) | 214 (91%) |
| French | 338 (17%) | 0 (0%) | 0 (0%) | 3 (1%) | 14 (2%) | 303 (58%) | 18 (8%) |
| Other | 69 (3%) | 8 (3%) | 8 (4%) | 4 (2%) | 29 (5%) | 17 (3%) | 3 (1%) |
| **Immigration status** | | | | | | | |
| Born in Canada | 1461 (72%) | 142 (60%) | 120 (66%) | 189 (79%) | 402 (64%) | 406 (78%) | 202 (86%) |
| Born outside Canada | 573 (28%) | 94 (40%) | 61 (34%) | 49 (21%) | 223 (36%) | 113 (22%) | 33 (14%) |
| **Ethnicity** | | | | | | | |
| Black (African, Afro-Caribbean, African descent) | 98 (5%) | 2 (1%) | 6 (3%) | 8 (4%) | 40 (7%) | 29 (6%) | 13 (6%) |
| East/Southeast Asian (e.g. Chinese, Korean, Japanese, Taiwanese, Filipino, Vietnamese, Cambodian, Thai, Indonesian, other East/Southeast Asian descent) | 247 (13%) | 57 (26%) | 31 (18%) | 21 (10%) | 97 (17%) | 38 (8%) | 3 (1%) |
| Indigenous (First Nations, Metis and/or Inuk/Inuit) | 60 (3%) | 8 (4%) | 7 (4%) | 16 (7%) | 13 (2%) | 5 (1%) | 11 (5%) |
| Latino/Latina (e.g. Latin American, Hispanic descent) | 50 (3%) | 6 (3%) | 7 (4%) | 6 (3%) | 18 (3%) | 13 (3%) | 0 (0%) |
| Middle Eastern and North African (e.g. Arab, Algerian, Egyptian, West Asian descent (e.g. Iranian, Israeli, Lebanese, Turkish, Kurdish, etc.) | 68 (4%) | 10 (5%) | 8 (5%) | 2 (1%) | 16 (3%) | 28 (6%) | 4 (2%) |

| | Canada (n=2036) | BC/YK (n=236) | AB/NT (n=181) | MB/ SK/NU (n=238) | ON (n=626) | QC (n=520) | ATL (n=235) |
|---|---|---|---|---|---|---|---|
| Mixed | 48 (3%) | 3 (1%) | 5 (3%) | 4 (2%) | 23 (4%) | 7 (1%) | 6 (3%) |
| Mixed Indigenous | 36 (2%) | 3 (1%) | 2 (1%) | 7 (3%) | 11 (2%) | 8 (2%) | 5 (2%) |
| South Asian (e.g., Afghan, Indian, Pakistani, Bangladeshi, Sri Lankan, etc.) | 152 (8%) | 26 (12%) | 11 (6%) | 13 (6%) | 85 (15%) | 10 (2%) | 7 (3%) |
| White European | 1130 (60%) | 105 (48%) | 95 (55%) | 142 (65%) | 281 (48%) | 348 (72%) | 159 (76%) |
| **Size of community** | | | | | | | |
| A large city | 863 (42%) | 100 (42%) | 97 (54%) | 113 (47%) | 267 (43%) | 232 (45%) | 54 (23%) |
| A suburb near a large city | 680 (33%) | 88 (37%) | 47 (26%) | 43 (18%) | 245 (39%) | 207 (40%) | 50 (21%) |
| A small city or town | 334 (16%) | 33 (14%) | 29 (16%) | 56 (24%) | 83 (13%) | 53 (10%) | 80 (34%) |
| A rural area | 159 (8%) | 15 (6%) | 8 (4%) | 26 (11%) | 31 (5%) | 28 (5%) | 51 (22%) |

Parents/caregivers were shown the RCI schedule outlined by their province or territory. Parents were then asked if they had missed or delayed one or more vaccines for their child(ren) since the start of the pandemic in March 2020. If parents reported missing a vaccine, they were asked about their intentions to catch up. Parents were also asked whether they had encountered any barriers that limited their ability to vaccinate their child, as well as for input on programs or policies that might act as drivers, increasing ease of access to immunization.

