

# THE LANCET

## Global Health

### Supplementary appendix 1

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Abbas KM, van Zandvoort K, Brisson, Mark Jit M. Effects of updated demography, disability weights, and cervical cancer burden on estimates of human papillomavirus vaccination impact at the global, regional, and national levels: a PRIME modelling study. *Lancet Glob Health* 2020; published online Feb 24. [http://dx.doi.org/10.1016/S2214-109X\(20\)30022-X](http://dx.doi.org/10.1016/S2214-109X(20)30022-X).

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## **A1. PRIME model and software**

The Excel-based version of Papillomavirus Rapid Interface for Modelling and Economics (PRIME) and documentation are accessible online (<http://primetool.org/>) for use by country program managers and planners to facilitate country-specific decision-making in low and middle-income countries.<sup>31</sup> We have also developed an R package (*prime*) which was used to generate the vaccine impact estimates used in this study and is accessible on GitHub (<https://github.com/lshmtm-vimc/prime>). The program for this study analysis is accessible on GitHub ([https://github.com/vaccine-impact/prime\\_update](https://github.com/vaccine-impact/prime_update)) to facilitate reproducibility and reusability.

## A2. Disability weights and morbidity attribution

**Table A2.1. Disability weights and durations for different phases of cervical cancer in GBD 2001 and 2017 studies.**

Cervical cancer phase/sequela	Health state description <sup>23</sup>	Disability weights		Duration	
		GBD 2001	GBD 2017	GBD 2001	GBD 2017
Diagnosis and primary therapy phase	has pain, nausea, fatigue, weight loss and high anxiety	0.08	0.288 (0.193 - 0.399)	1 year	4.8 months
Controlled phase	has a chronic disease that requires medication every day but minimal interference with daily activities	0.04 (A) 0.11 (B) 0.13 (C) 0.17 (D/E) (A, B, C, D, E - WHO mortality stratum)	0.049 (0.031 - 0.072)	4 years	remainder of time after attributing other sequelae
Metastatic phase	has severe pain, extreme fatigue, weight loss and high anxiety	0.78	0.451 (0.307 - 0.6)	6 months	9.21 months
Terminal phase	has lost a lot of weight and regularly uses strong medication to avoid constant pain	0.78	0.54 (0.377 - 0.687)	6 months	1 month

**Table A2.2. Morbidity attribution**

Morbidity attribution by age of incidence	Morbidity attribution by age of prevalence
$YLD = I * DW * L$ I = incidence (new cases in a given year) DW = disability weight L = average duration of case until remission or death (years)	$YLD = P * DW * L$ P = prevalence (in a given year) DW = disability weight L = average duration of case in a given year (maximum of 1 year)

Incidence, prevalence and mortality for a given age and specific country are defined as follows:

- Incidence at age  $a$  in country  $c$  is the proportion in the specified population who were diagnosed with cervical cancer (at age  $a$ ).
- Prevalence at age  $a$  in country  $c$  is the proportion in the specified population who had been diagnosed with cervical cancer within the last 5 years and are still alive.
- Mortality at age  $a$  in country  $c$  is the proportion in the specified population who died due to cervical cancer.

### Morbidity attribution to the age of incidence

In the Global Burden of Disease (GBD) 2001 study, morbidity (i.e., YLDs - years lived with disability) was attributed to the age of incidence using GBD 2001-specific disability weights and durations for different phases of cervical cancer.

$$YLD_{a,c} = (\text{incidence}_{a,c} - \text{mortality}_{a,c}) * (\text{duration}_{\text{diagnosis phase}} * \text{disability weight}_{\text{diagnosis phase}} + \text{duration}_{\text{control phase}} * \text{disability weight}_{\text{control phase}}) + \text{mortality}_{a,c} * (\text{duration}_{\text{diagnosis phase}} * \text{disability weight}_{\text{diagnosis phase}} + \text{duration}_{\text{metastatic phase}} * \text{disability weight}_{\text{metastatic phase}} + \text{duration}_{\text{terminal phase}} * \text{disability weight}_{\text{terminal phase}})$$

### Morbidity attribution to the age of prevalence

In GBD 2017 study, morbidity was attributed to the age of prevalence using GBD 2017-specific disability weights and durations for different phases of cervical cancer.

$$YLD_{a,c} = \text{incidence}_{a,c} * (\text{duration}_{\text{diagnosis phase}} * \text{disability weight}_{\text{diagnosis phase}}) + \text{prevalence}_{a,c} * (\text{disability weight}_{\text{control phase}}) + \text{mortality}_{a,c} * (\text{duration}_{\text{metastatic phase}} * \text{disability weight}_{\text{metastatic phase}} + \text{duration}_{\text{terminal phase}} * \text{disability weight}_{\text{terminal phase}})$$

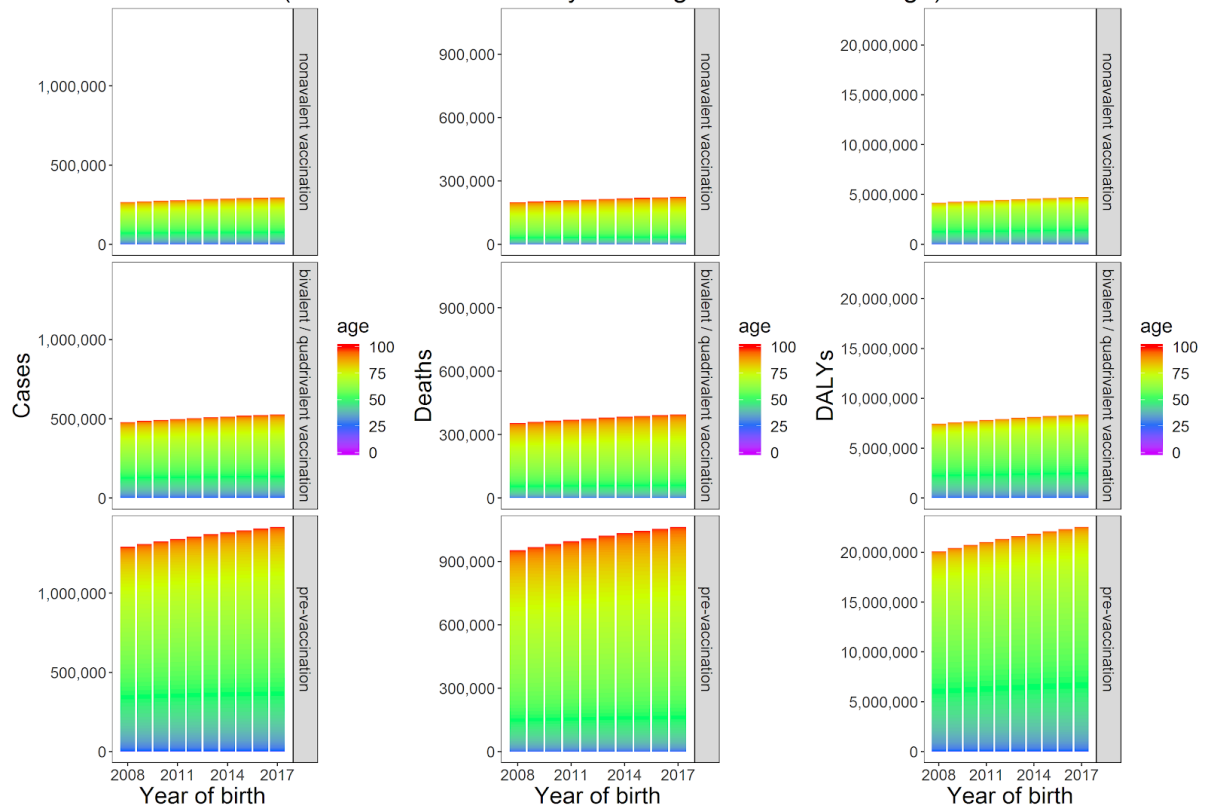
### A3. Comparative scenarios to assess the health impact of HPV vaccination using PRIME

<b>Scenario</b>	<b>Demography</b>	<b>Disability weights</b>	<b>Cervical cancer burden</b>
s1	WHO (2009)	GBD 2001	GLOBOCAN 2012
s2	UNWPP (2019)	GBD 2001	GLOBOCAN 2012
s3	WHO (2009)	GBD 2017	GLOBOCAN 2012
s4	WHO (2009)	GBD 2001	GLOBOCAN 2018
s5	UNWPP (2019)	GBD 2017	GLOBOCAN 2018

#### A4. Cervical cancer burden pre- and post-vaccination of 12-year-old girls at the global level

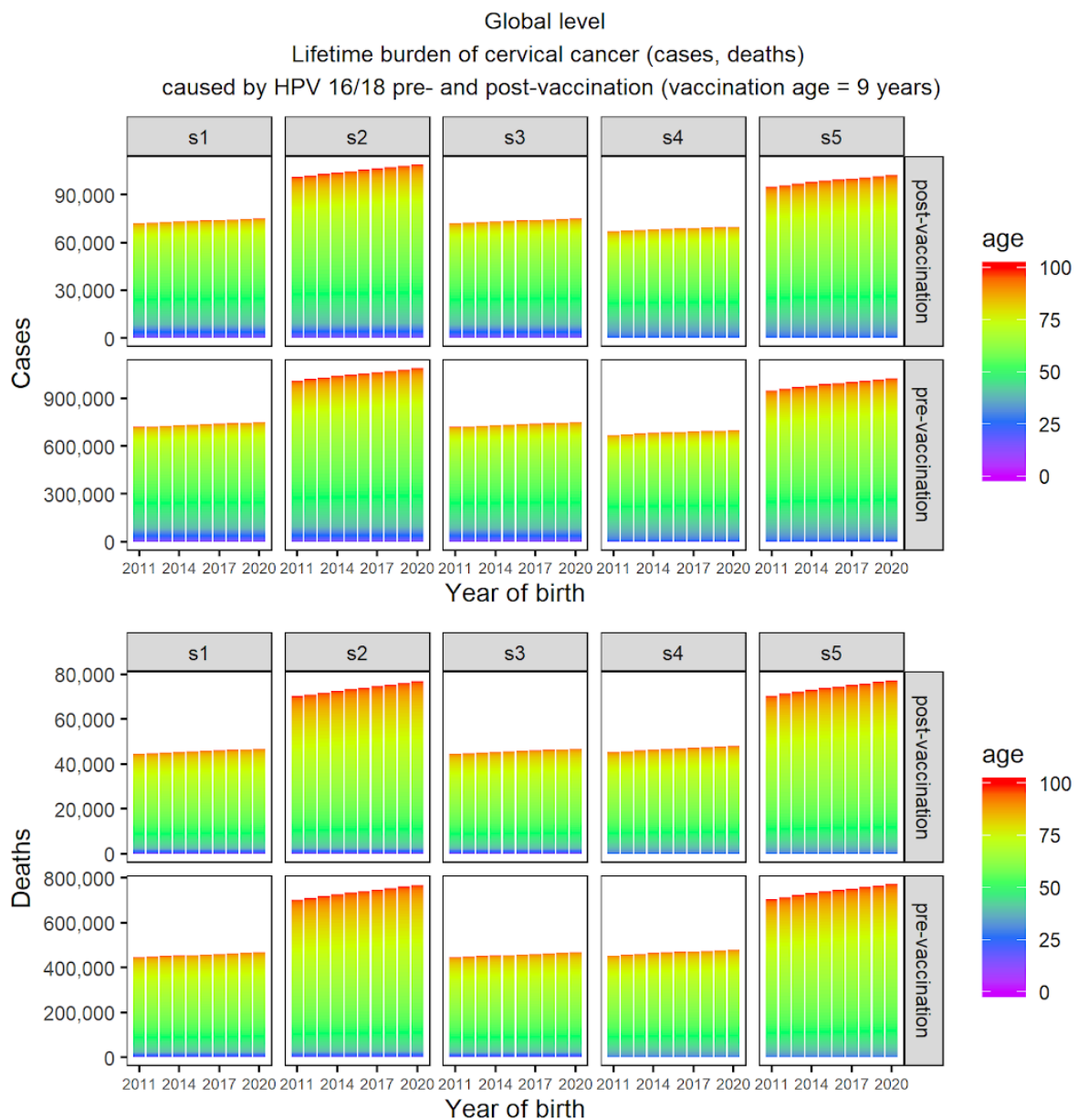
Lifetime cervical cancer burden in terms of cases, deaths and DALYs pre and post bivalent/quadrivalent and nonavalent HPV vaccination of 12-year-old girls at 90% coverage in 177 countries during 2020-2029, which relates to birth cohorts of 2008-2017 (estimates after the combined PRIME updates for demography, disability weights and cervical cancer burden).

Lifetime burden of cervical cancer (cases, deaths, DALYs) pre- and post-vaccination (HPV vaccination of 12-year-old girls at 90% coverage)



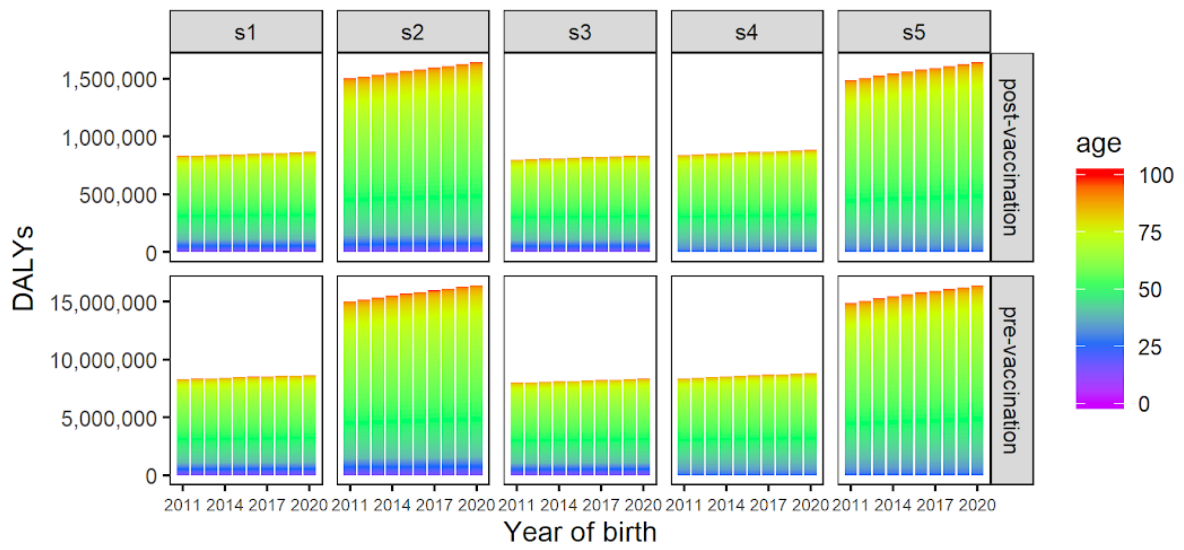
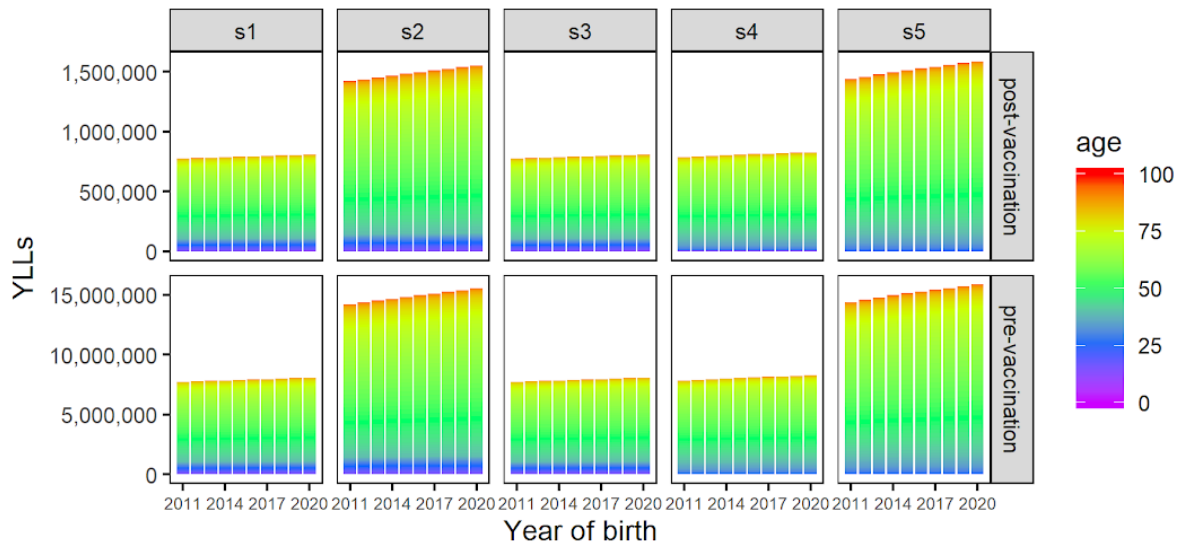
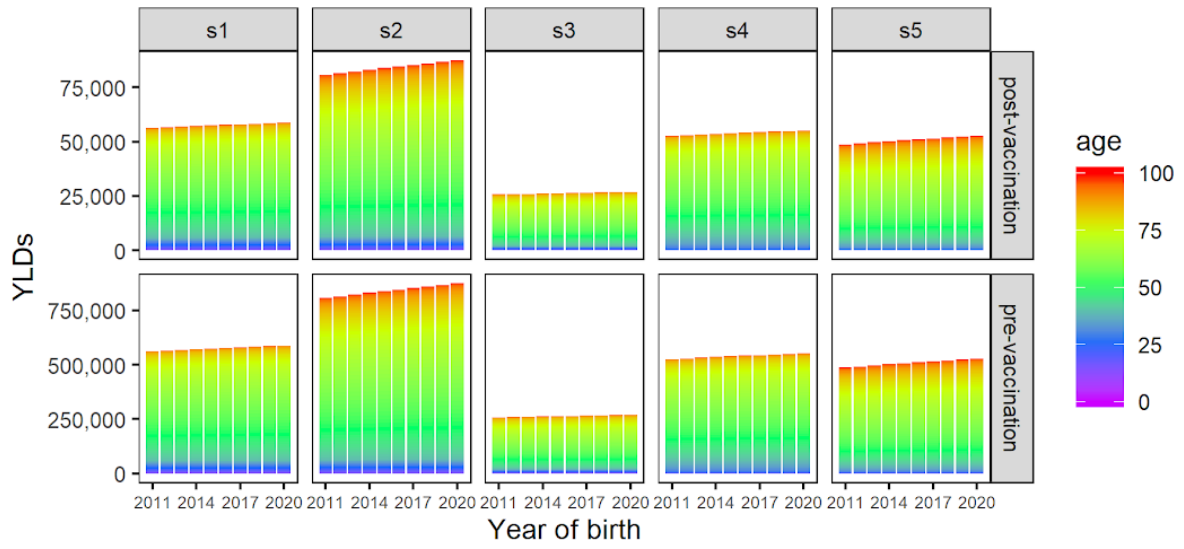
## A5. Cervical cancer burden pre- and post-vaccination at the global level

The lifetime burden of cervical cancer caused by HPV 16/18 and HPV 16/18/31/33/45/52/58 in terms of cases, deaths, YLDs, YLLs and DALYs pre- and post-vaccination at 90% coverage during 2020-2029 in 177 countries for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls. The bivalent/quadrivalent vaccine protects against cervical cancers caused by HPV 16/18 while the nonavalent vaccine protects against cervical cancers caused by HPV 16/18/31/33/45/52/58.

