Impact of the COVID-19 pandemic and national TCV introduction on enteric fever diagnosis in Nepal

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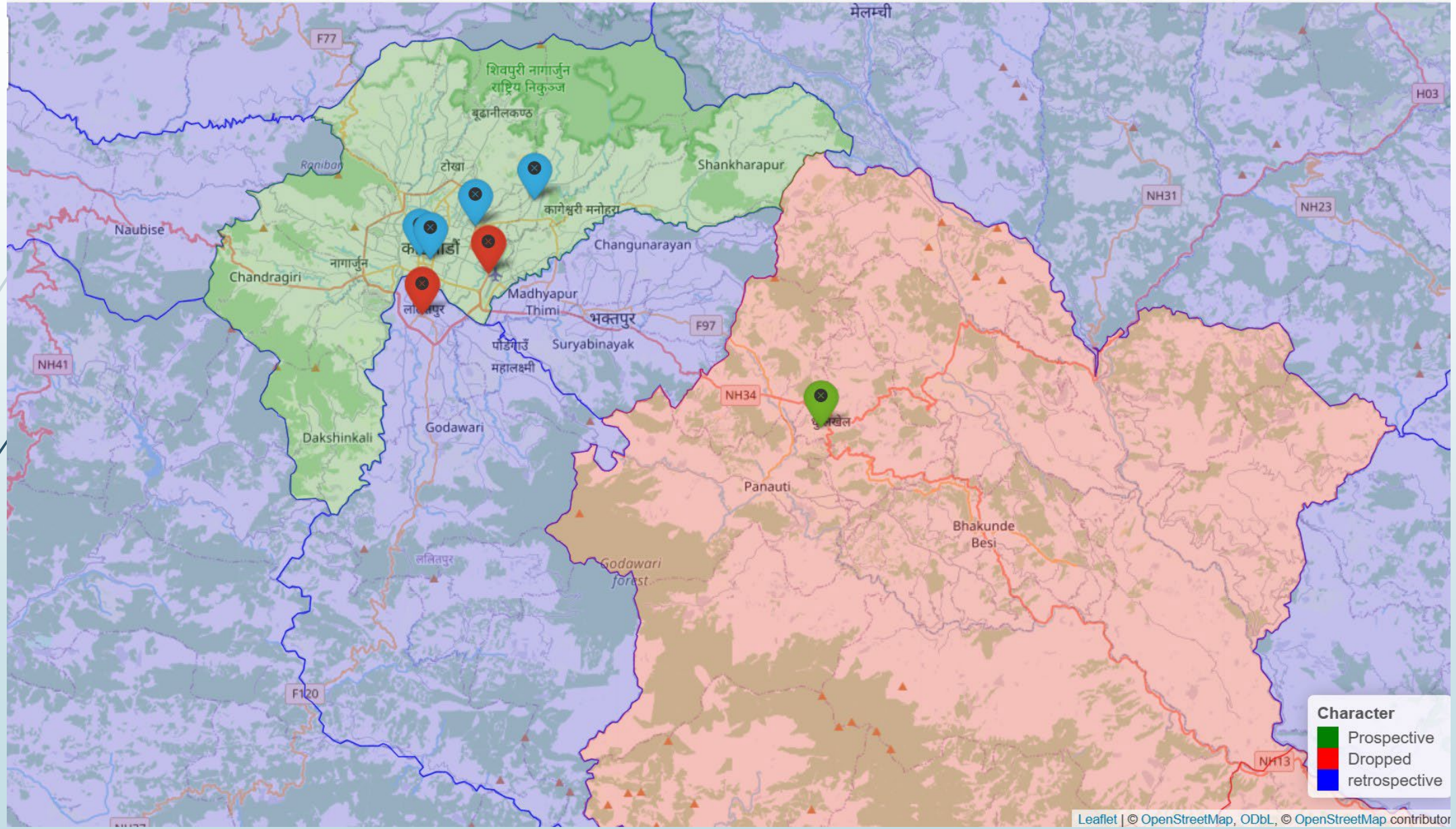
Introduction