The survey assessed parental vaccine-related knowledge, attitudes, beliefs, and behaviours related to their children, as well as potential pandemic-related impacts. Analysis was conducted based on the child's age bracket*: 0-4 years (769 parents), 5-11 years (982 parents), or 12-17 years (864 parents).

*Some respondents have children in more than one age bracket and were thus counted more than once.

# Selection of Key Findings

### A significant proportion of parents report having missed or delayed RCIs since the COVID-19 pandemic began; Most have caught up or intend to.

A sizable group of parents/caregivers report having missed routine vaccines since the pandemic (Figure 1). Among those with children under 4 years, 25% reported missing or delaying a routine vaccine for their child since the pandemic began in March 2020. A meaningful proportion of parents with older children (between 5-11 years: 19%, and between 12-17 years: 23%) similarly reported missing or delaying a vaccine for their child since the pandemic began.

Among the 580 parents who missed a vaccine for their child, the majority intended to catch up as soon as possible (respondents with children under 4 years: 53%, between 5–11-years: 49%, between 12-17 years: 44%; Figure 2). A smaller proportion intended to catch up, but not within the next 30 days (parents with children under 4 years: 17%, between 5–11-years: 21%, between 12-17 years: 20%; Figure 2).

**Figure 1 - Reported missed childhood vaccines since March 2020, separated by age bracket.**

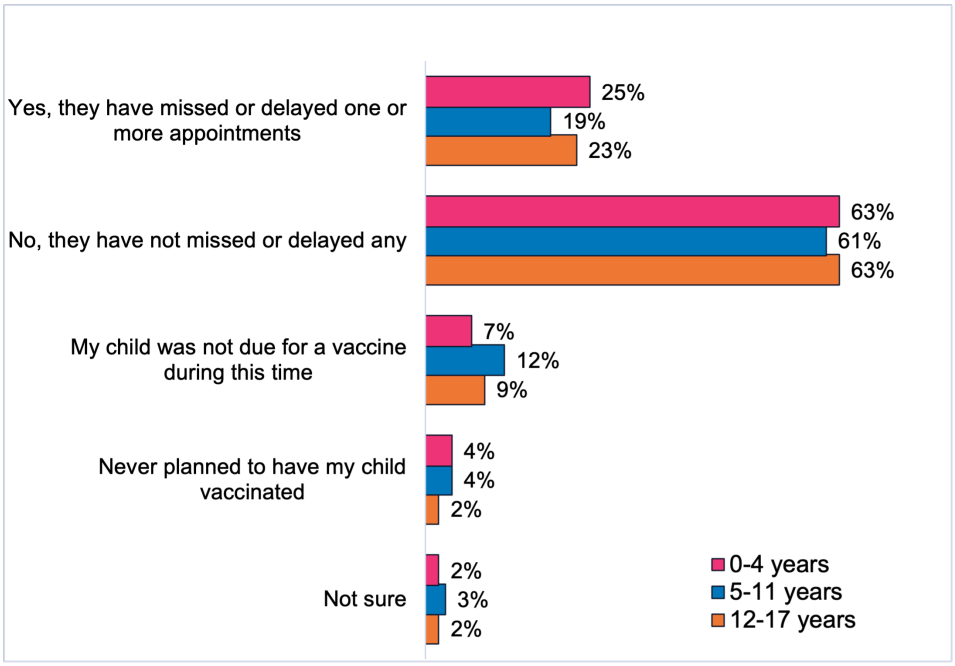
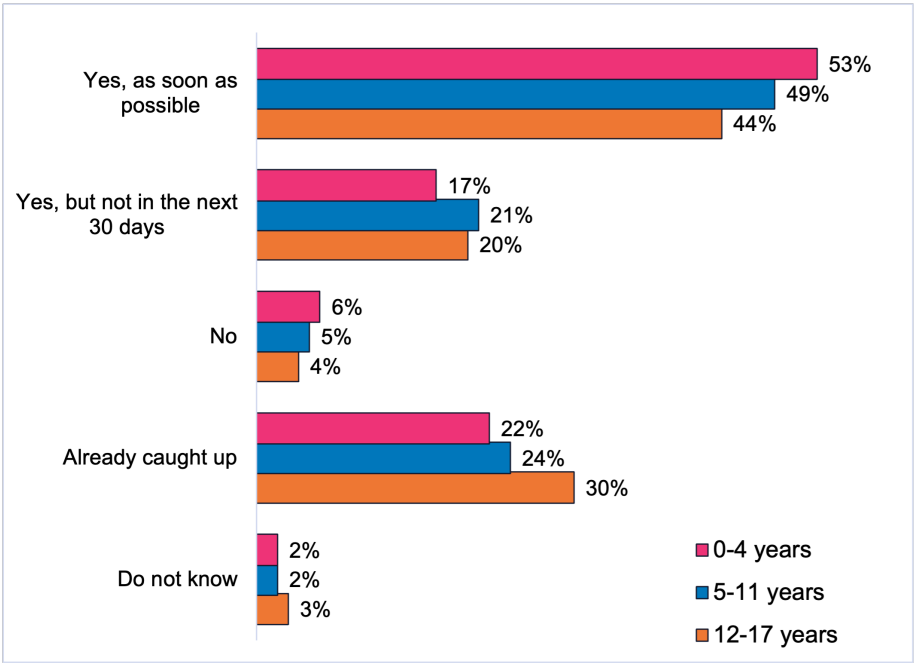