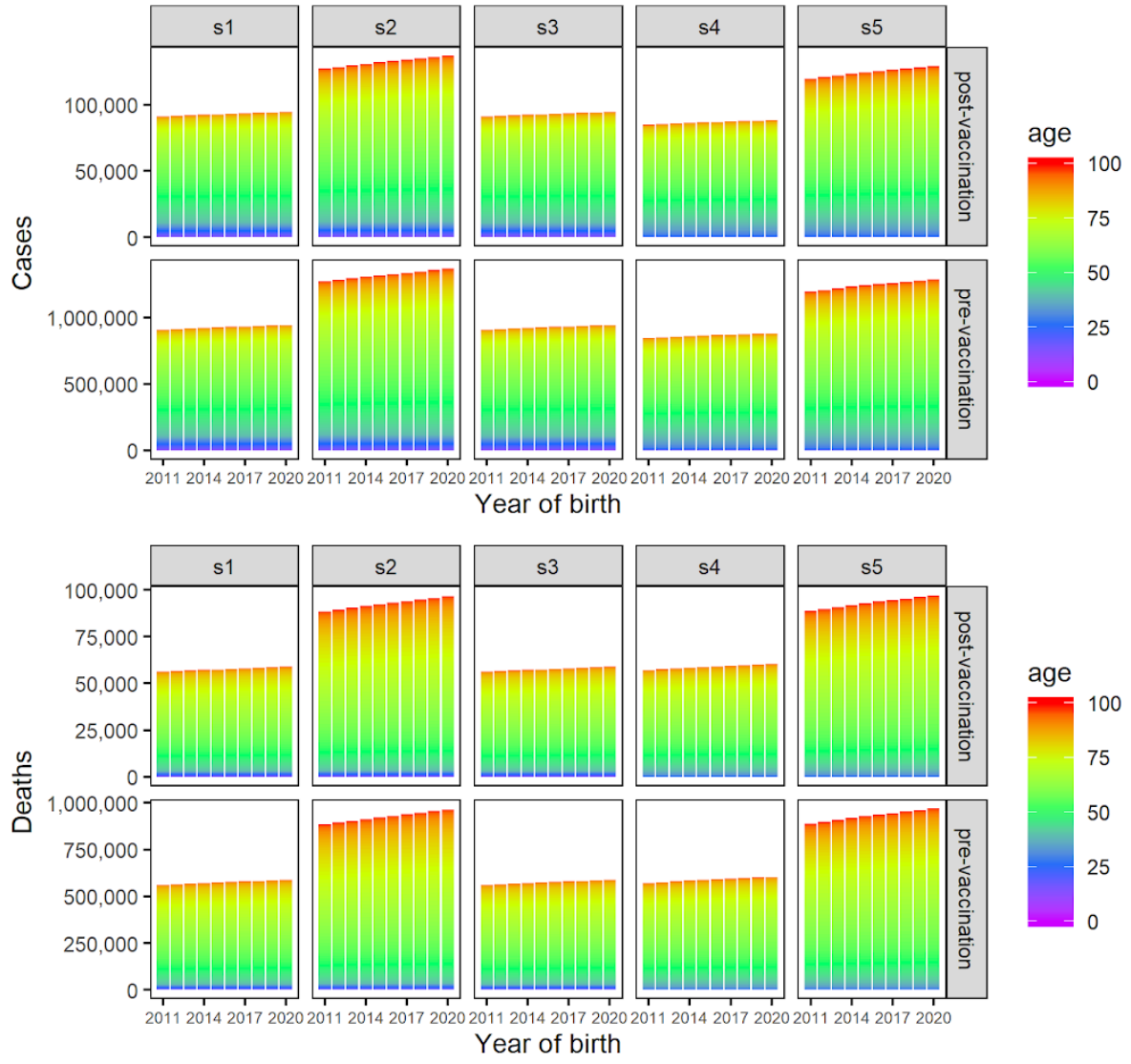


- s1 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden
- s2 - UNWPP 2019 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden
- s3 - WHO 2009 demography, GBD 2017 disability weights, GLOBOCAN 2012 cervical cancer burden
- s4 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2018 cervical cancer burden
- s5 - UNWPP 2019 demography, GBD 2017 disability weights, GLOBOCAN 2018 cervical cancer burden

Global level  
 Lifetime burden of cervical cancer (YLDs, YLLs, DALYs)  
 caused by HPV 16/18 pre- and post-vaccination (vaccination age = 9 years)

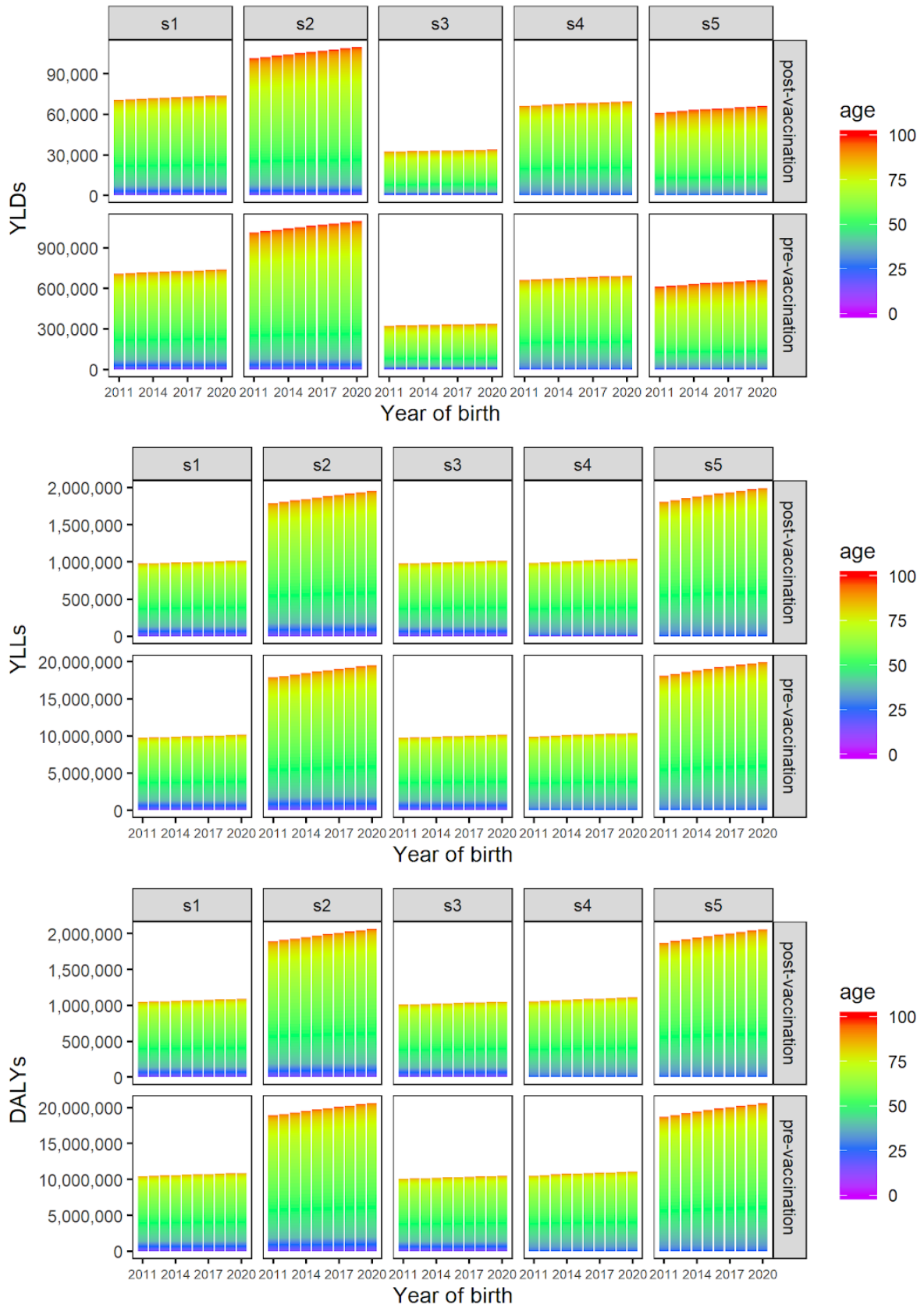


Global level  
 Lifetime burden of cervical cancer (cases, deaths)  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination (vaccination age = 9 years)

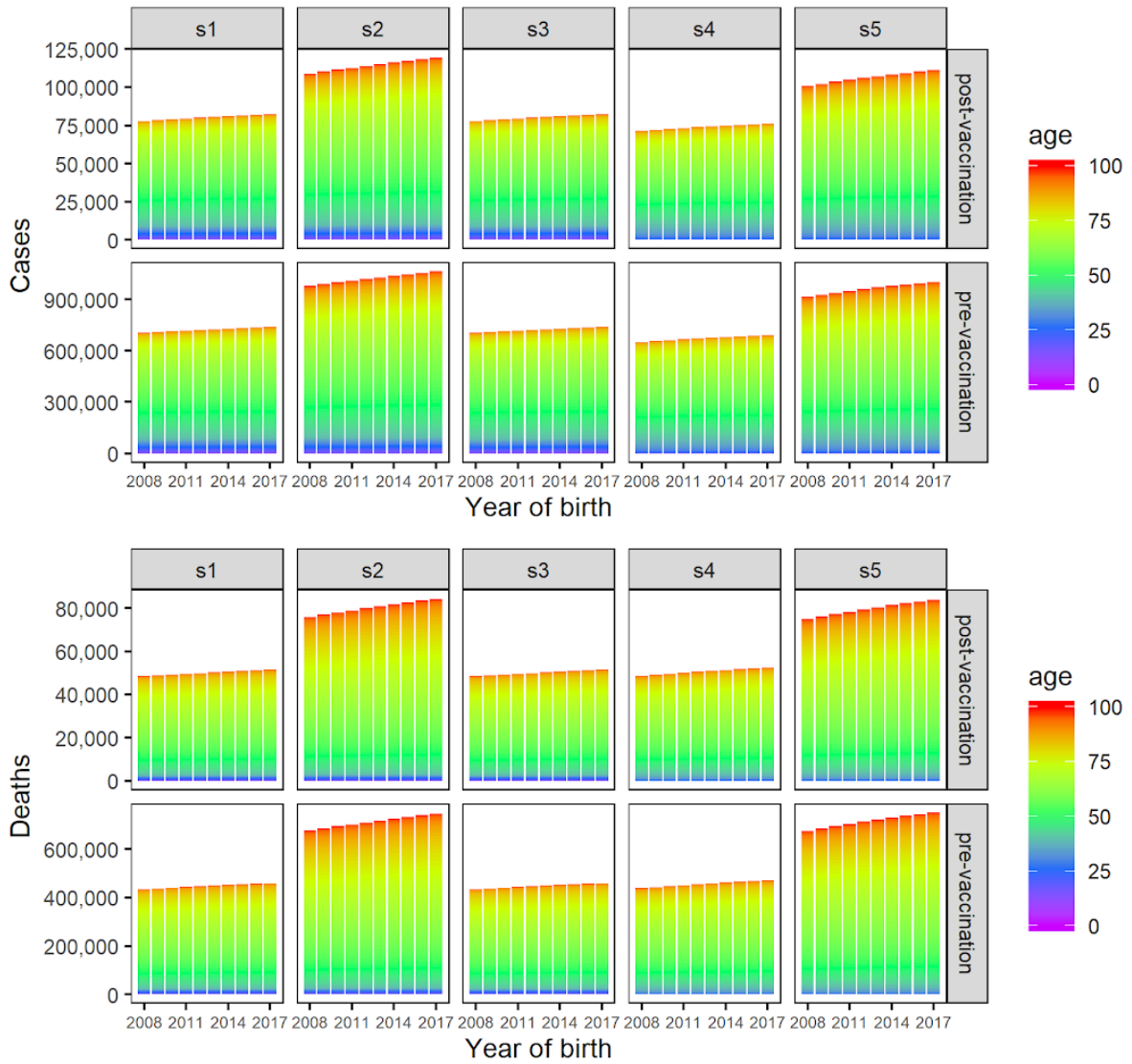




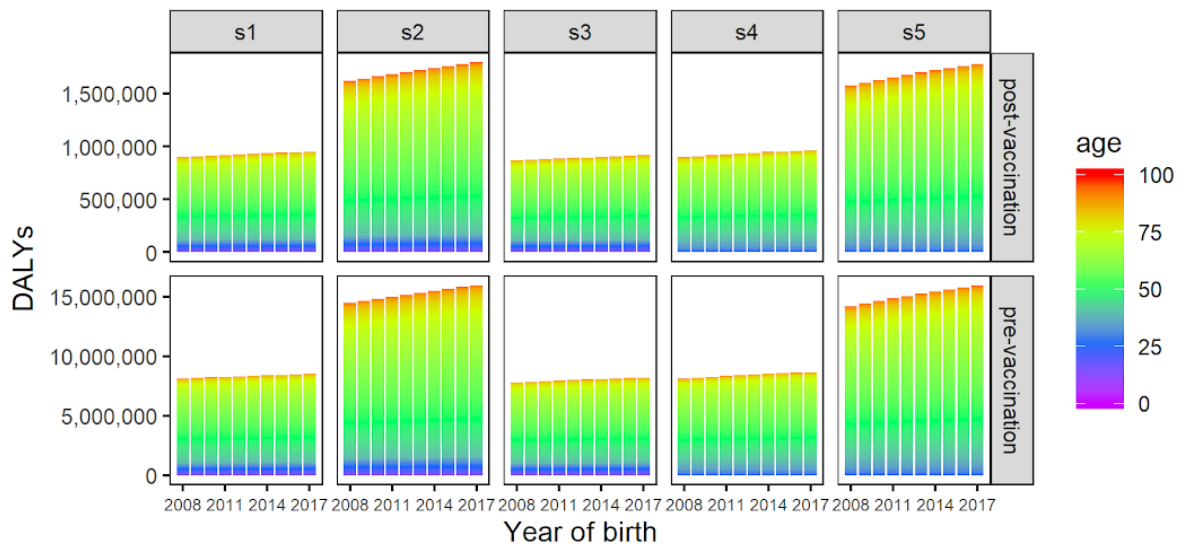
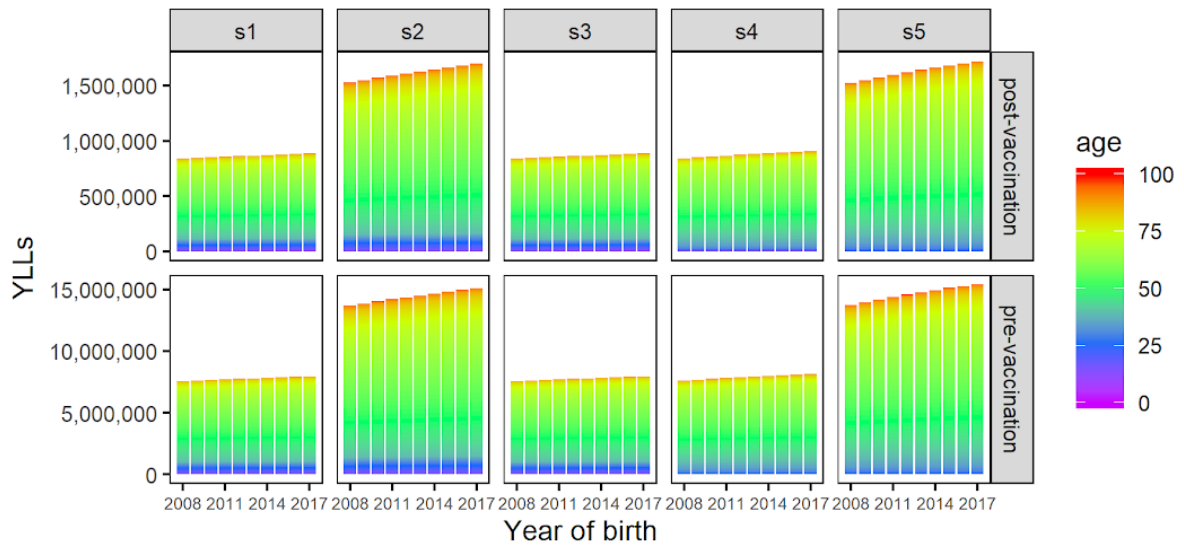
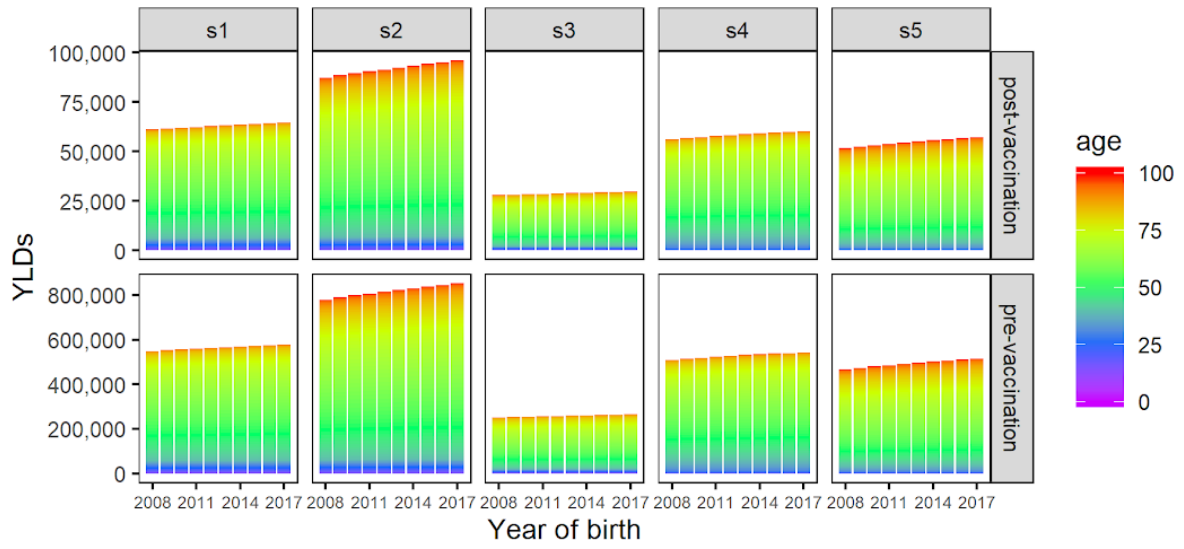
Global level  
 Lifetime burden of cervical cancer (YLDs, YLLs, DALYs)  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination (vaccination age = 9 years)



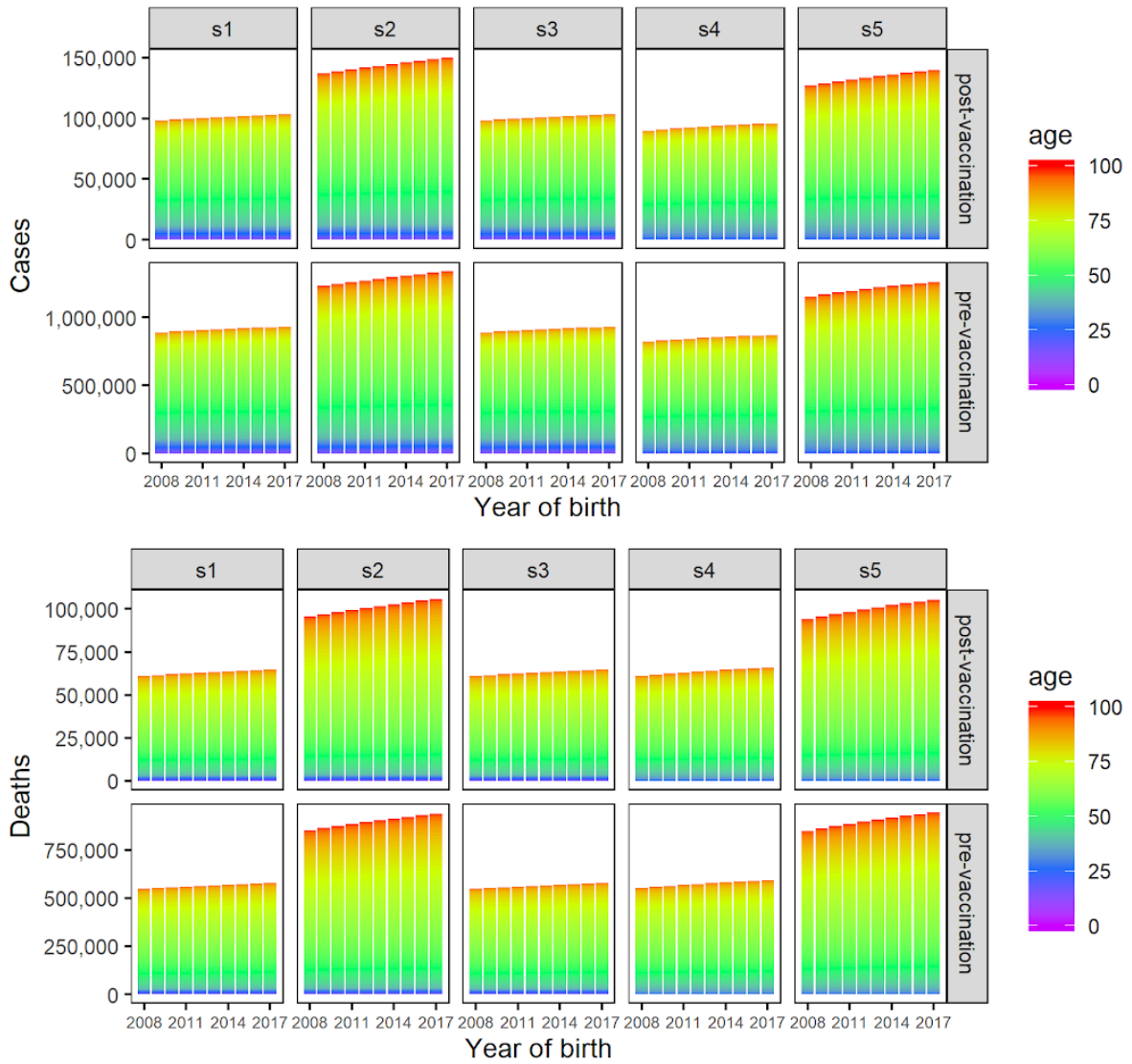
Global level  
 Lifetime burden of cervical cancer (cases, deaths)  
 caused by HPV 16/18 pre- and post-vaccination (vaccination age = 12 years)



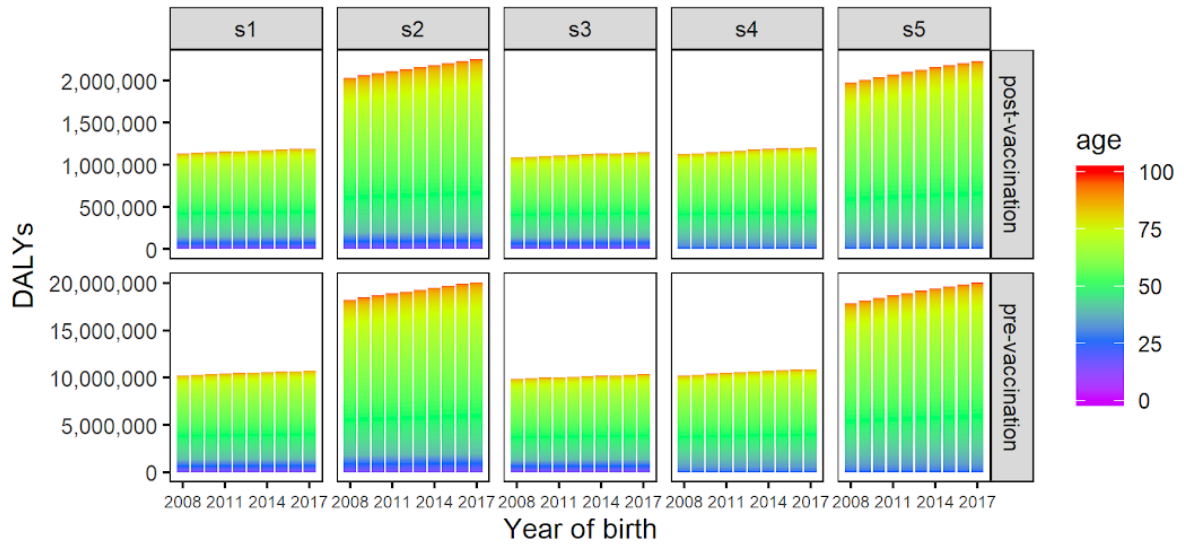
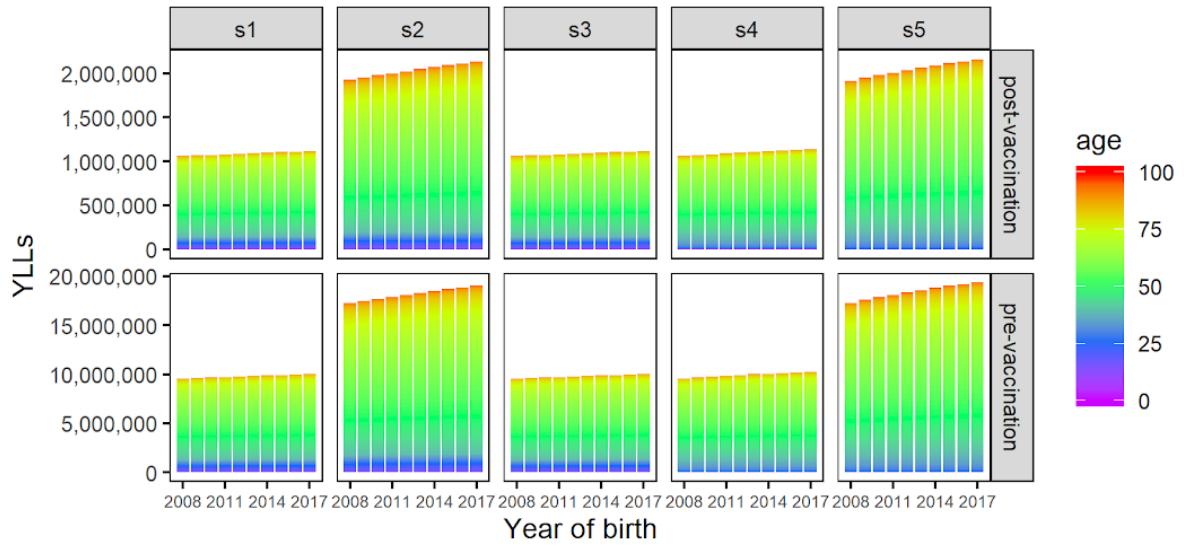
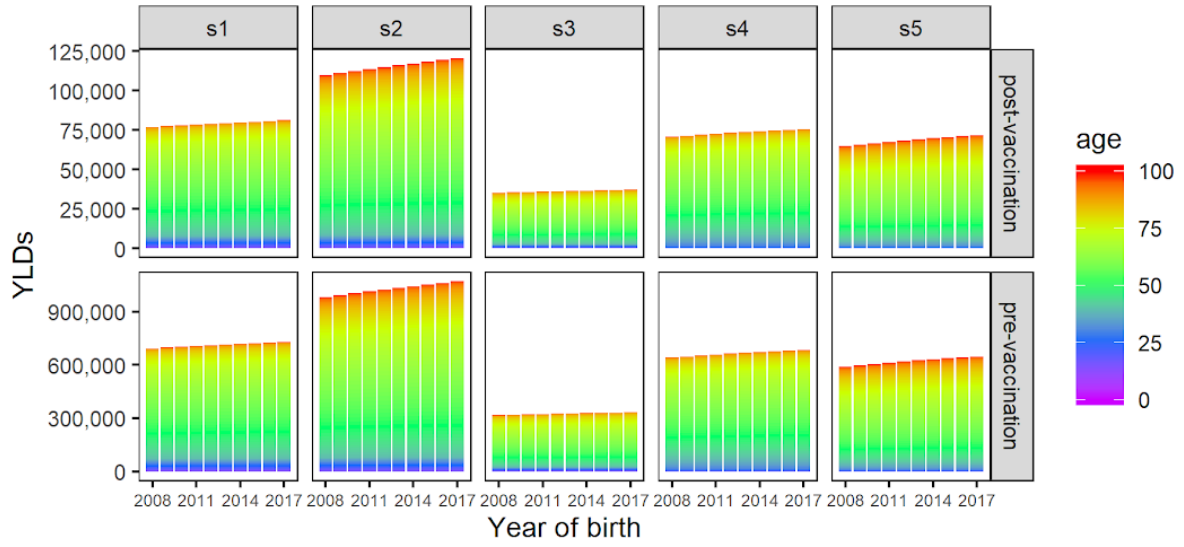
Global level  
 Lifetime burden of cervical cancer (YLDs, YLLs, DALYs)  
 caused by HPV 16/18 pre- and post-vaccination (vaccination age = 12 years)