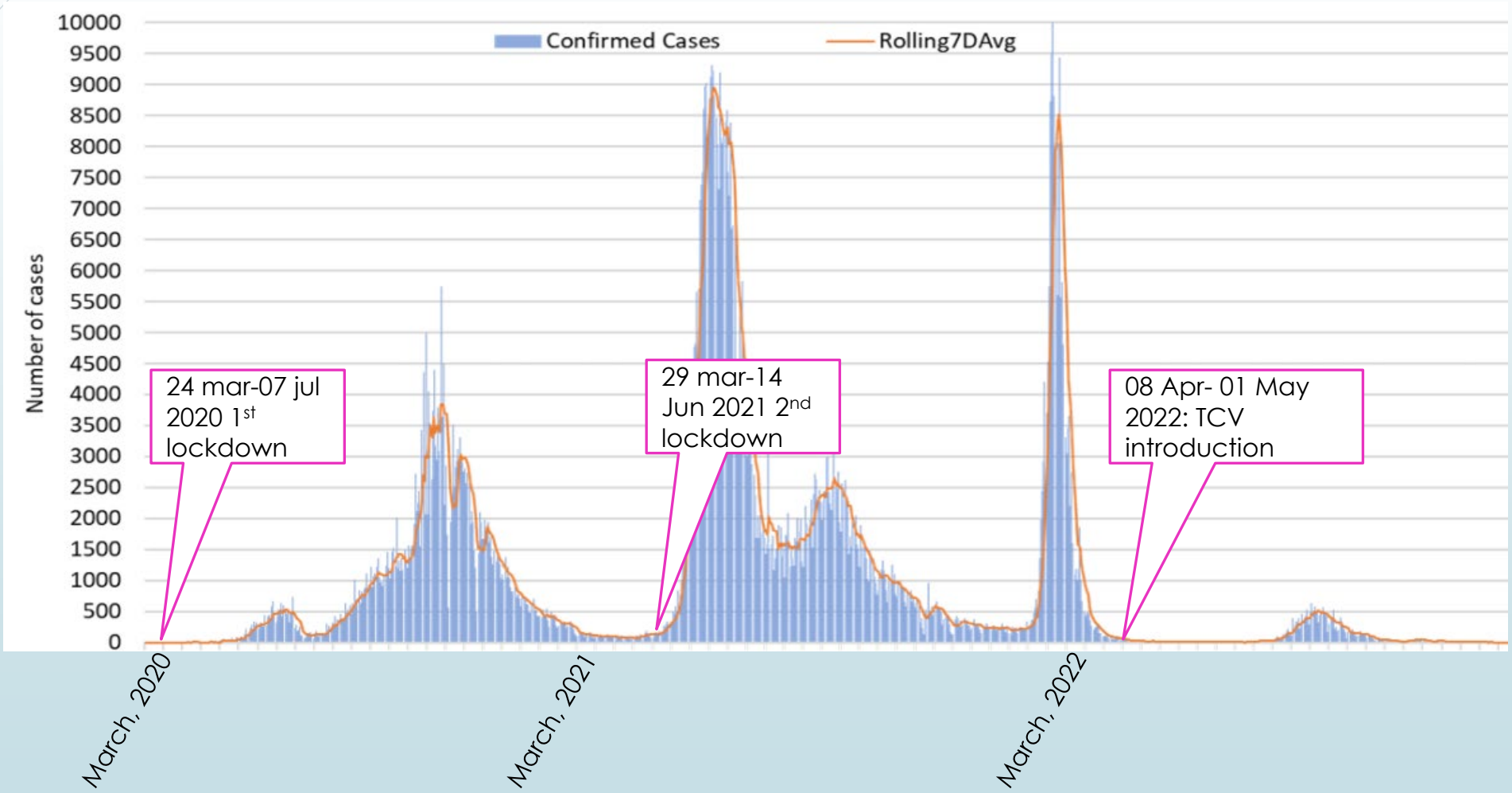
- Over 9 million typhoid fever cases and 110,000 deaths globally
- Incidence rates of typhoid infection were 330 (95%CI: 230-480) and 268 (95%CI: 202-362) per 100,000 person-years in Kathmandu and Kavre respectively.
- Surveillance of Enteric Asia Project (SEAP) is hospital based surveillance of enteric fever ongoing since Oct 2016 in Nepal