**Figure 2 - Reported intentions to catch-up on missed vaccines, separated by age bracket.**



## COVID-19 had a negative impact on routine childhood immunization

Parents reported a number of barriers to getting their child immunized. Many of the barriers reported had a sizeable influence on the likelihood of missing or delaying a vaccine. For example, among parents of 0-4 year olds, those who report experiencing difficulty making an appointment are over 3x as likely to have missed or delayed their child's vaccine. Pandemic-related barriers like clinic closures were similarly impactful, increasing the odds of missing or delaying a child's vaccine by 3.3x.

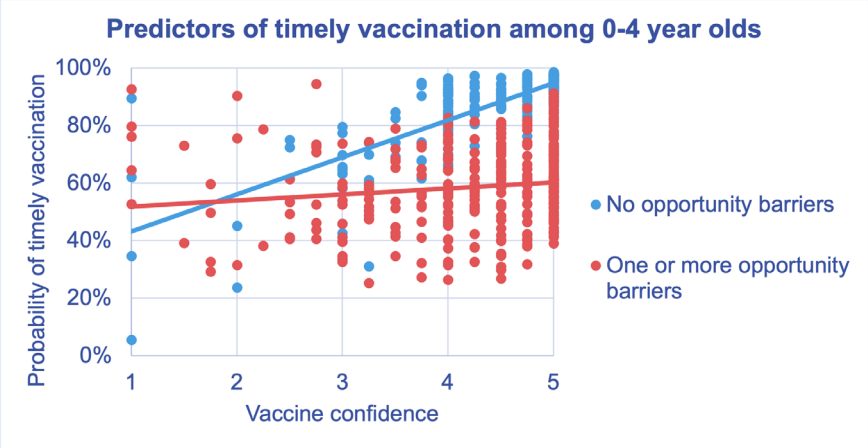
Respondents who intentionally delayed (n=247) or missed (n=173) a child's routine vaccination cited COVID-19-related concerns among their selected reasons. These include the fear of contracting COVID-19 at the immunization appointment and/or concerns about routine vaccines interacting with the COVID-19 vaccine.