Global level  
 Lifetime burden of cervical cancer (cases, deaths)  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination (vaccination age = 12 years)



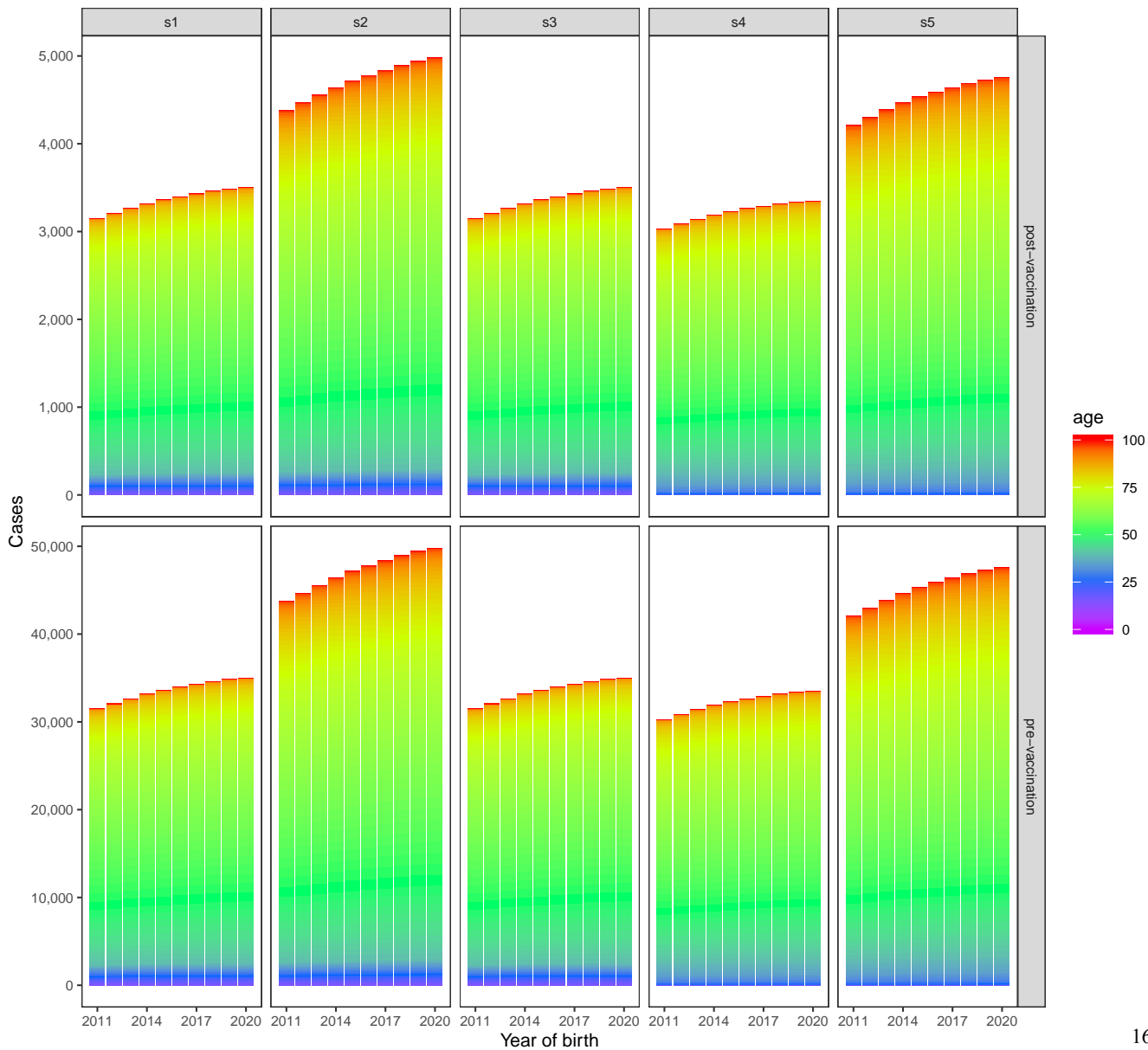
Global level  
 Lifetime burden of cervical cancer (YLDs, YLLs, DALYs)  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination (vaccination age = 12 years)



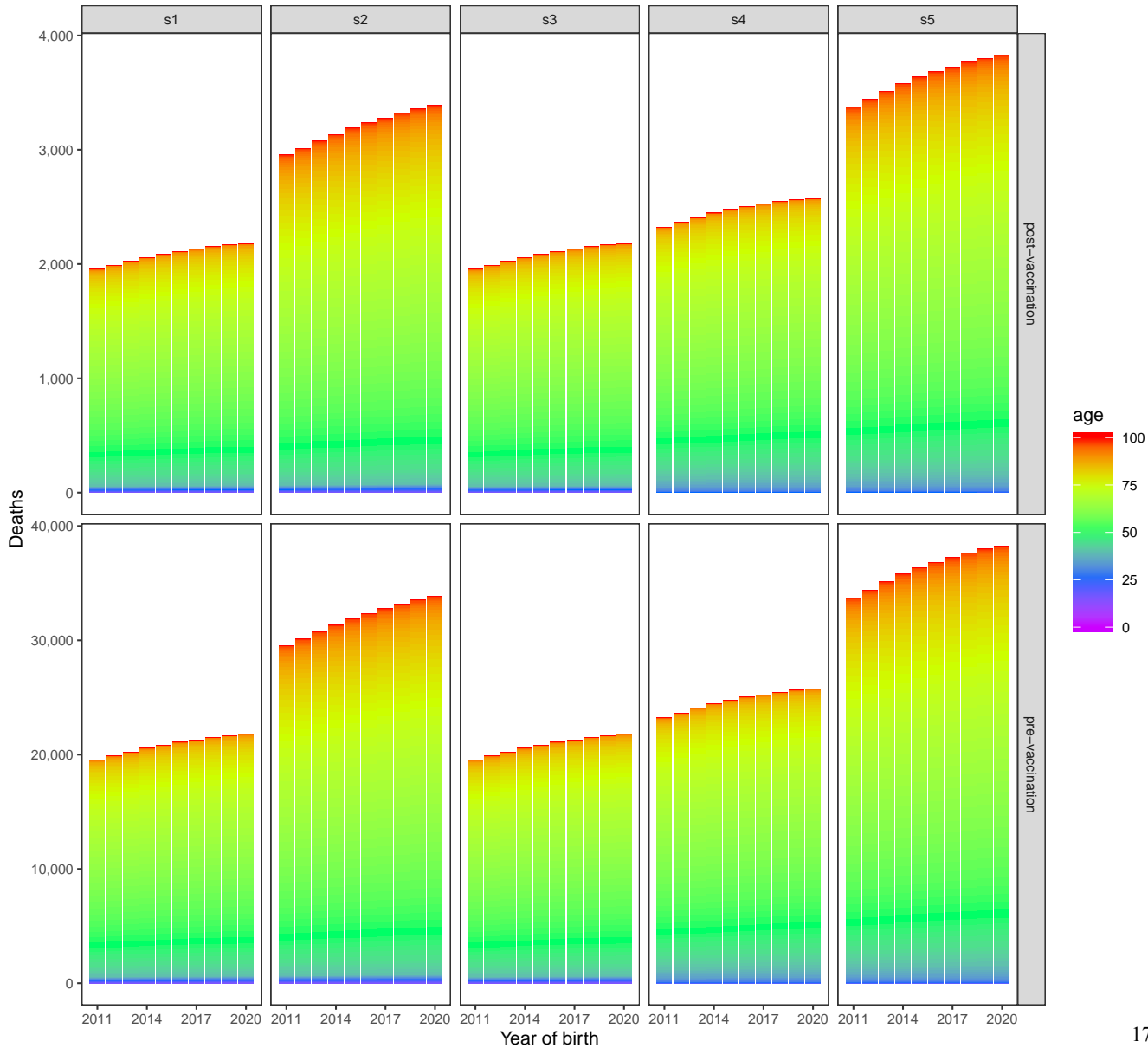
#### **A6. Cervical cancer burden pre- and post-vaccination at the regional level**

The lifetime burden of cervical cancer caused by HPV 16/18 and HPV 16/18/31/33/45/52/58 in terms of cases, deaths, YLDs, YLLs and DALYs pre- and post-vaccination at 90% coverage during 2020-2029 in the 6 WHO regions for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls.

Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

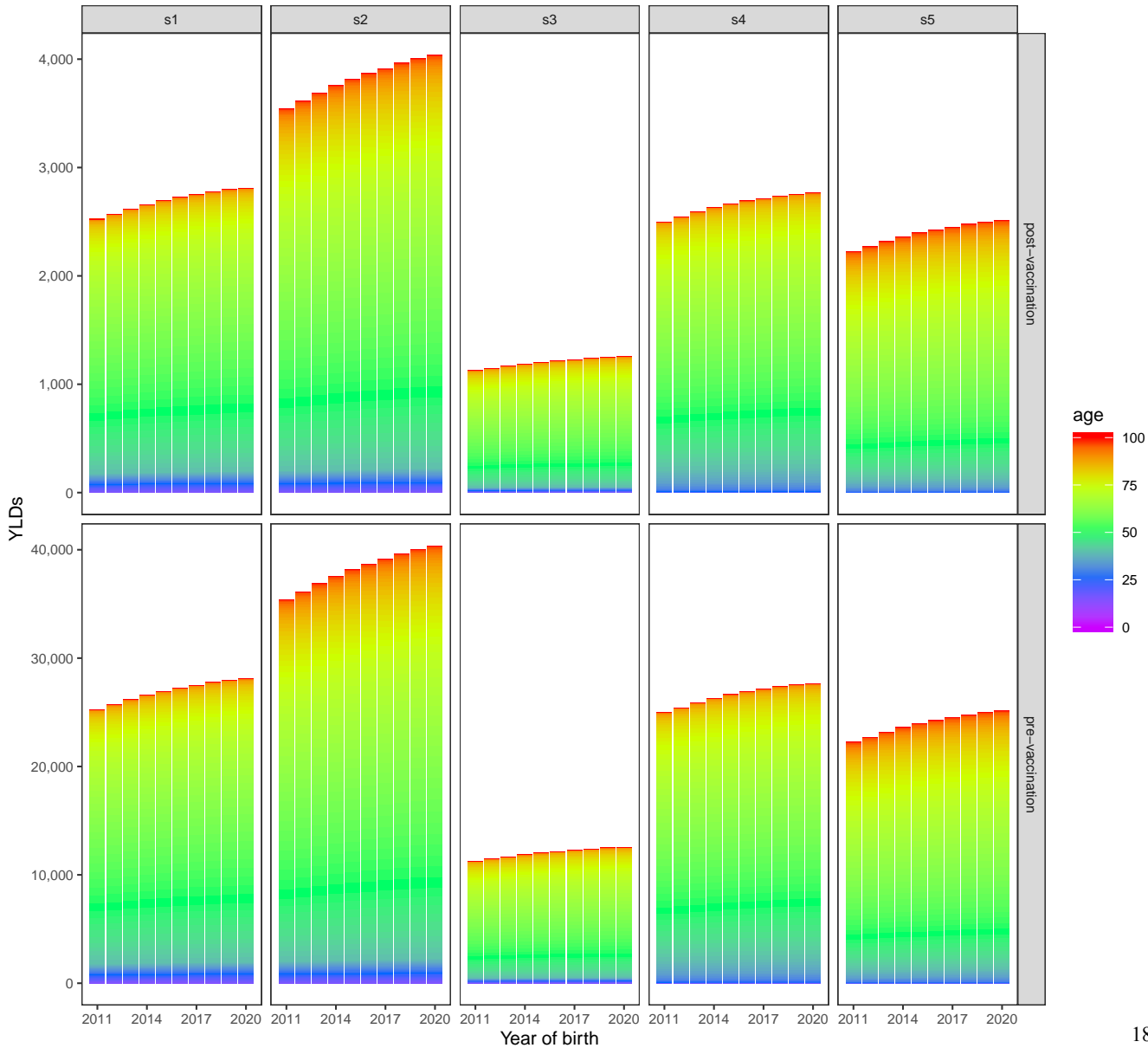


Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

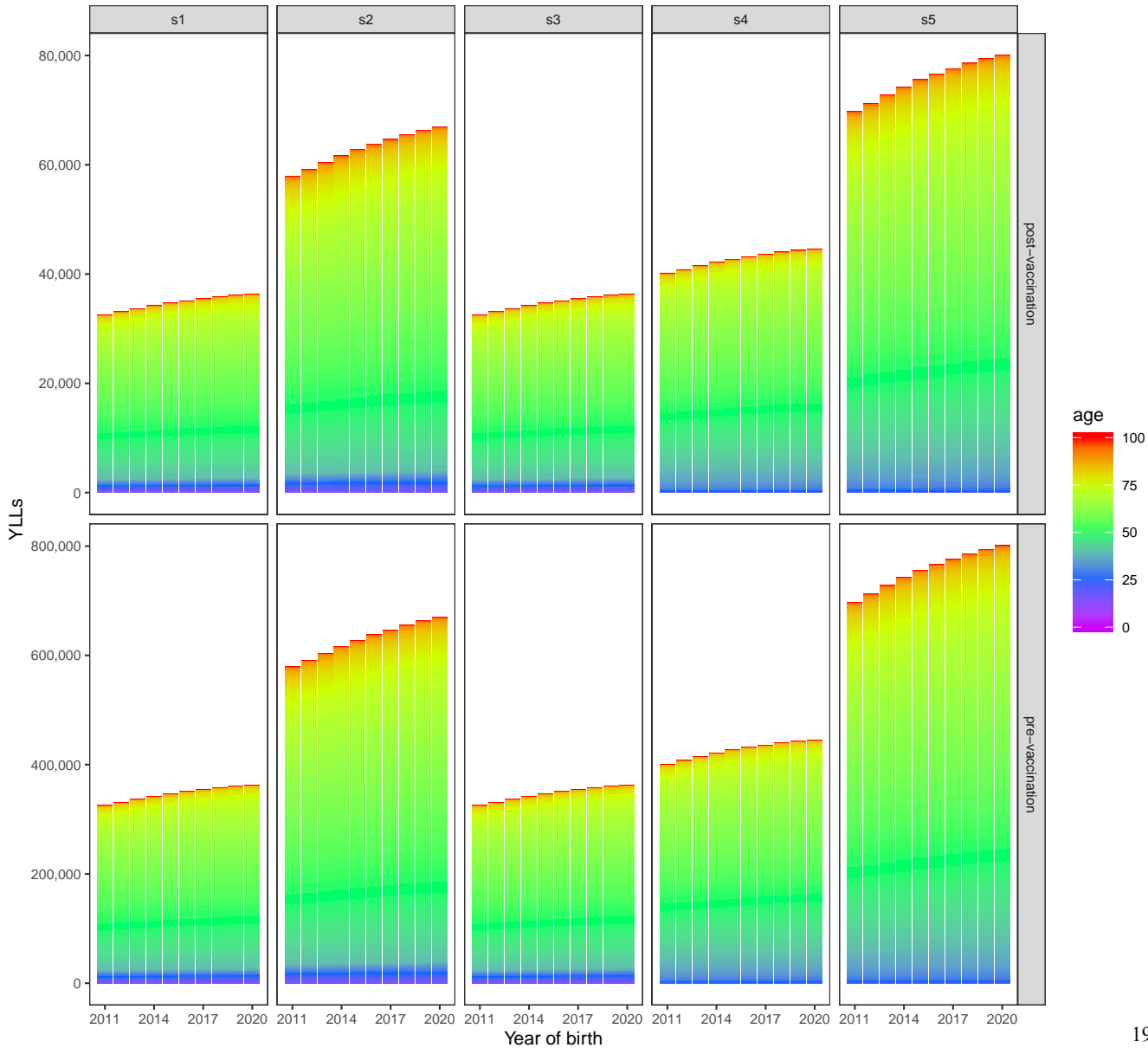




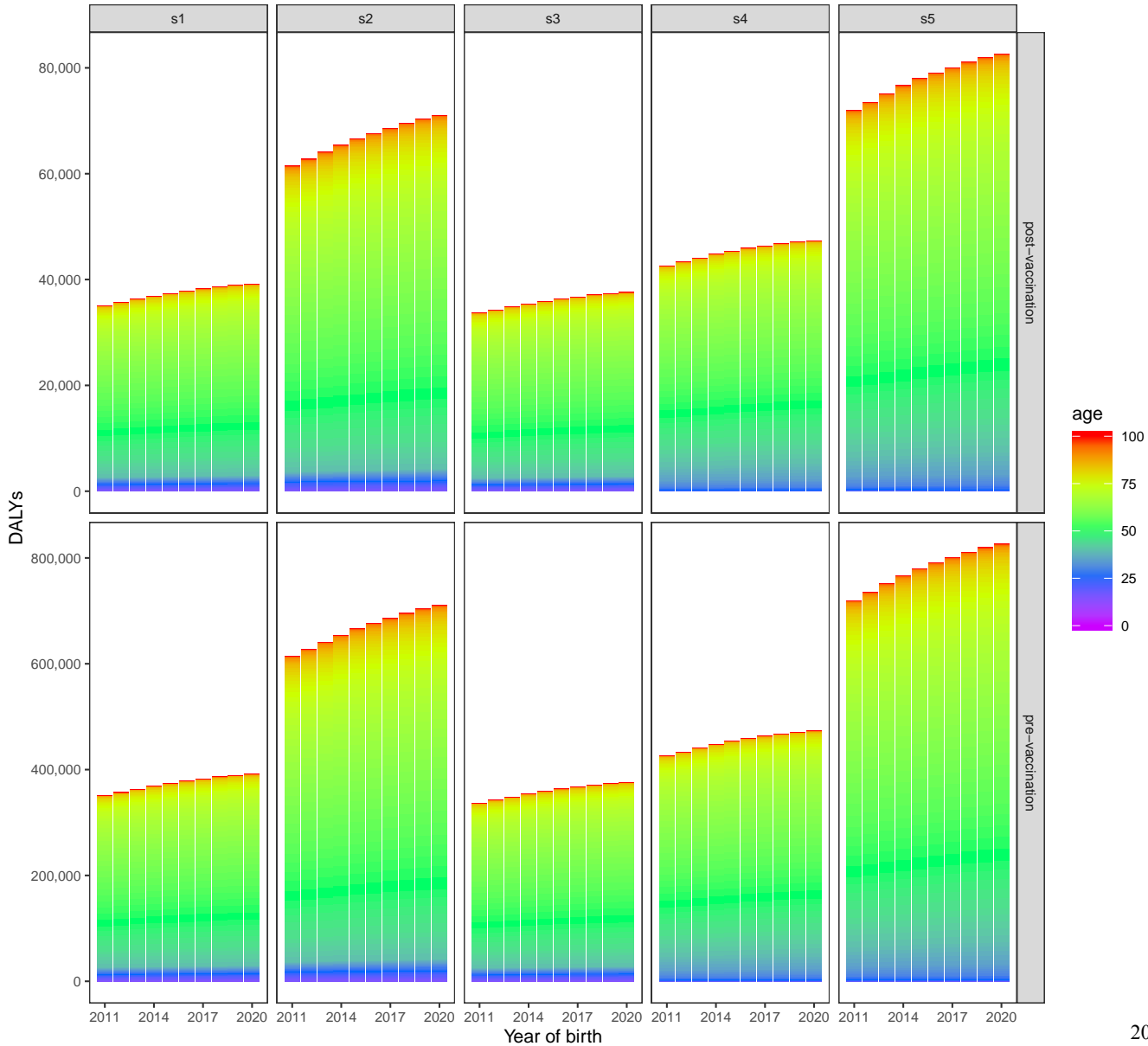
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