(WHO 2023; Garrett et al, *Lancet Global Health,* 2022)

SEAP Study sites (Phase III)



Epidemiological curve of PCR confirmed SARS-CoV-2 in Nepal



TCV introduction

- Nepal introduced a typhoid conjugate vaccine (TyphiBeV) in April 2022
- Catchup campaign: 15m -15 years child
- has introduce in EPI at 15 m of age

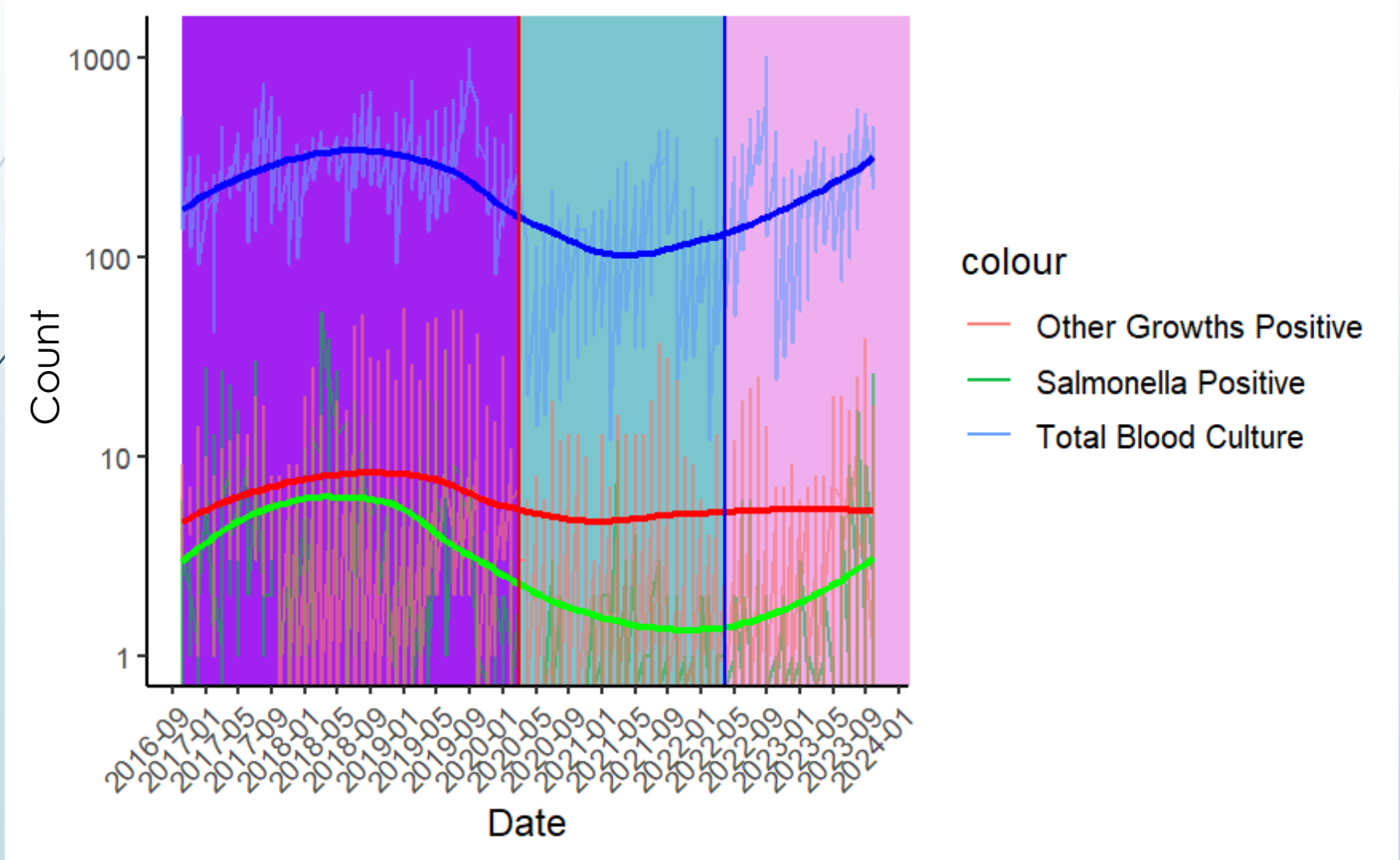
Objectives

- To evaluate the impact of the COVID 19 pandemic and national TCV introduction on diagnosis of enteric fever in Nepal
- To determine whether TCV introduction among children under age of 15 years has shifted the age distribution of typhoid fever in Nepal

