

# Tailoring Deadlines to Improve Childhood Immunization Timeliness

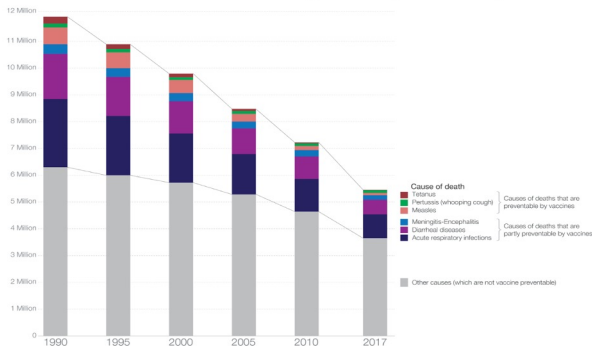
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# Early-childhood immunization

## Global number of child deaths per year – by cause of death

Our World in Data

Shown is the number of children younger than 5 years who died in a year. The height of the bar shows the total number of deaths with colored sections showing the number of children who died of diseases that are wholly or partially preventable by vaccines. The number of child deaths for which there are vaccines available declined from 5.5 million deaths in 1990 to 1.8 million deaths 27 years later.



Data source: based on data from the Institute for Health Metrics and Evaluation (IHME). The data visualization is available at [OurWorldInData.org](https://ourworldindata.org). There you find research and more visualizations on global development.

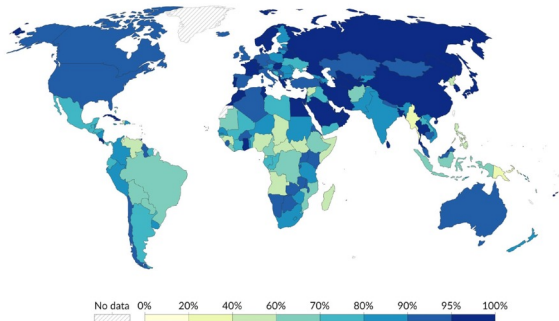
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1/3 of under-5 deaths are vaccine preventable

# Early-childhood immunization

Share of one-year-olds vaccinated against diphtheria, pertussis, and tetanus, 2021

Share of one-year-olds who received the third dose of the diphtheria, pertussis and tetanus vaccine (DTP3).



Data source: WHO; UNICEF (2022)

[OurWorldInData.org/vaccination](https://OurWorldInData.org/vaccination) | CC BY

Note: Diphtheria and pertussis are infectious respiratory diseases caused by bacteria in the throat and airways. Tetanus is a bacterial infection that leads to severe muscle spasms, fever, headache, and can be fatal.

Even among those who do receive the vaccination, 34% receive it a month or more after when the child was age-eligible and 11% receive it more than three months late (DHS, 2019).

## Deadlines as a Commitment Device

- Deadlines/commitment devices can be effective at overcoming procrastination for preventative health behavior.
- Welfare consequences: Deadlines can reduce overall completion for certain individuals with large cost shocks.
- Feature of early-childhood immunisations: repeated action → use previous behaviour to tailor deadlines/incentives by parent's type.

# Research Question

- **Policy relevance:** Can we use parents' previous behavior to tailor deadlines/incentives for timely immunizations?
- **Econ:** Can we identify the parental type (present bias and cost variance) using previous behavior?

# Setting

Sindh province, Pakistan: 50 million people, 3 million children under 2



Source: Gavi/2020/Asad Zaidi

## - Infant vaccination schedule

| Age       | Vaccine             |
|-----------|---------------------|
| Birth     | BCG, OPV0           |
| 6 weeks   | Penta1, OPV1, Rota1 |
| 10 weeks  | Penta2, OPV2, Rota2 |
| 14 weeks  | Penta3, OPV3, IPV1  |
| 9 months  | Measles1            |
| 15 months | Measles2            |

- 94% of 1-year-olds have had at least one vaccine
- 35% have had all vaccines
- 1/3 receive it more than a month late

# Design

**Baseline household survey:** measures of present bias and cost variance, deadline preference, treatment randomization.

**Treatments:** Incentive payments with or without deadlines in place until child is 24 months old.

**Immunization behavior:** Test for effect of treatments on remaining immunizations.

# Interventions

Randomised at the household level:

- **Control:** Status quo
- **T1. Payment with No Deadline:** Receive an additional 500 PKR (\$2) when the child receives the vaccine (till the age of 2).
- **T2. Payment with Strict Deadline:** Receive an additional 500 PKR (\$2) if the child receives the vaccine within one week of the eligible date.
- **T3. Payment with Lax Deadline:** Receive an additional 500 PKR (\$2) if the child receives the vaccine within one month of the eligible date.