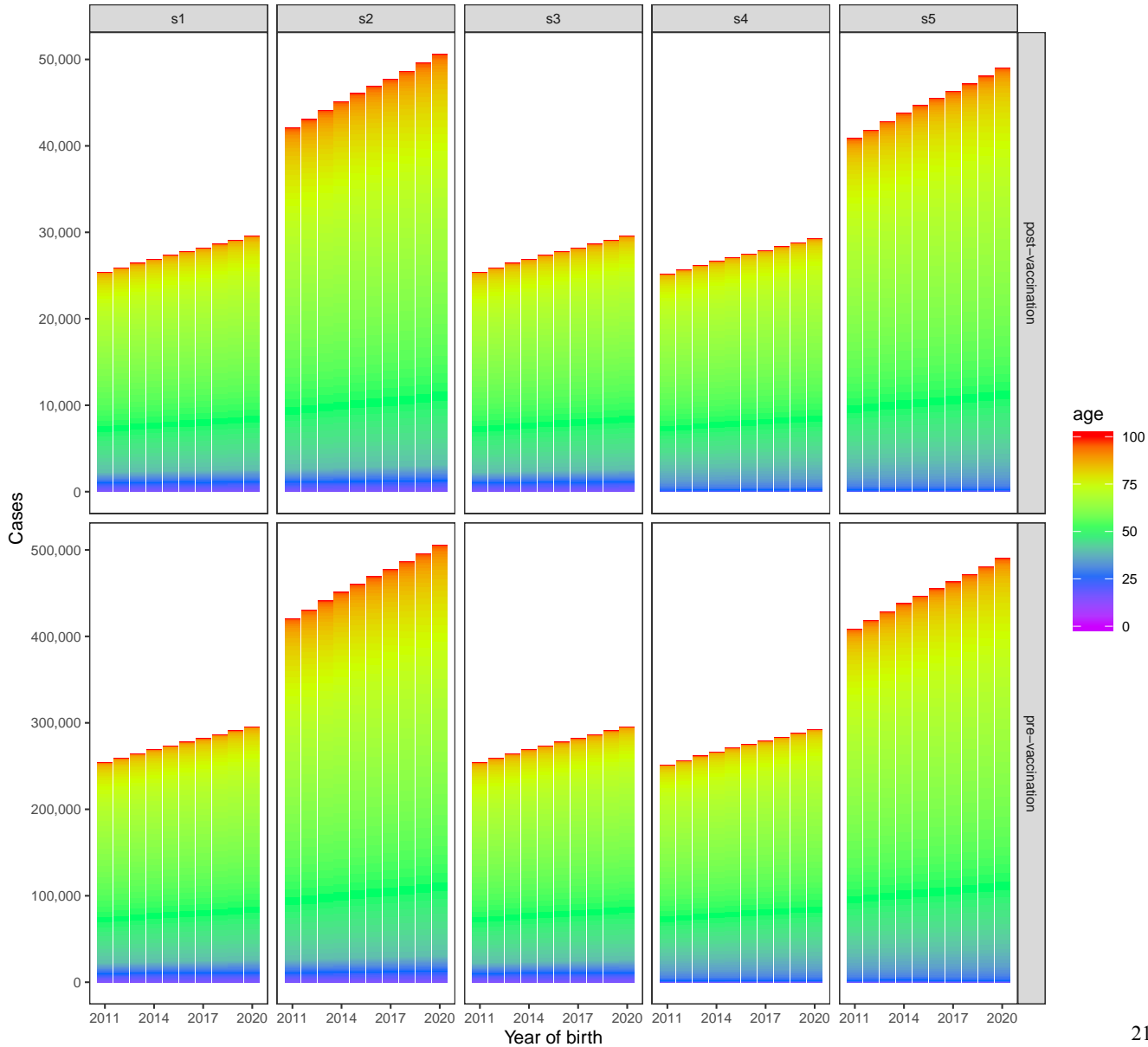
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



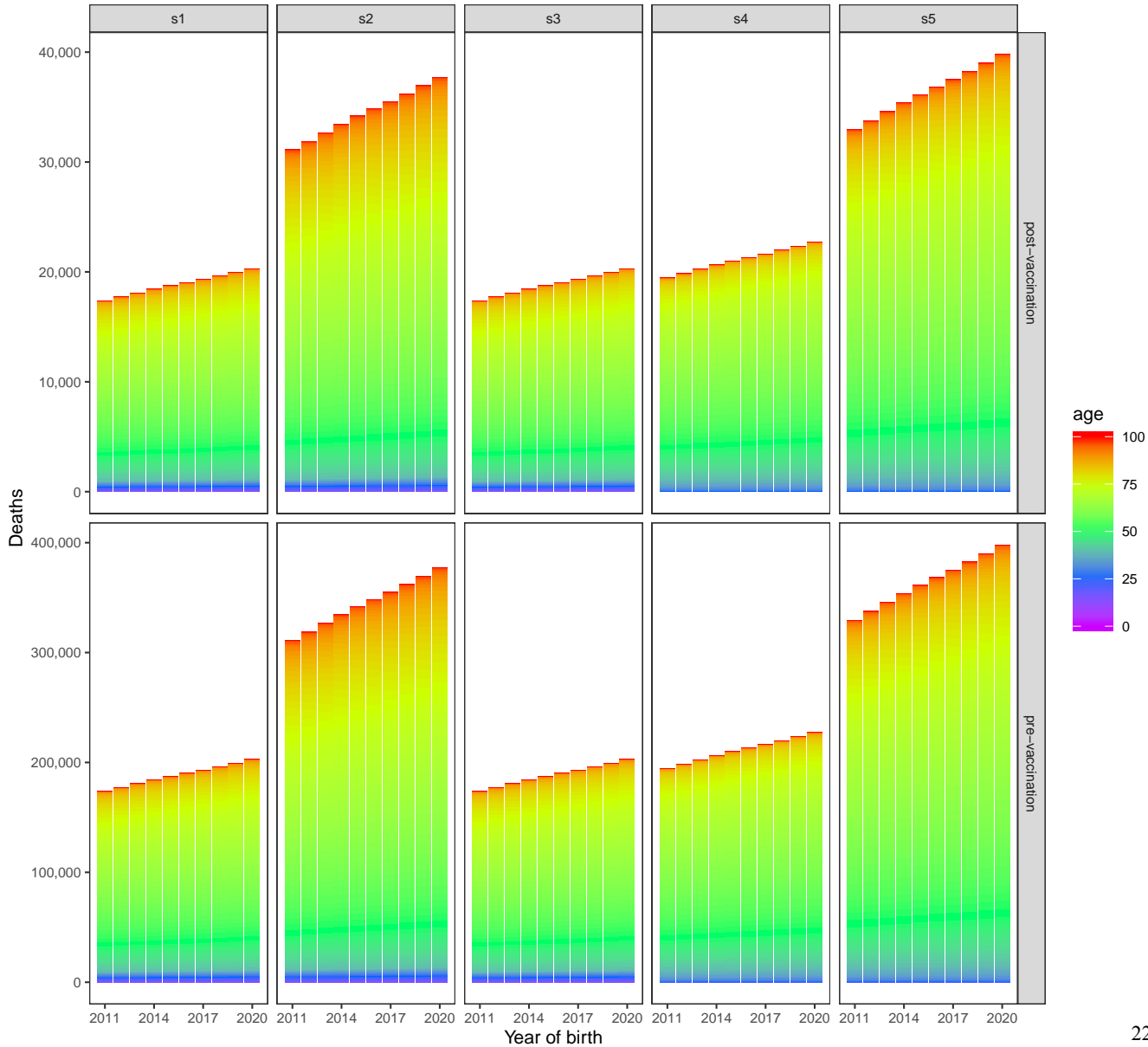
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



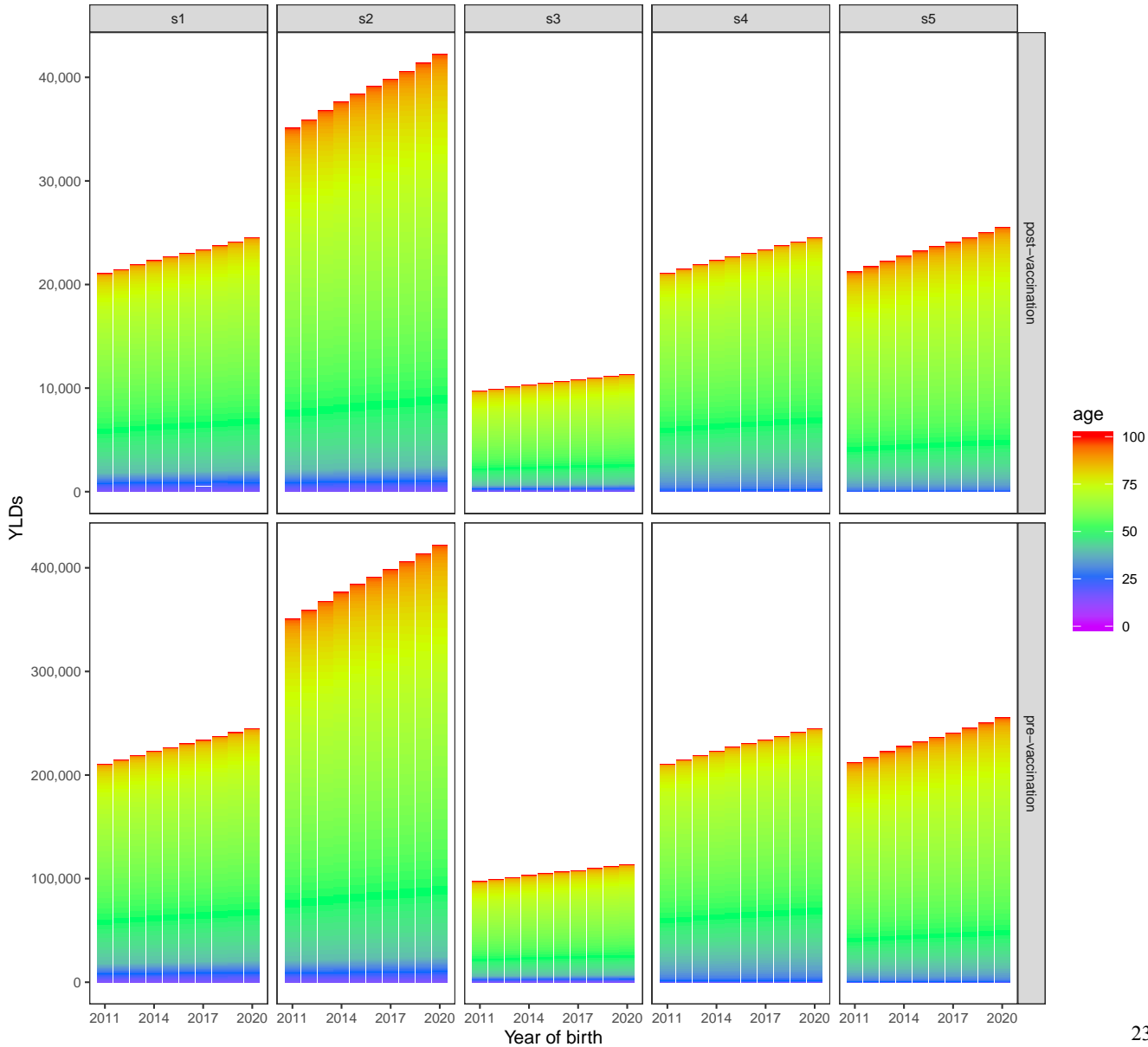
African Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



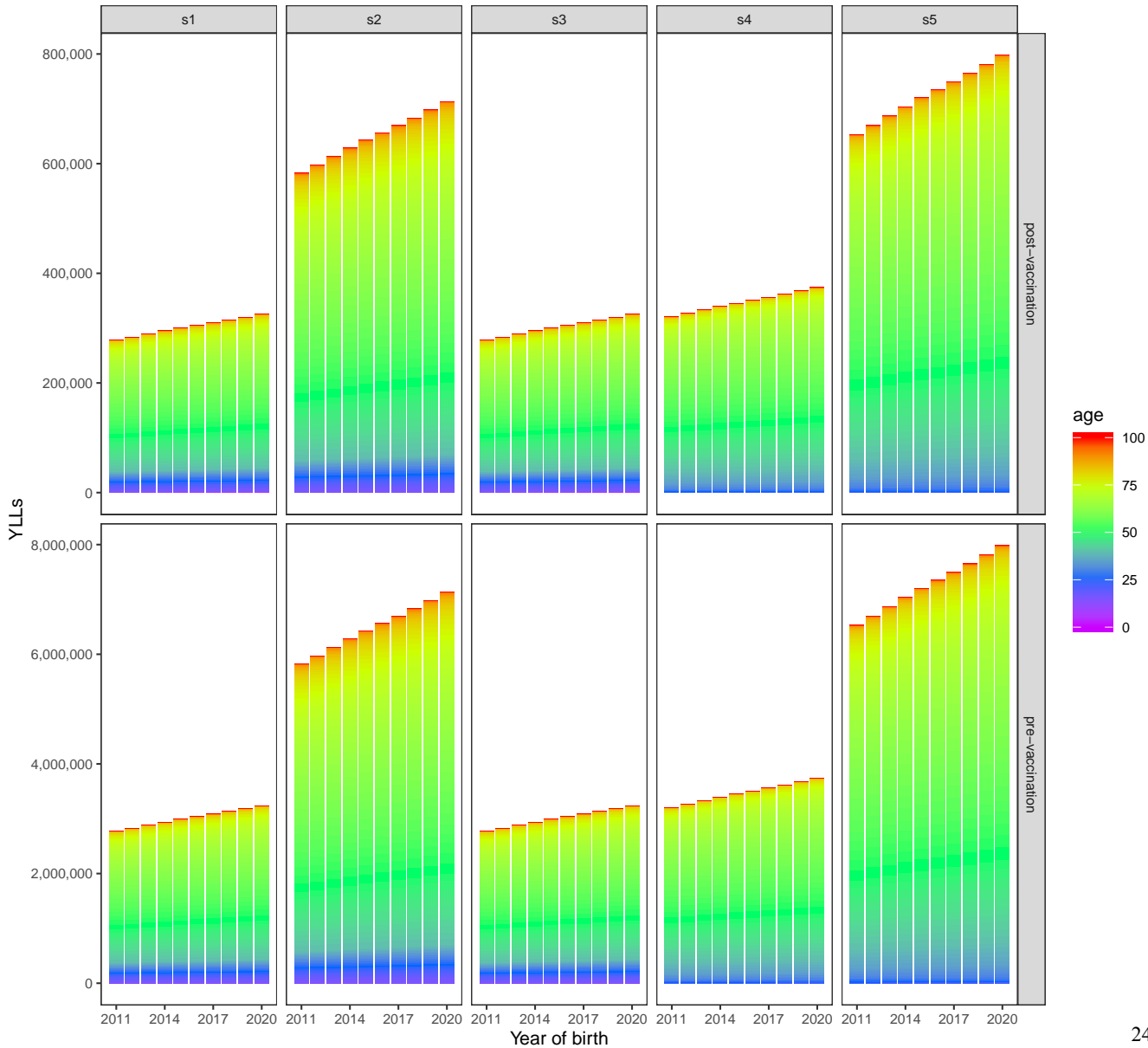
African Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



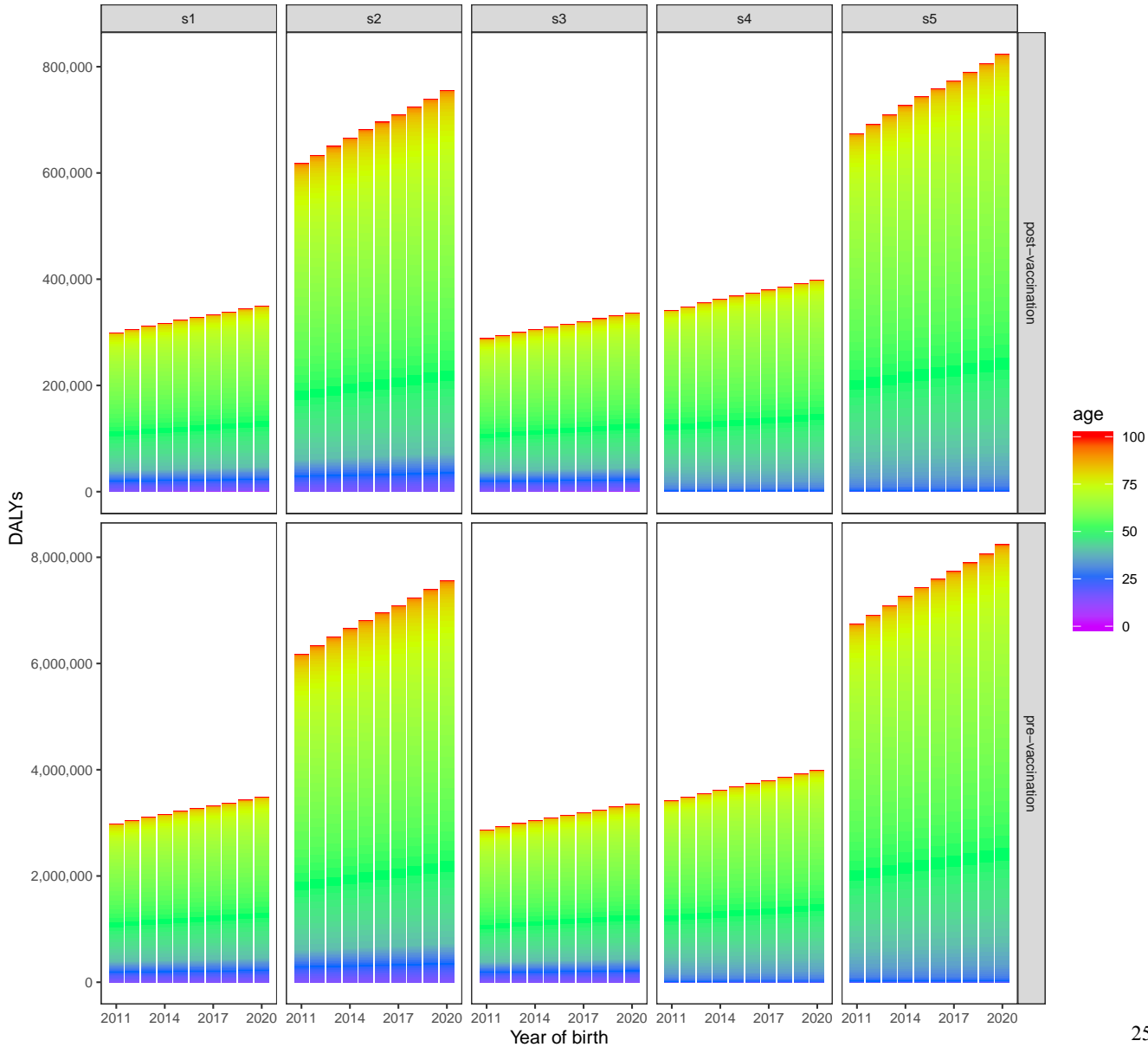
African Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



African Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
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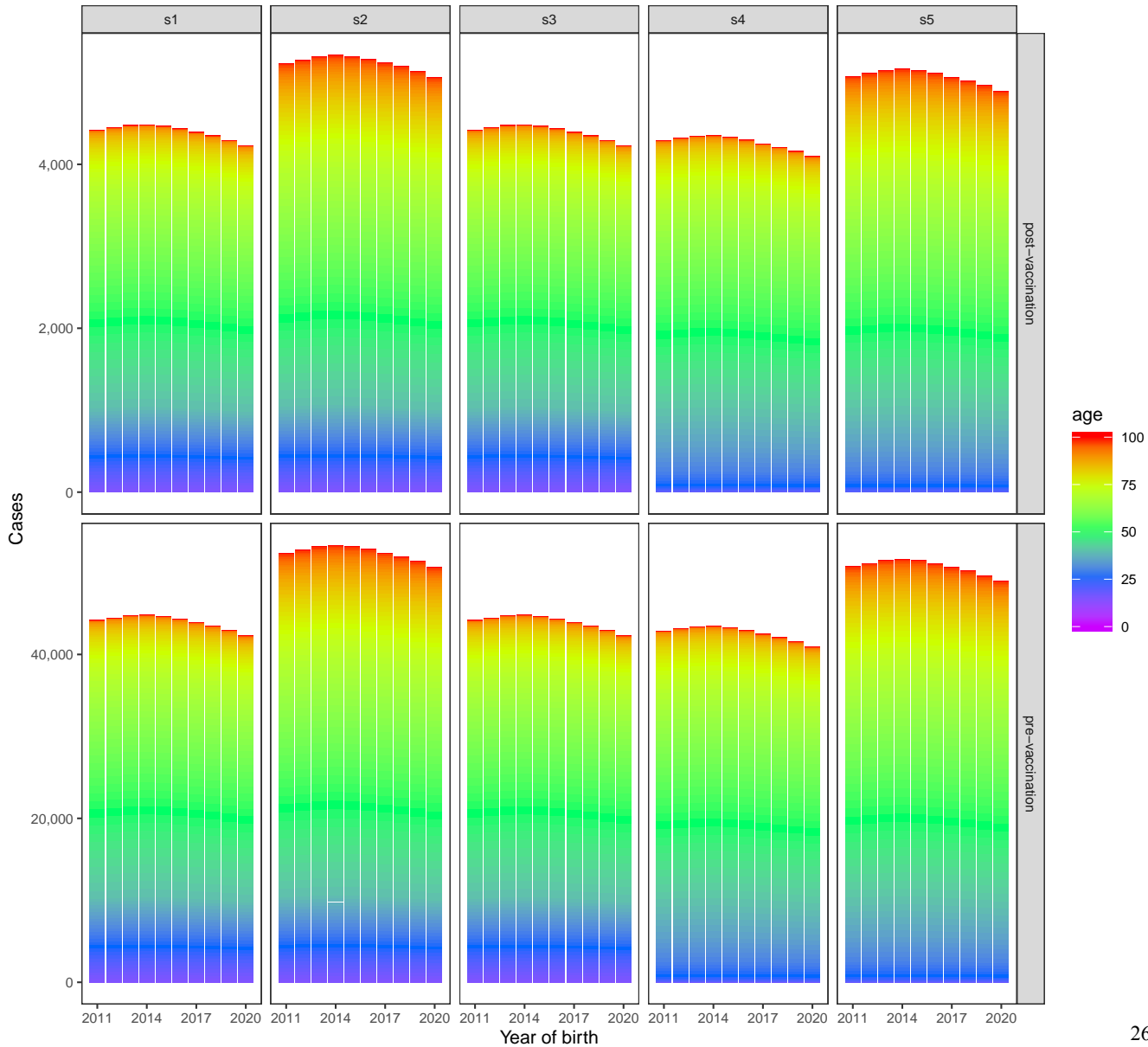


African Region  
 Lifetime burden of cervical cancer DALYs  
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 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