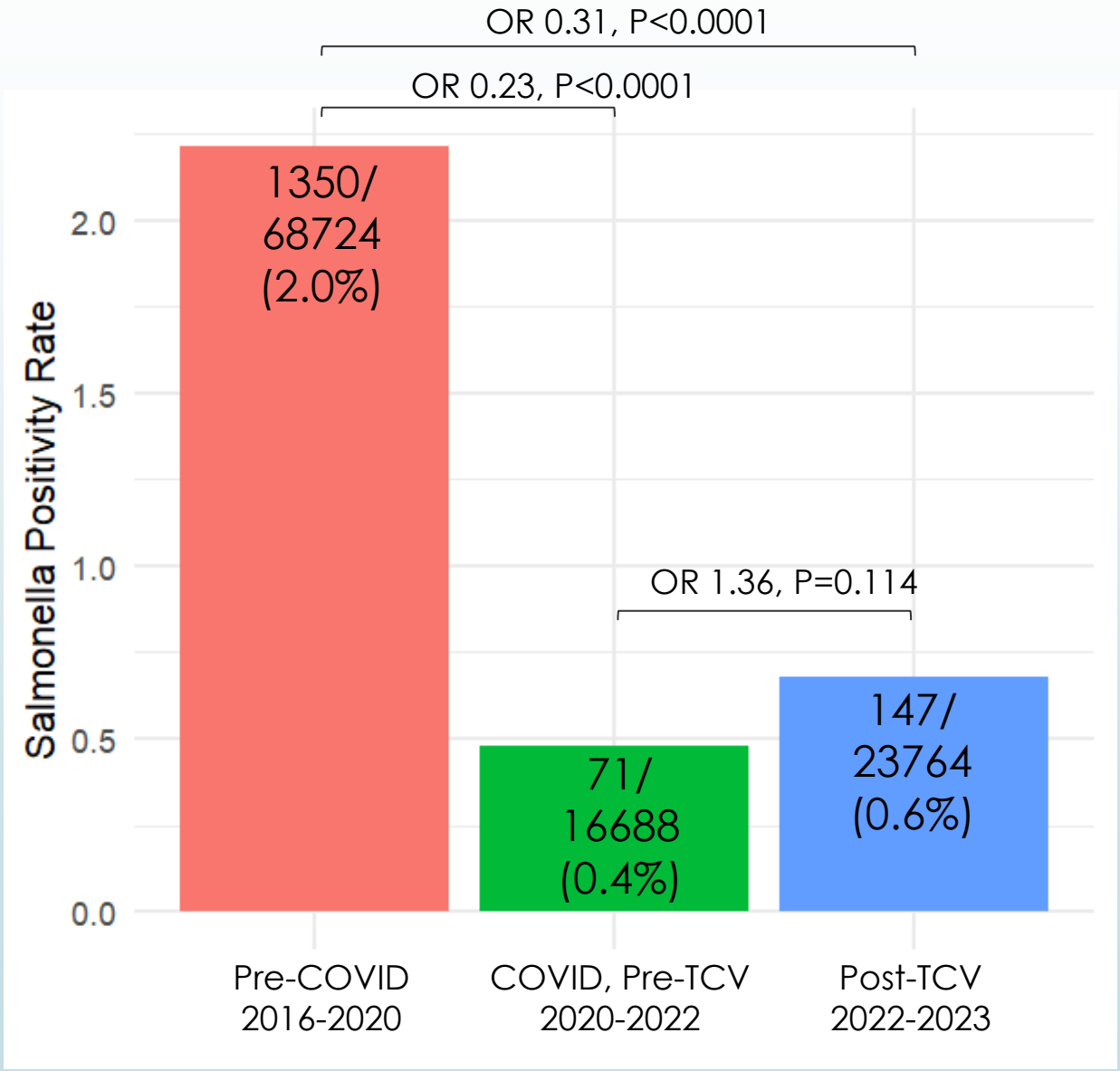
Methods

- Collected data on total blood cultures, cases of typhoidal *Salmonella* and other than typhoidal *Salmonella* pathogens from October 2016 to October 2023 at five SEAP sites
- Analyzed the trend of blood culture numbers, typhoidal *Salmonella* positivity rates, and rates of positivity for pathogens other than typhoidal *Salmonella* during three different periods
  - Before COVID 19 pandemic: October 2016 to March 2020