Though vaccine confidence was generally high among sampled respondents, there are some signs that this may be shifting. Vaccine confidence was measured using a scale derived from the 2019 childhood National Immunization Coverage Survey (cNICS 2019). While agreement with positive statements such as "In general, vaccines help to protect my child's health" was high (90%), there was a marked increase in agreement with statements with a negative valence relative to pre-pandemic data. For example, 24% of parents agreed that "In general, the use of alternative practices, such as homeopathy or naturopathy, can eliminate the need for vaccination", a rate of agreement that is more than twice what was observed by cNICS in 2019.

## Experience with barriers to vaccination substantially decreases timely vaccination, even among the vaccine confident

Logistic regression was used to better understand the factors contributing to timely vaccination using the Capability, Opportunity, and Motivation framework for Behaviour (COM-B) as a guide for variable selection. Generally, cognitive factors such as vaccine confidence, taken here as a measure of Motivation, and self-reported understanding of how and where to find vaccines and vaccine-related information, taken as a measure of Capability were positively associated with timely vaccination. However, among parents reporting experience with one or more barriers to vaccination, a measure of Opportunity, the positive effects of Motivation and Capability were eliminated (Figure 3).

**Figure 3 - Among parents who did not encounter any barriers that limited their opportunity to vaccinate their children, vaccine confidence was positively associated with timely vaccination (blue). For parents who encountered one or more barrier to vaccination, this relationship was absent (orange).**




These finding suggest that intention to vaccinate and positive attitudes toward vaccination on their own are not sufficient to ensure timely vaccination. Rather, encountering barriers that limit the ease and convenience of access to vaccines can thwart the intention to vaccinate even among the positively disposed.

## Parents and caregivers want increased ease, convenience, and access to RCI services to help catch up.

Parents were asked what would make their catch up easier. The top three potential drivers of immunization they identified were:

1. Greater access to vaccine services, such as having RCIs available at their local pharmacy (selected by 34%)

2. Improvements to healthcare services by being able to set up appointments on a convenient time and day (selected by 34%)

3. Tracking and record-keeping support by receiving a reminder when their child is due for an immunization (selected by 34%).

These responses complement the top barriers to vaccination observed by parents, such as difficulty making appointments and uncertainty about which vaccines are needed (particularly among older children), highlighting the importance of facilitating access to vaccination.

# Discussion

Throughout the COVID-19 pandemic, especially during its peak, the delivery of RCIs was disrupted, with 19-25% of parents reporting that their child(ren) missed or delayed a routine immunization. Though most Canadians have high vaccine confidence and intention to routinely vaccinate their children, this study found evidence suggesting that concern about RCIs has increased since March 2020. This heightened concern comes at a time when parents also report a number of barriers to accessing RCIs, some of which directly reflect stresses to the healthcare system since the onset of the pandemic. Respondents reported that more convenient access to RCIs, including their availability in pharmacies and schools, flexibility in making appointments, as well as text or email-based reminders would help them catch up on missed or delayed vaccines.

From a Behavioural Science perspective, this research points to the interaction between cognitive factors such as vaccine confidence and practical factors like the experience of barriers as being crucial in determining the risk of missing or delaying a child's routine immunization. While work to improve confidence in the efficacy, safety, and importance of routine immunizations is an essential part of the effort to drive greater rates of vaccine uptake, even parents with high levels of vaccine confidence are at greater risk of missing their child's appointment if faced with one or more barriers. The results of this study furnish an inventory of such barriers, along with a 'wish list' of potential drivers that could increase the ease of vaccination, pointing the way toward policy goals that could measurably contribute toward Canada's vaccine coverage goals as we recover from the pandemic and into the future.

# For Further Information

To learn more about this project or other Impact and Innovation Unit activities, please contact the team at iiu-uii@pco-bcp.gc.ca.

# Related Resources

- Global public perceptions about the importance of vaccines for children since the COVID-19 pandemic: Results from the April 2023 UNICEF report.
- Vaccination coverage in Canadian children: Results from the 2019 and 2021 cNICS.
- COVID-19 pandemic fuels largest continued backslide in vaccinations in three decades: Results up to 2021 from WHO and UNICEF.