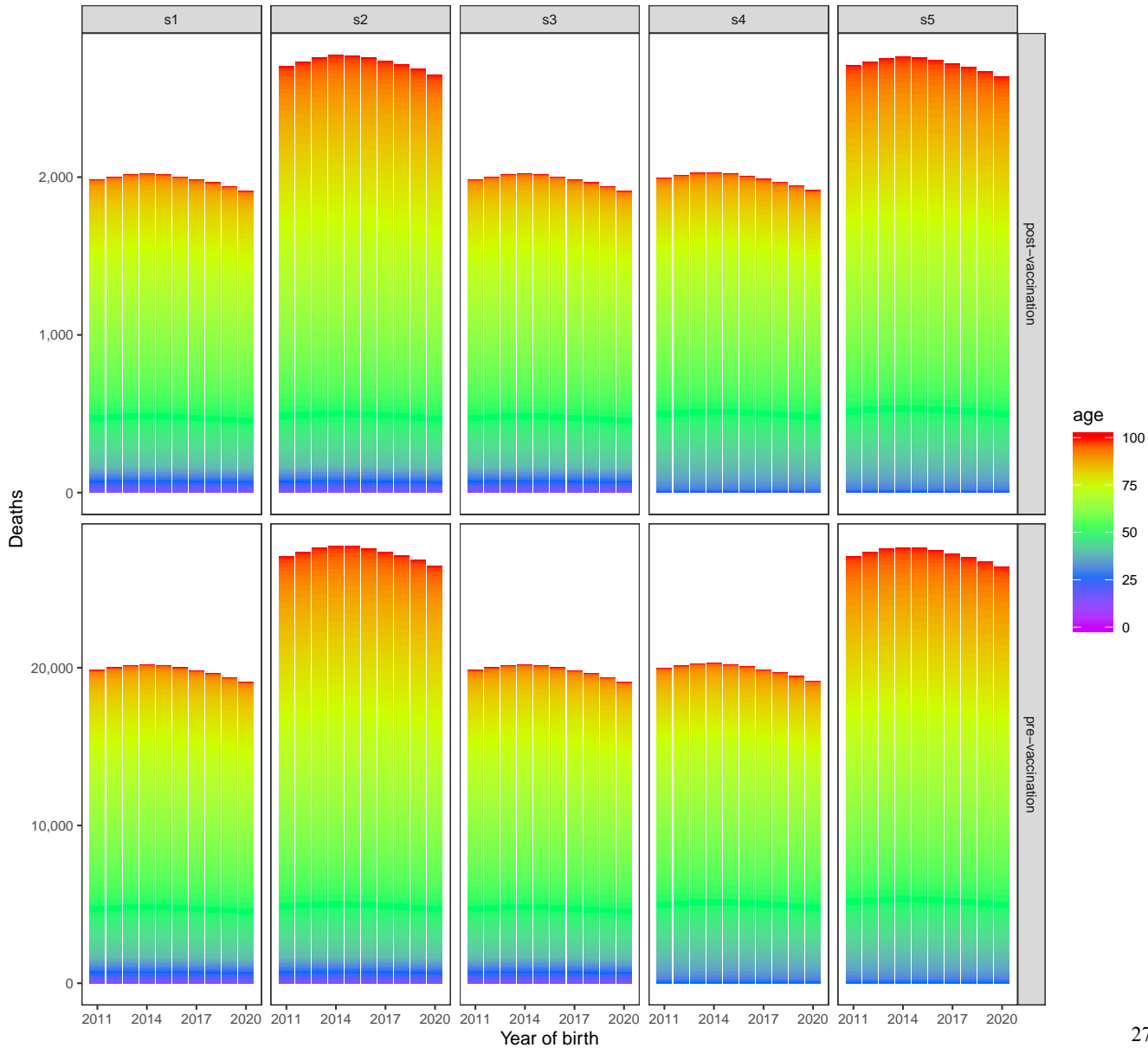




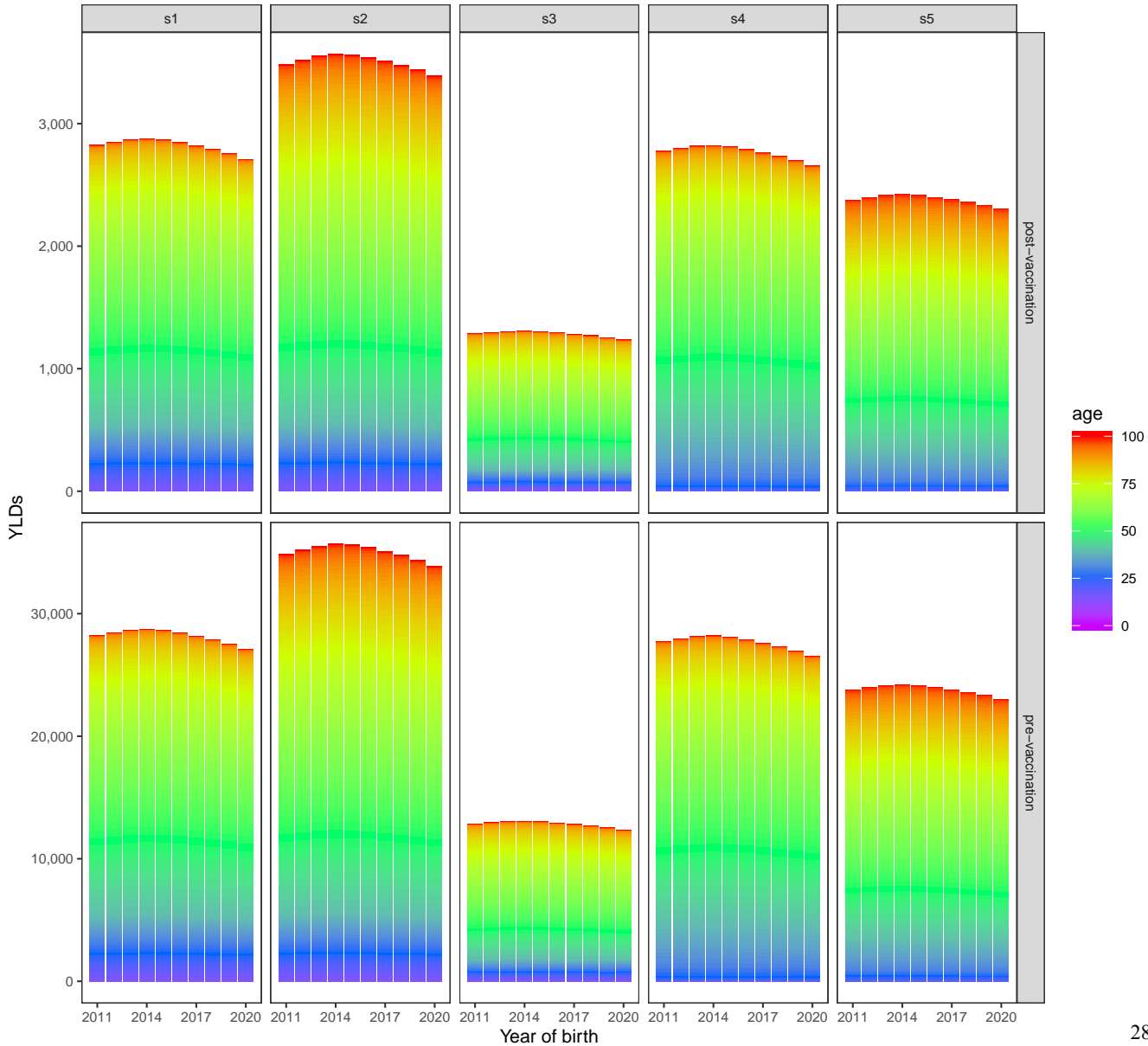
European Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



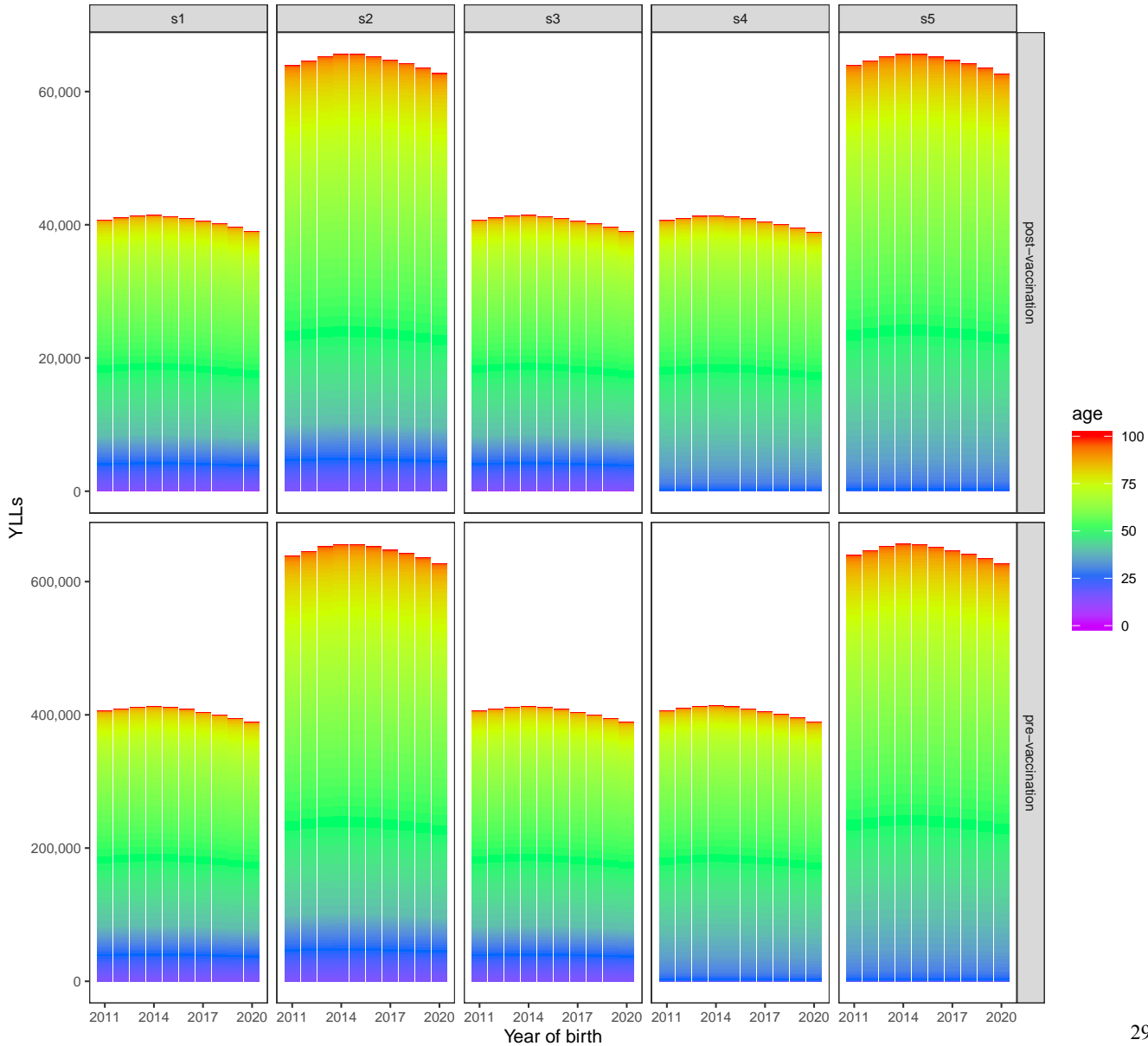
European Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



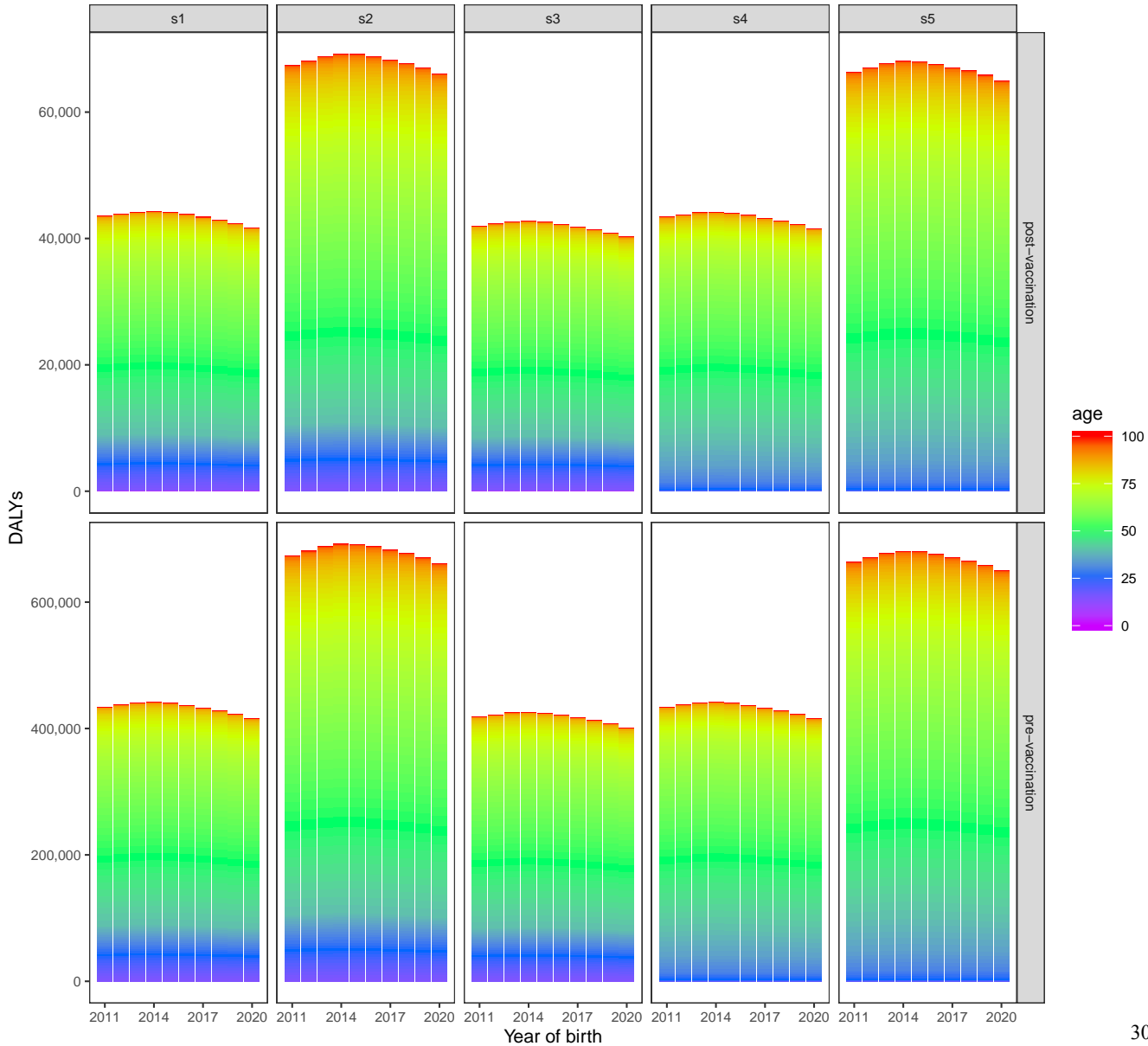
European Region  
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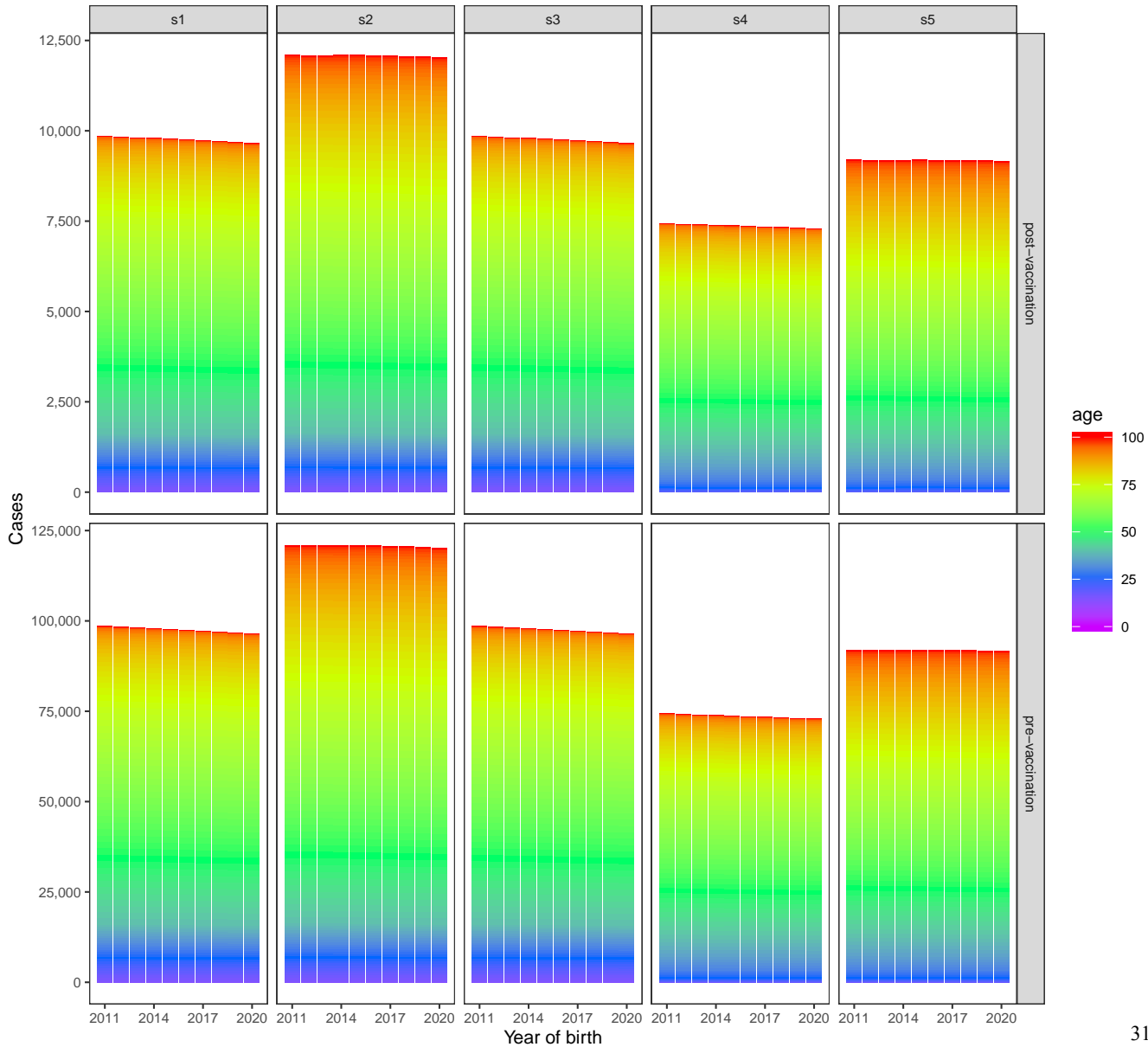
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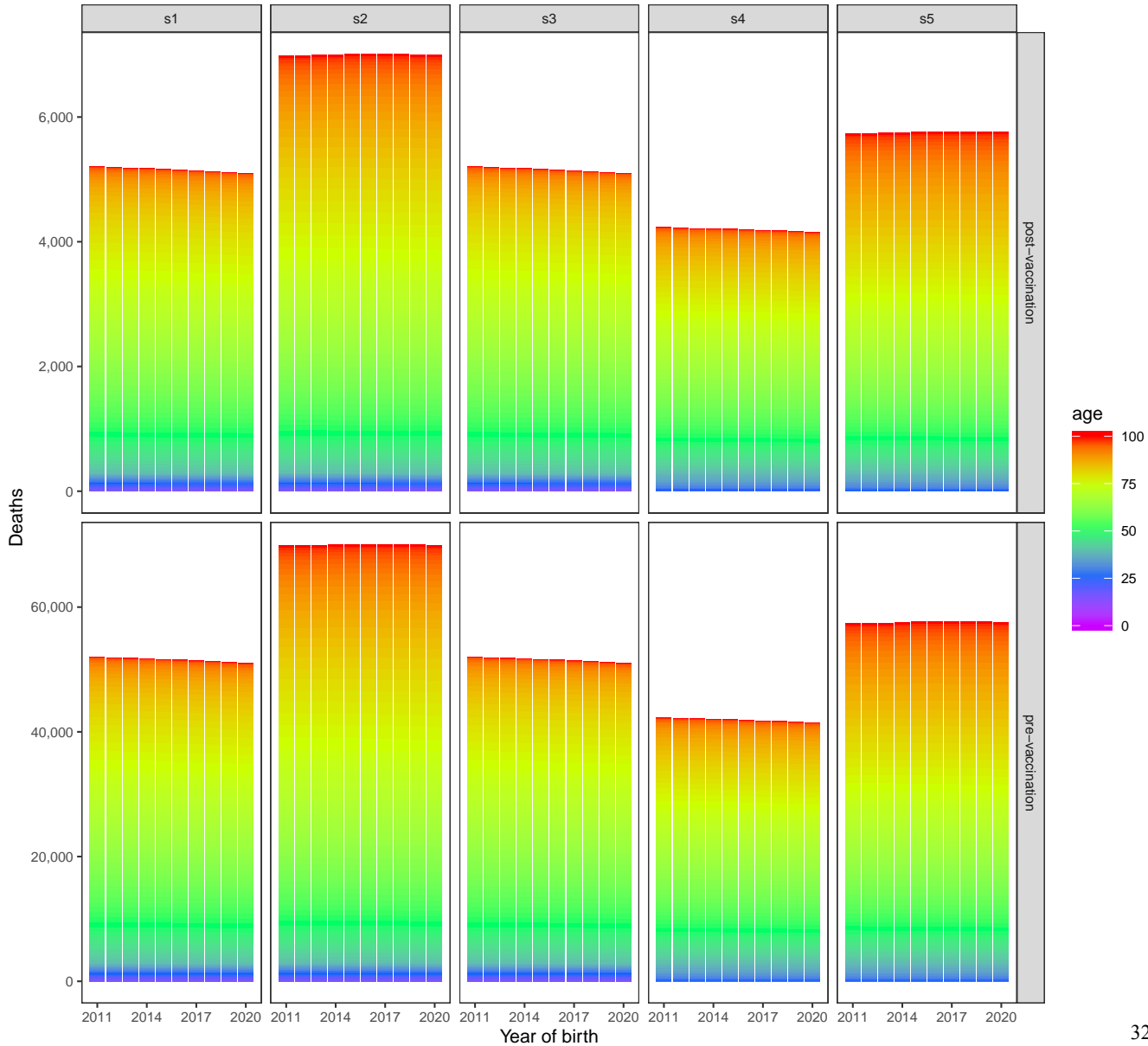
European Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