  - During pandemic, prior to TCV introduction: April 2020 to April 2022
  - Post TCV introduction: May 2022 to October 2023
- Used multivariable logistic regression assessing Typhi positivity with fixed effects for month, study site and study period
- Compared the age distribution of typhoidal *Salmonella* cases pre-TCV vaccine introduction (Jan 2018-Apr 2022) and post-TCV introduction (May 2022-Oct 2023) periods

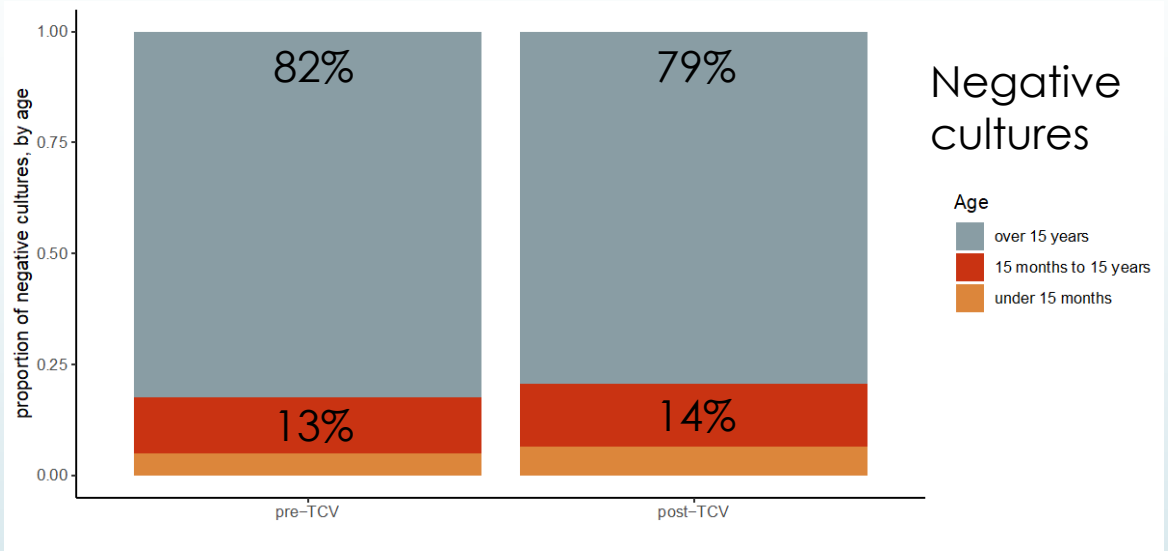
Trends in blood cultures performed and typhoidal *Salmonella* recovered

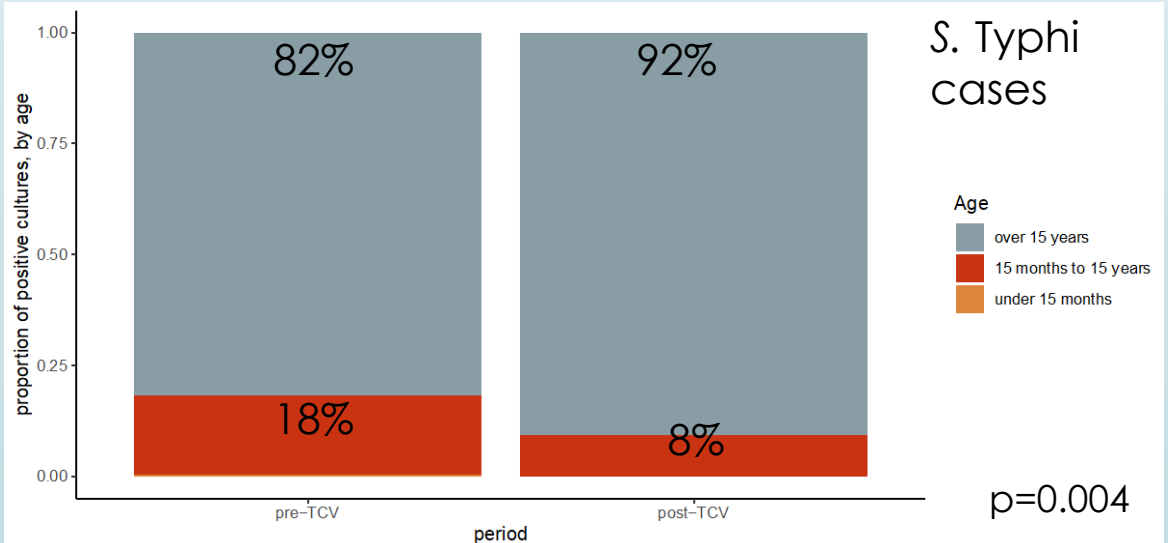


Salmonella positivity rate by study period



In the post-TCV era, an even higher proportion of typhoid cases identified among >15 year olds





Conclusions

- Blood culture positivity for typhoidal *Salmonella* was substantially lower following onset of COVID-19 pandemic and remained low following TCV introduction
- Potential explanations for these changes include:
  - changes in healthcare seeking patterns
  - reductions in typhoid transmission due to
    - movement restrictions
    - increased emphasis on hygiene practices
    - reductions in eating outside the household
- Adolescents and young adults continue to have substantial burden of typhoid in Nepal, and policies should consider inclusion of this age group for TCV receipt

Acknowledgements

Child Health Research Foundation

Samir Saha

Senjuti Saha

Sira Jam Munira

Nepal, Team

Dipesh Tamrakar

Shiva Naga

Rajeev Shrestha

Sabin Bikram Shahi

Nishan Katuwal

Dr Basudha Shrestha

Rabin Pokhrel

Dr Pratibha Bista

Ram PSD Adhikari

The Aga Khan University

Farah Qamar

Irum Fatima Dehraj

Junaid Iqbal

Tahir Yousafzi

Massachusetts General Hospital

Richelle Charles

University of Toronto

Isaac Bogoch

UC Davis

Kristen Aiemjoy

Stanford University

Jason Andrews

Steve Luby

Sabin Vaccine Institute

Denise Garrett

Jessica Seidman

Kate Doyle

Ali Carter


Thank you
for your
attention