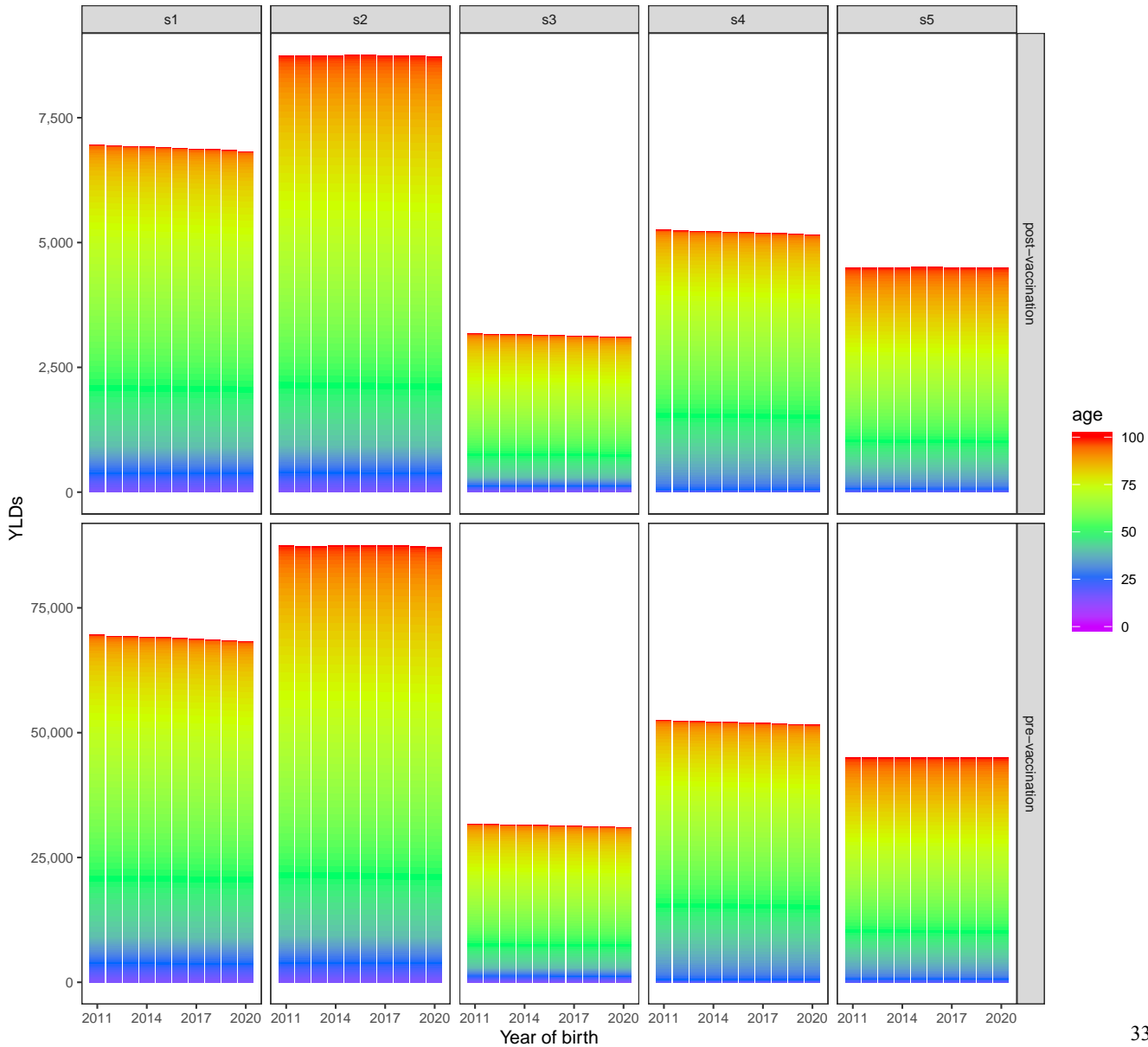
Region of the Americas  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



Region of the Americas  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

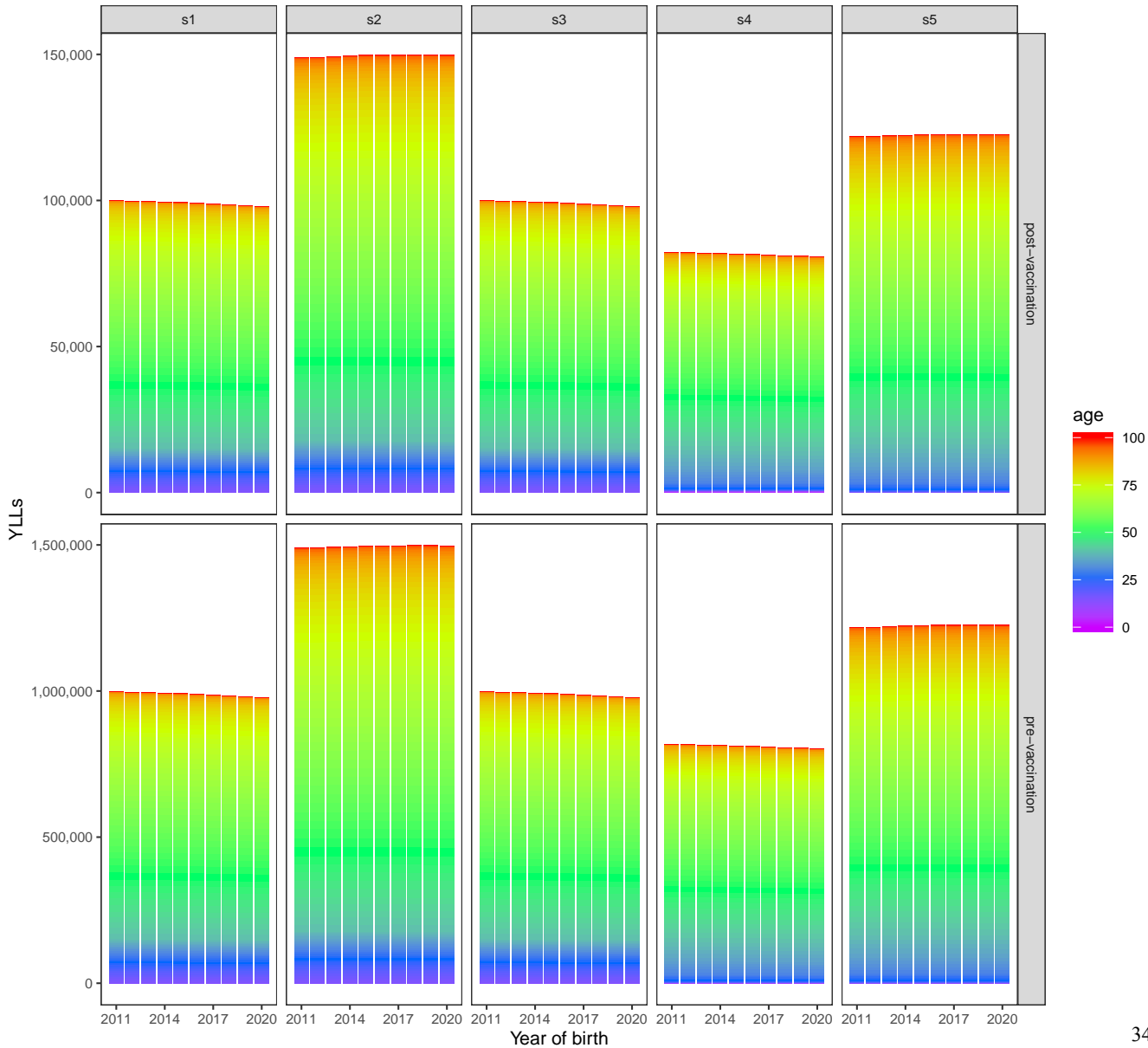


Region of the Americas  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

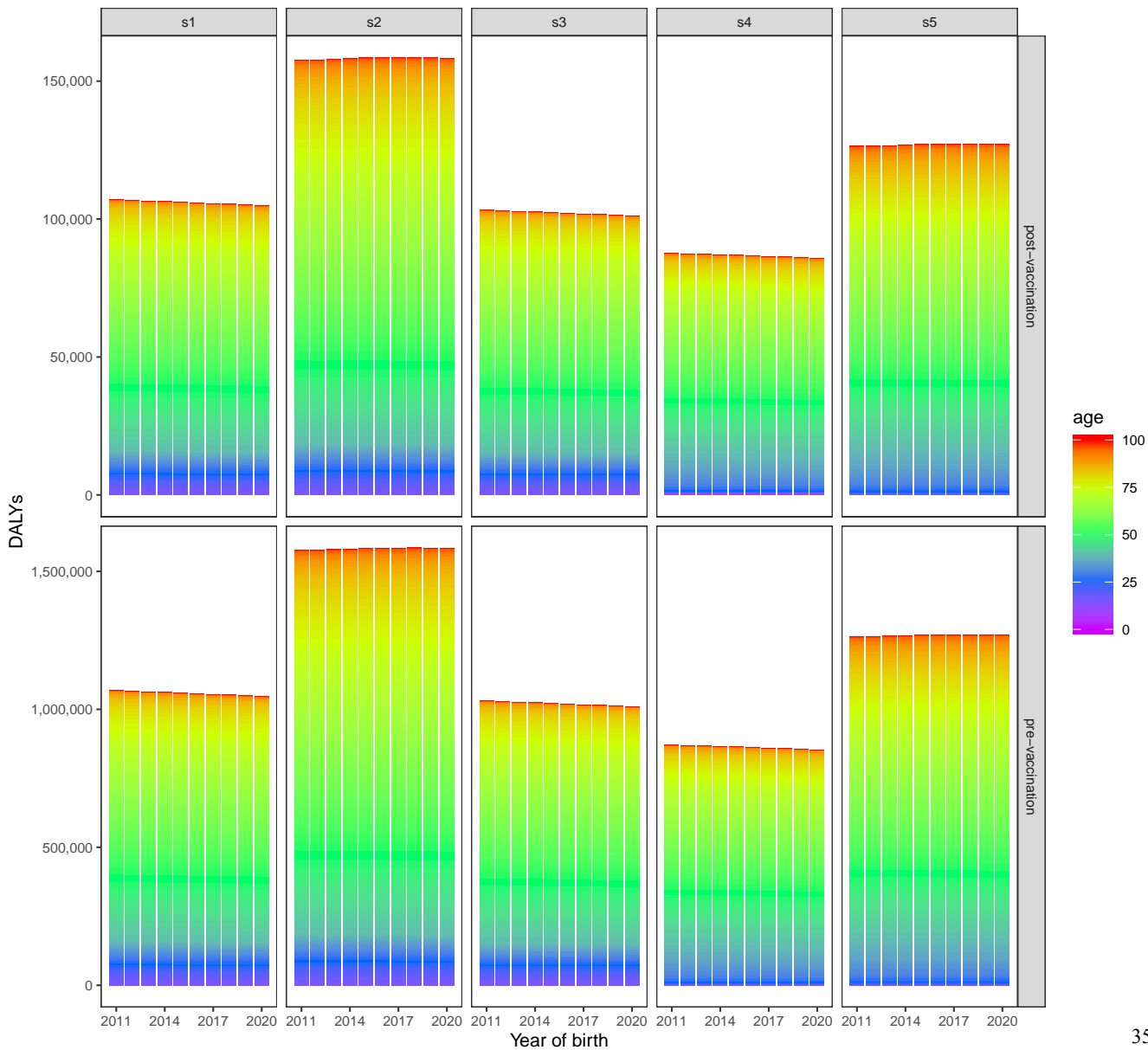




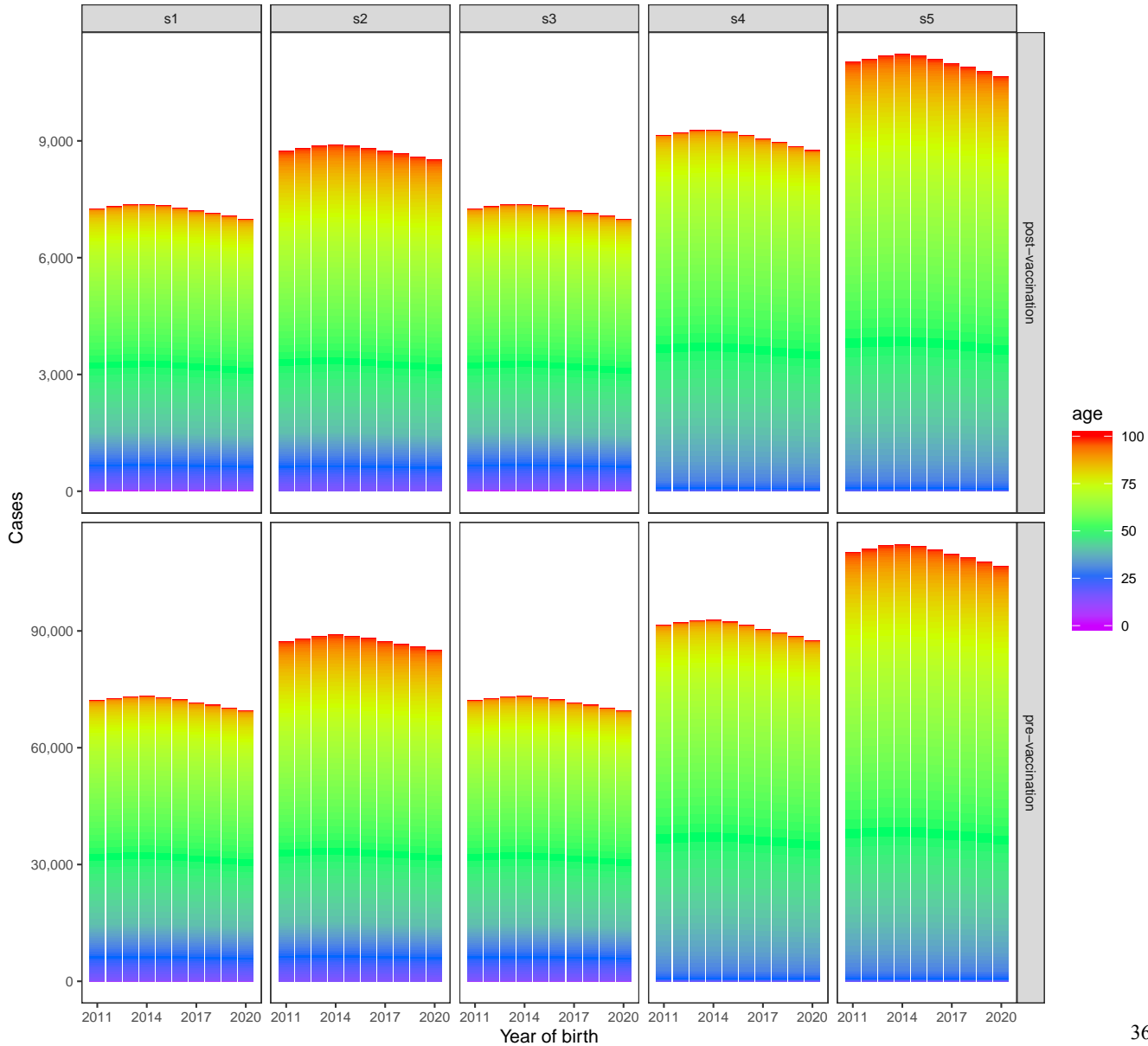
Region of the Americas  
 Lifetime burden of cervical cancer YLLs  
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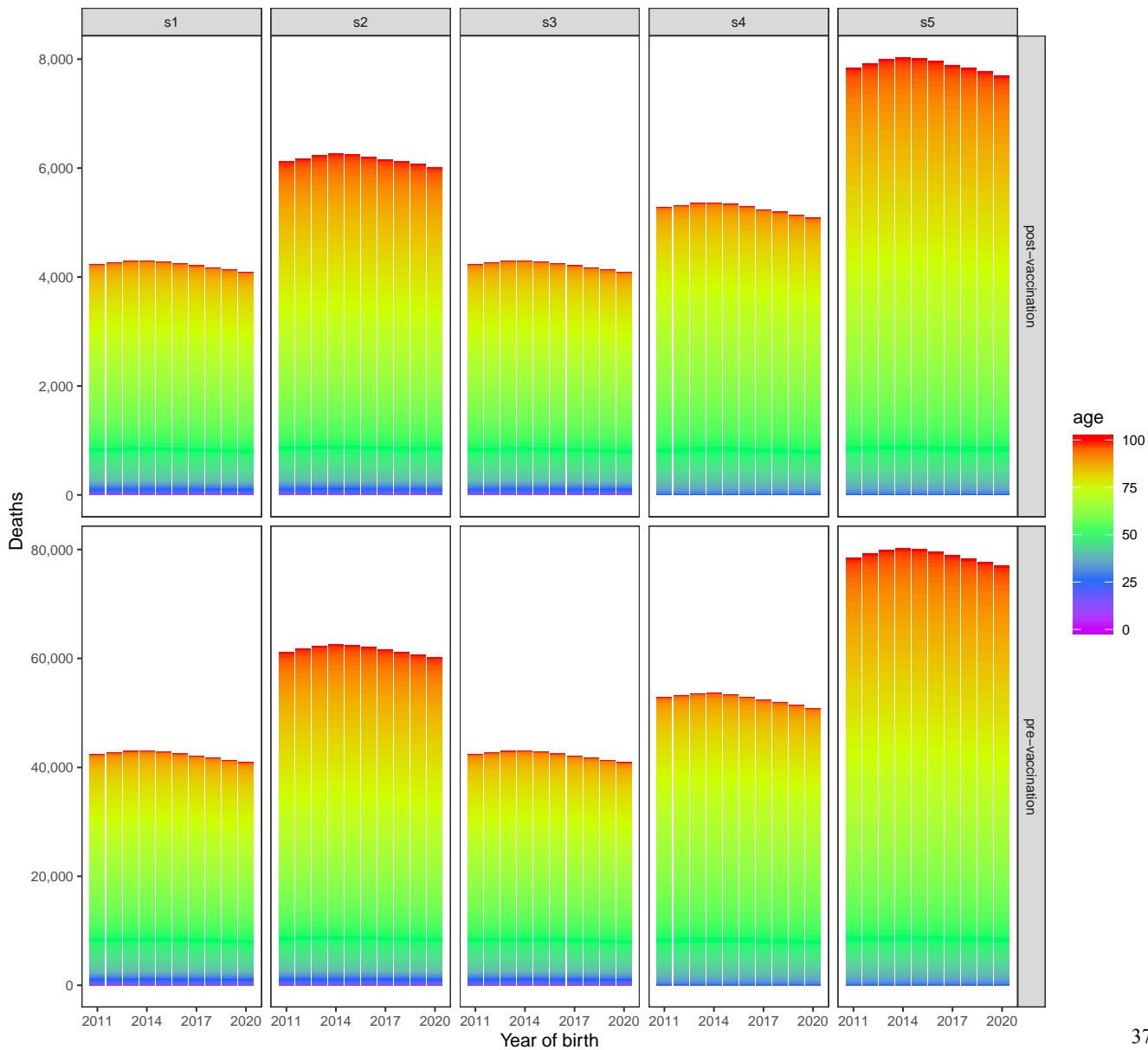
Region of the Americas  
 Lifetime burden of cervical cancer DALYs  
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 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



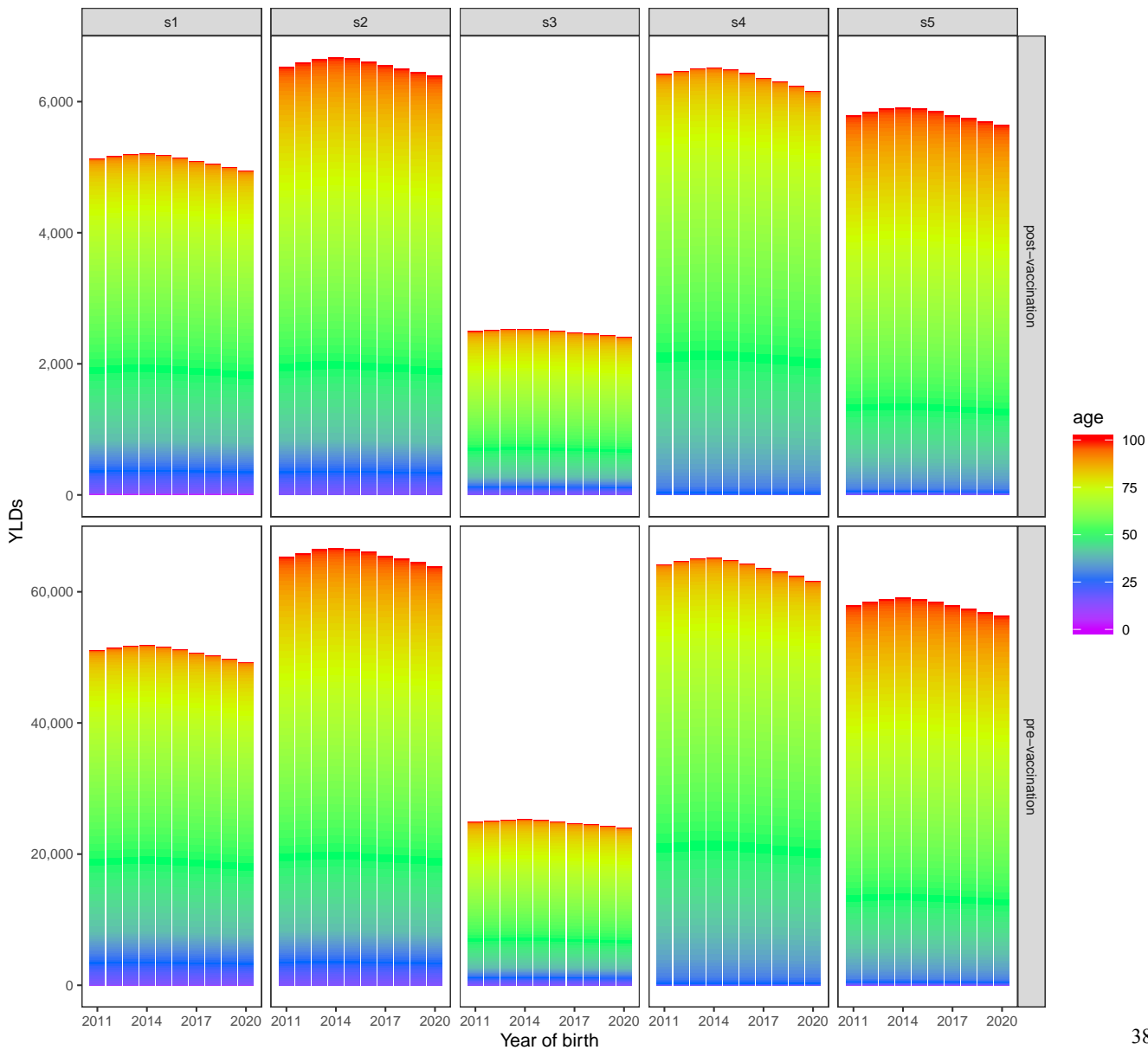
Western Pacific Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



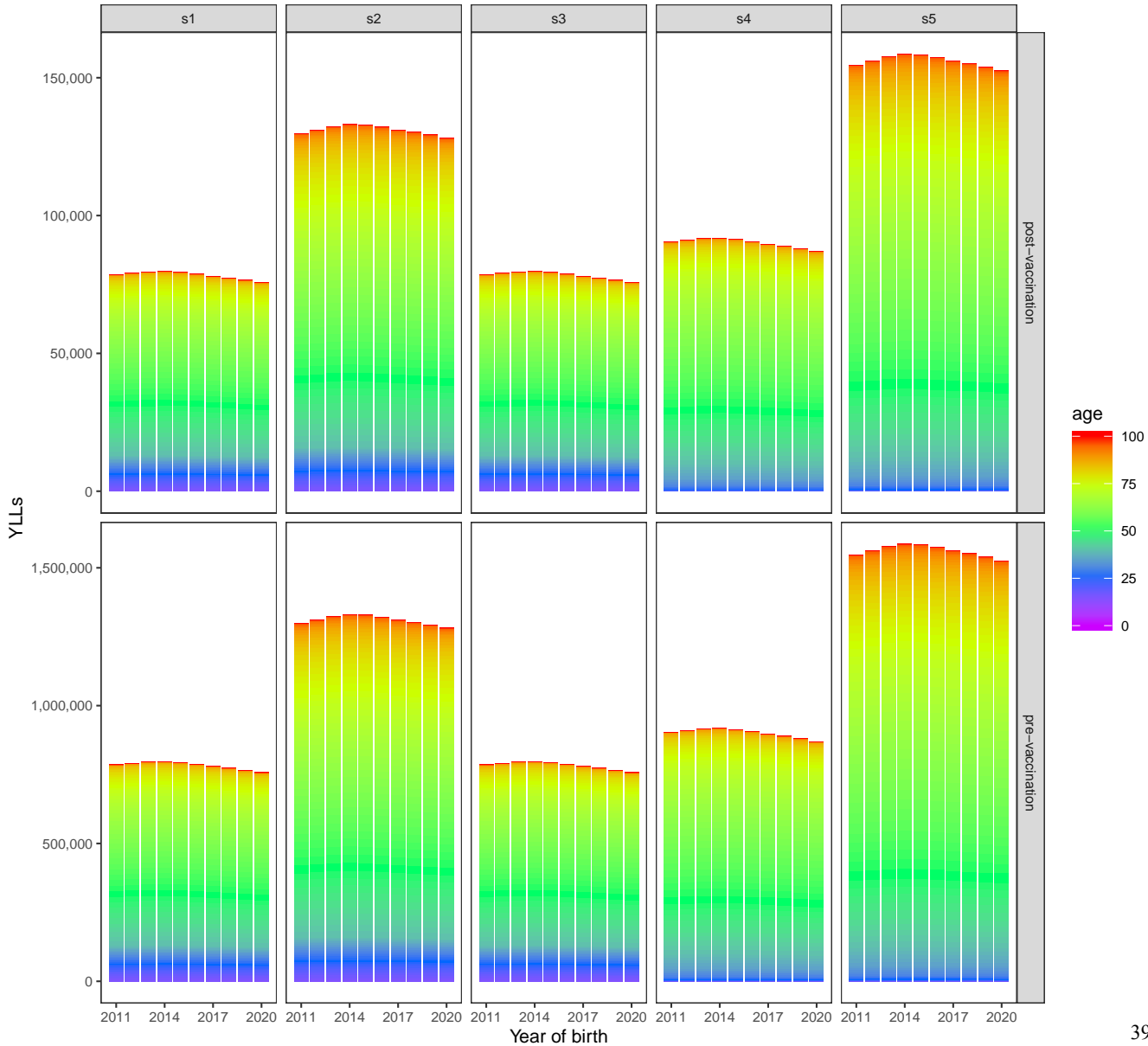
Western Pacific Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



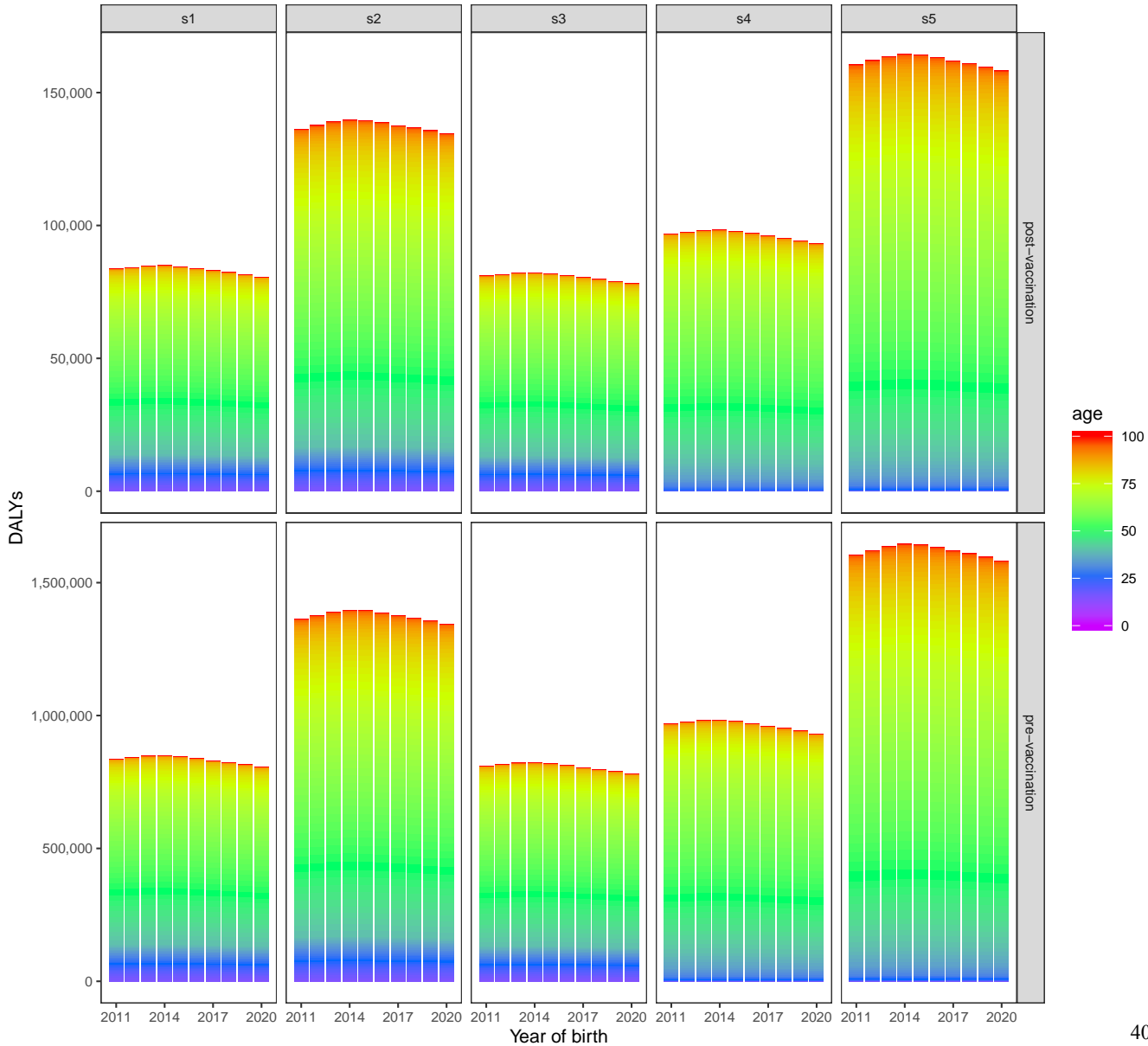
Western Pacific Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



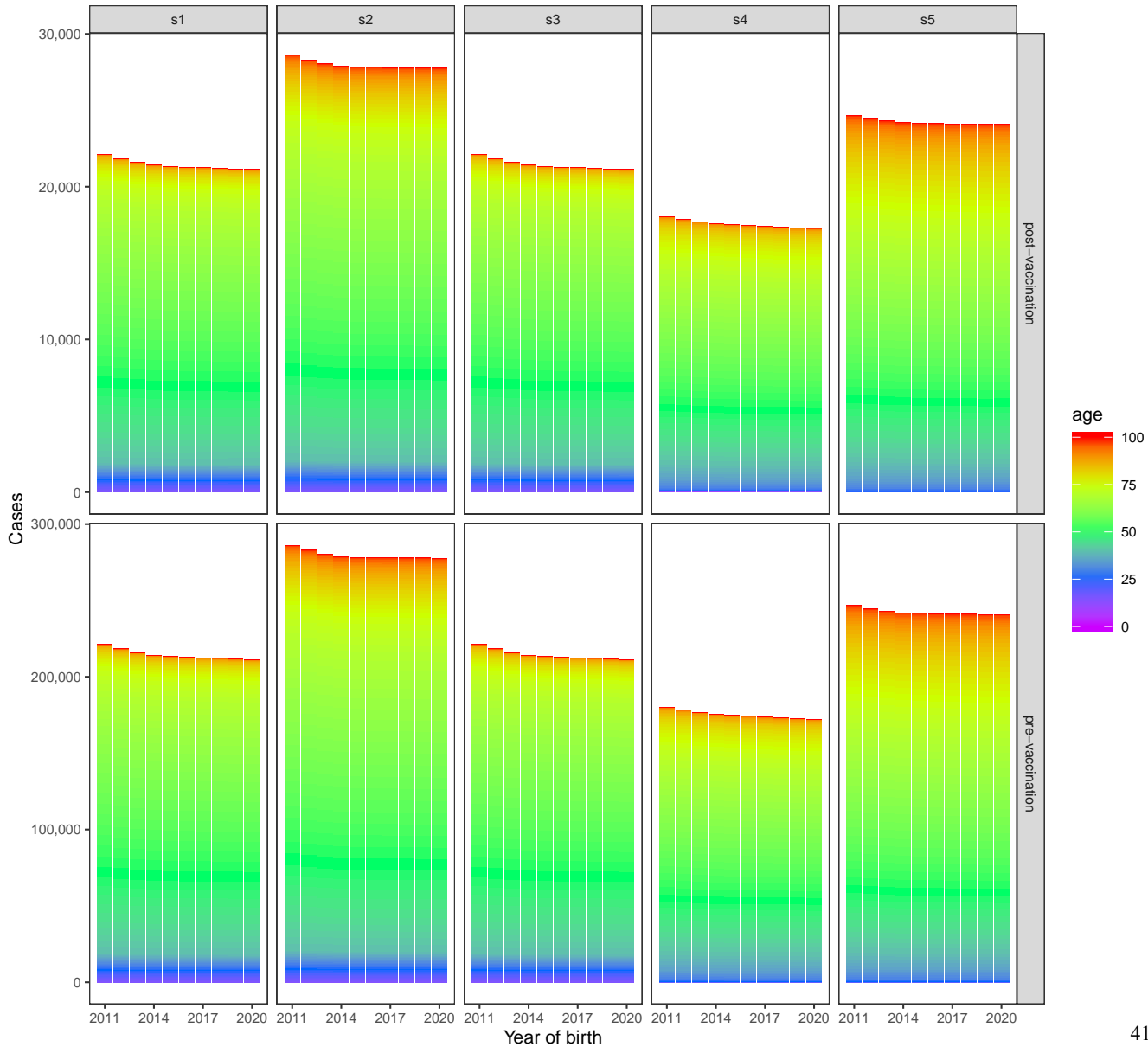
Western Pacific Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



Western Pacific Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

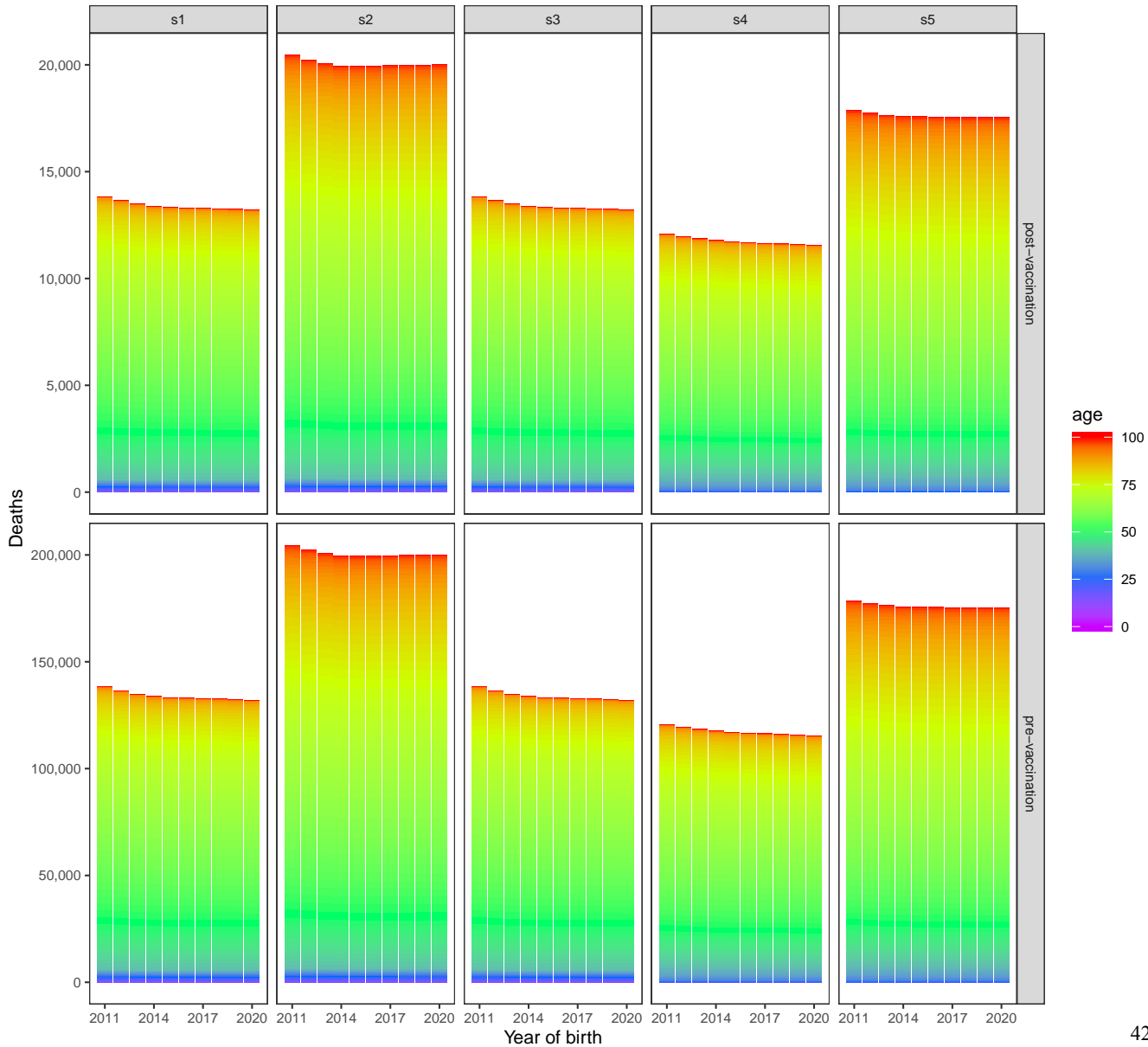


South-East Asia Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)

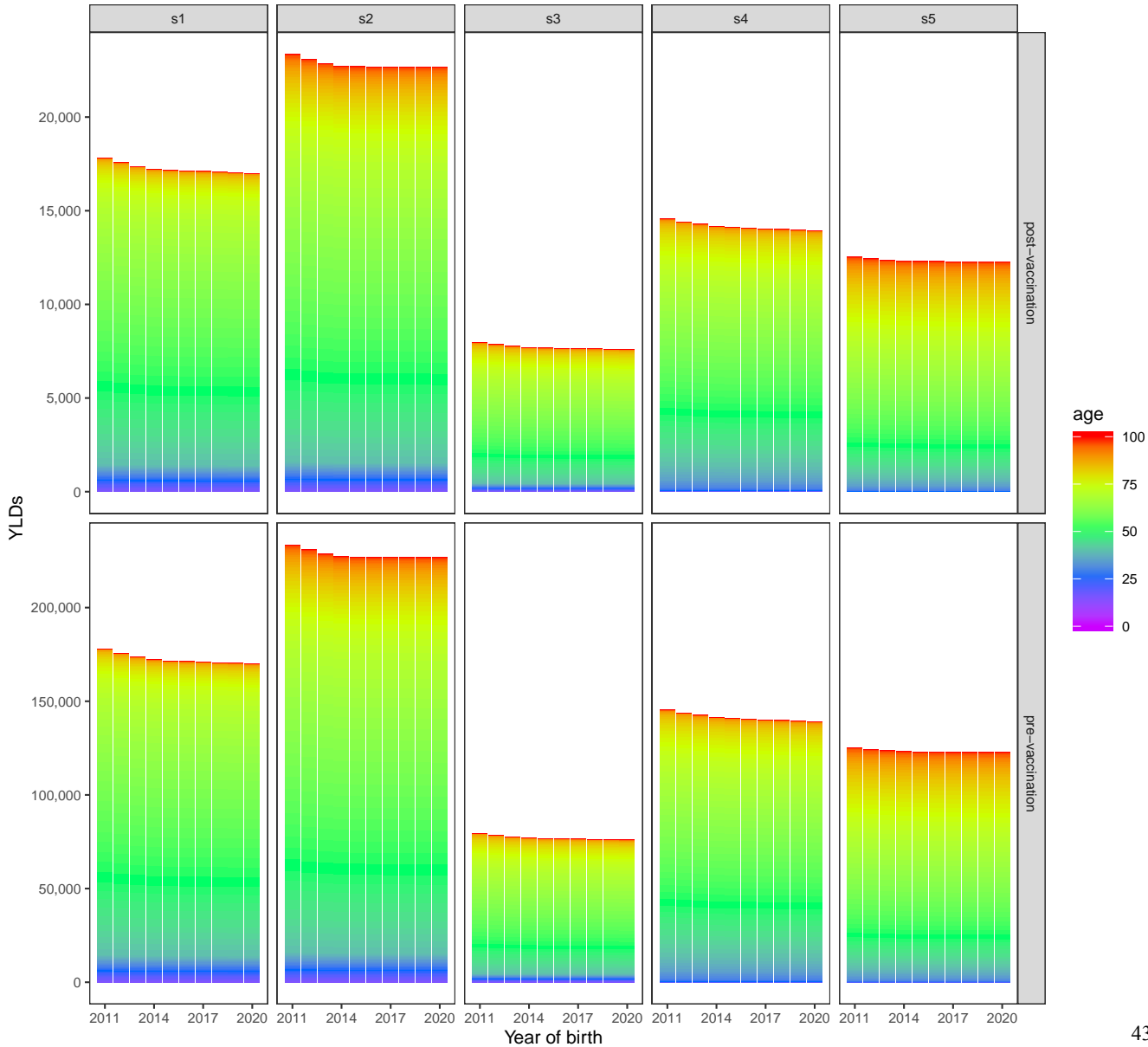




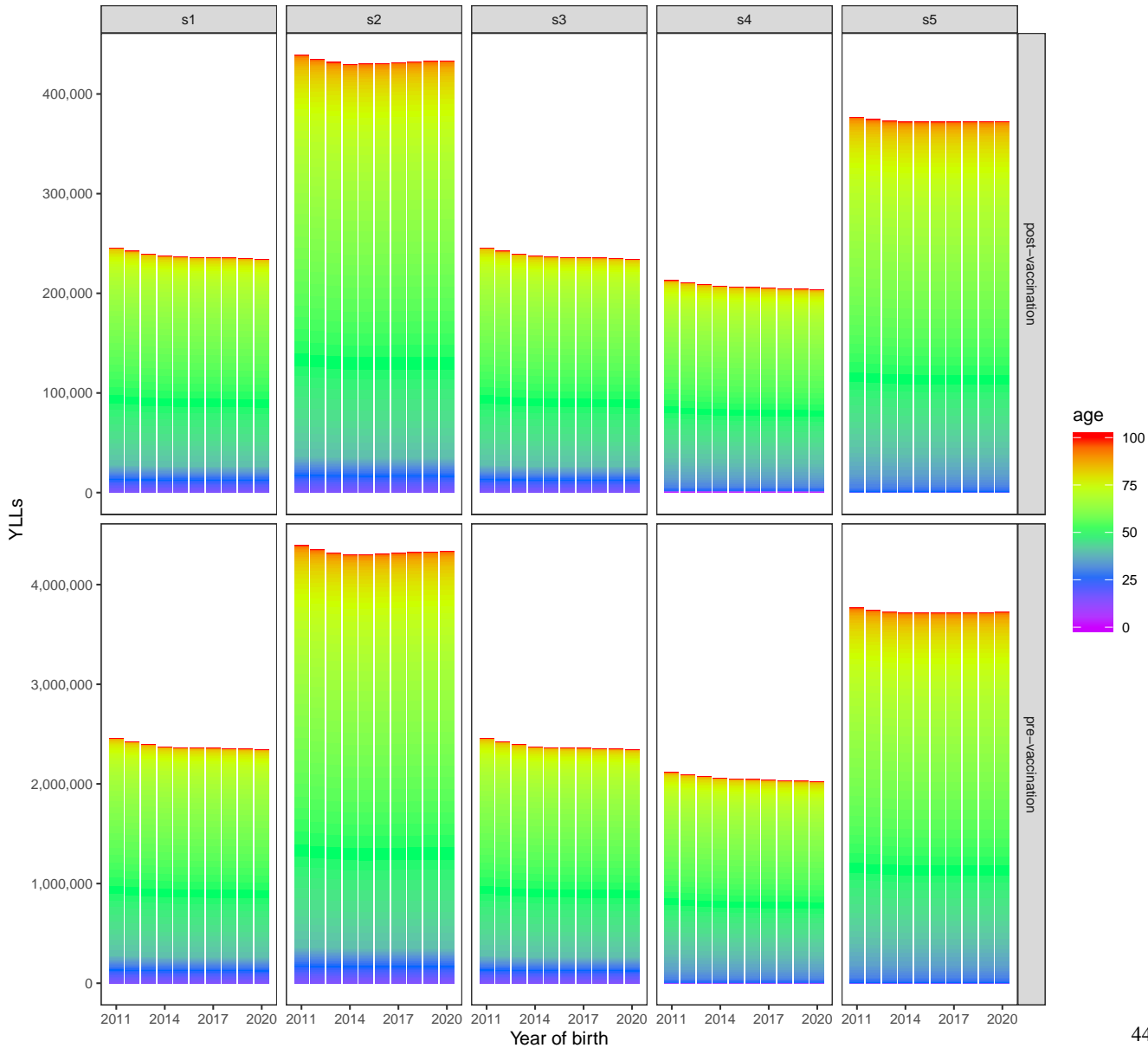
South-East Asia Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



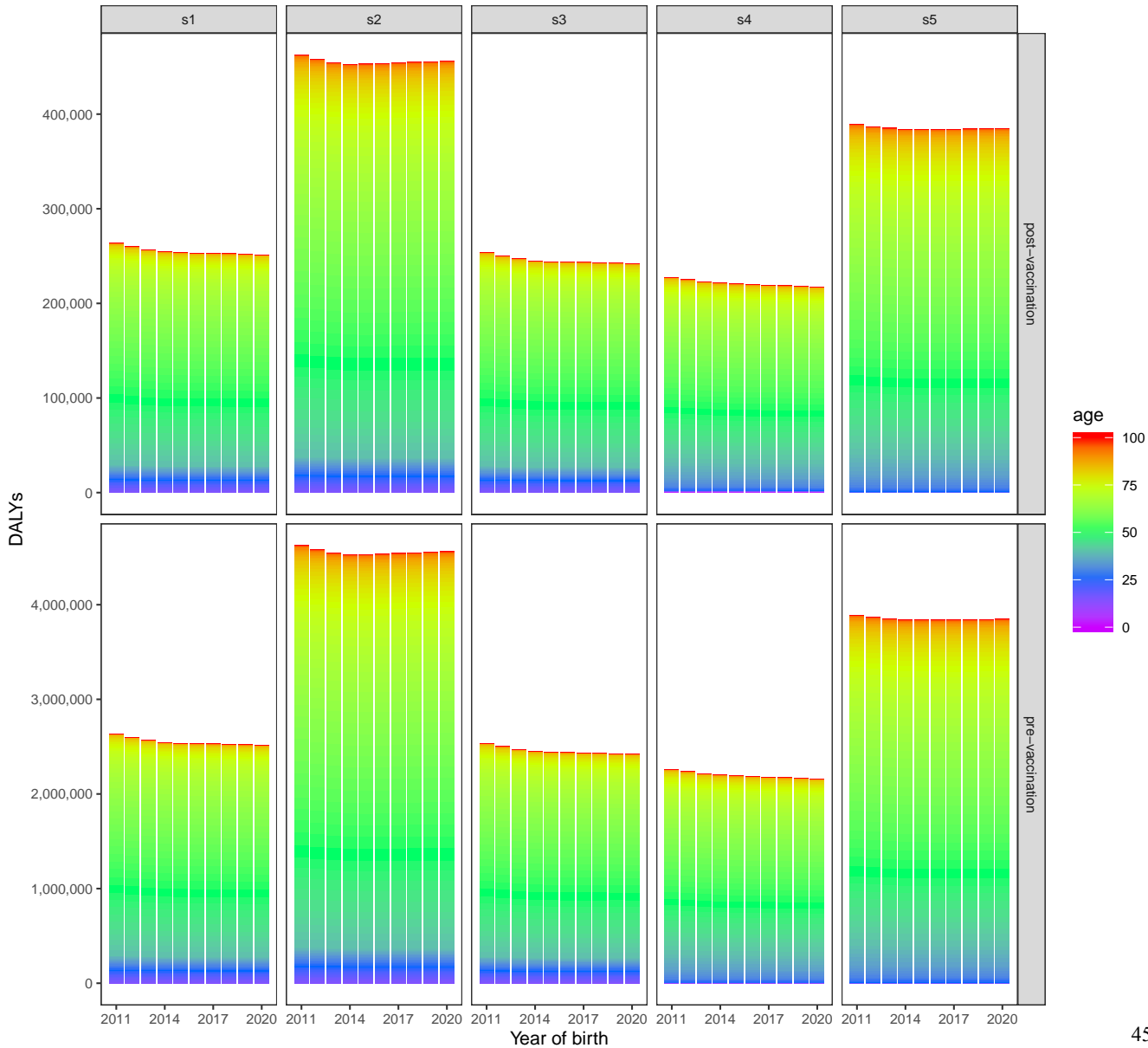
South-East Asia Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



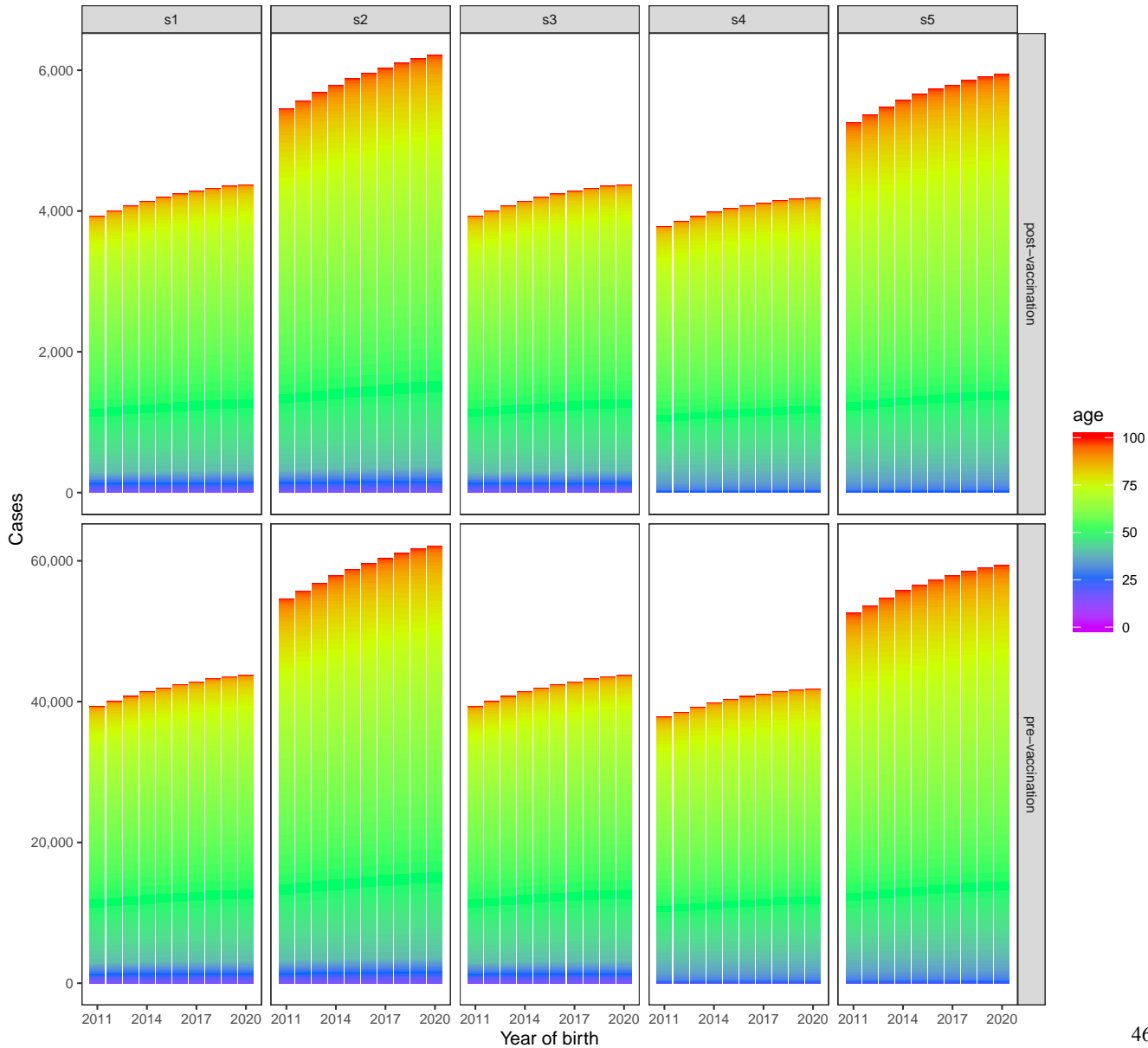
South-East Asia Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



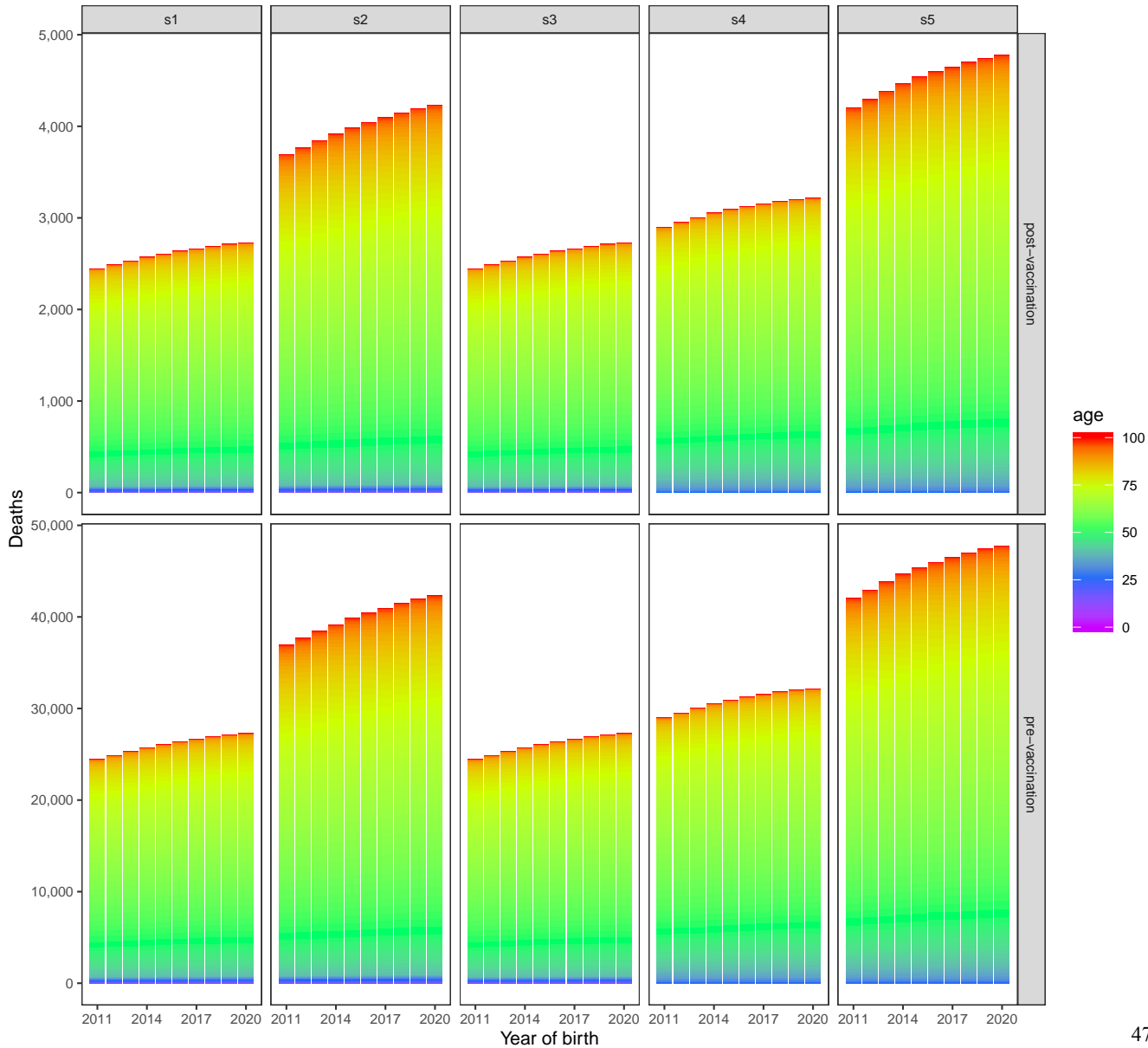
South-East Asia Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 9 years / bivalent/quadrivalent vaccine)



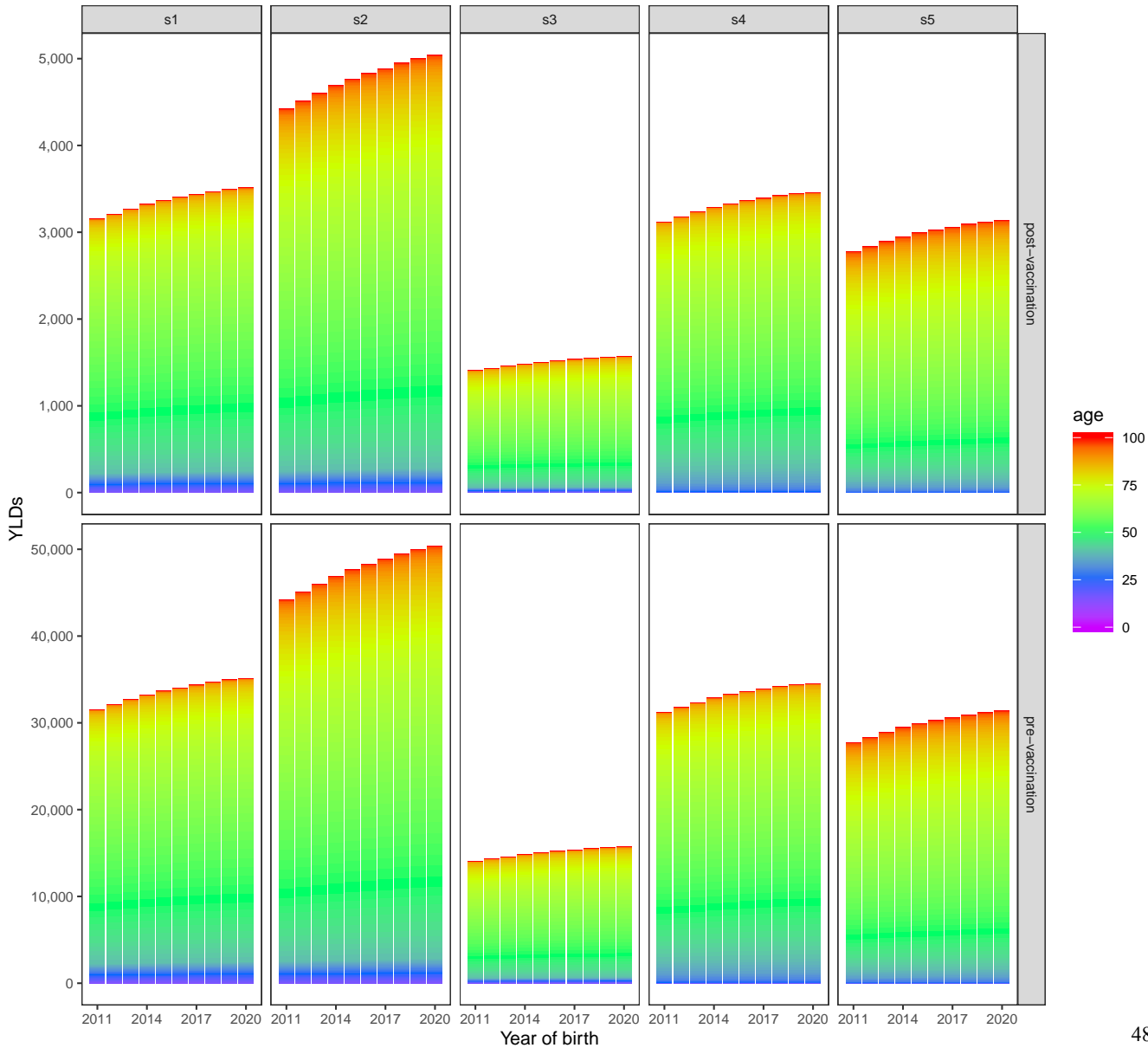
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



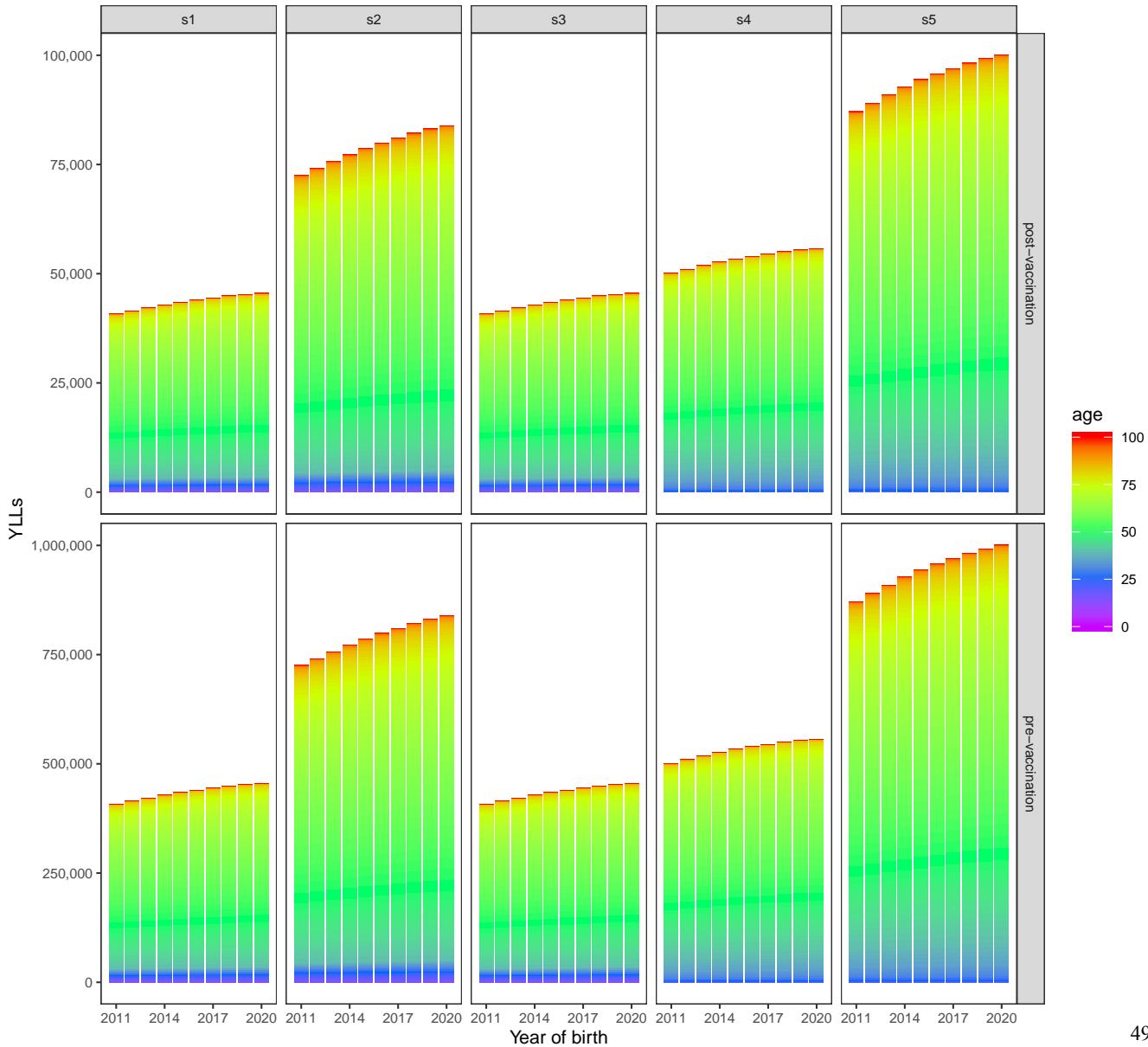
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

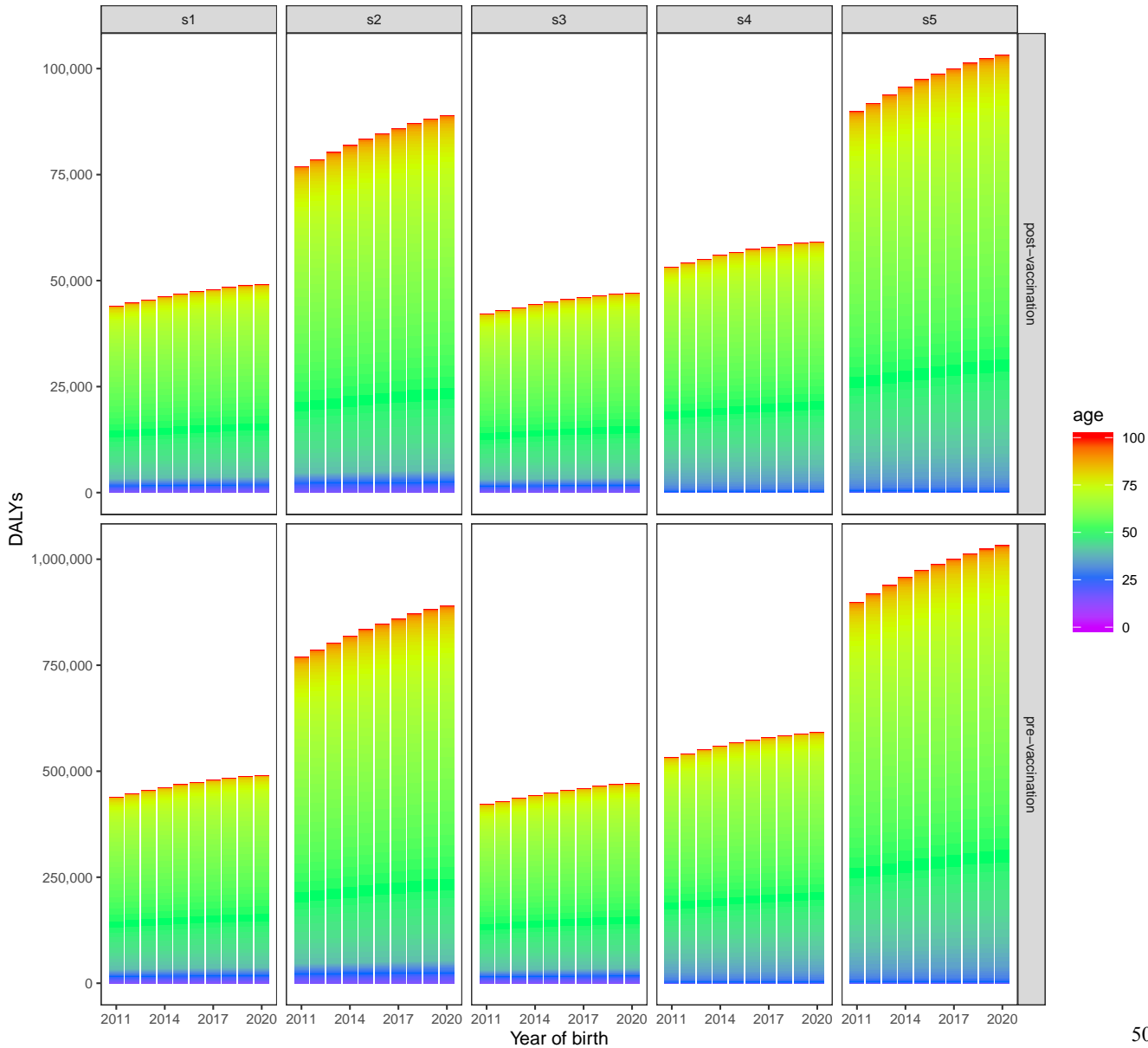


Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

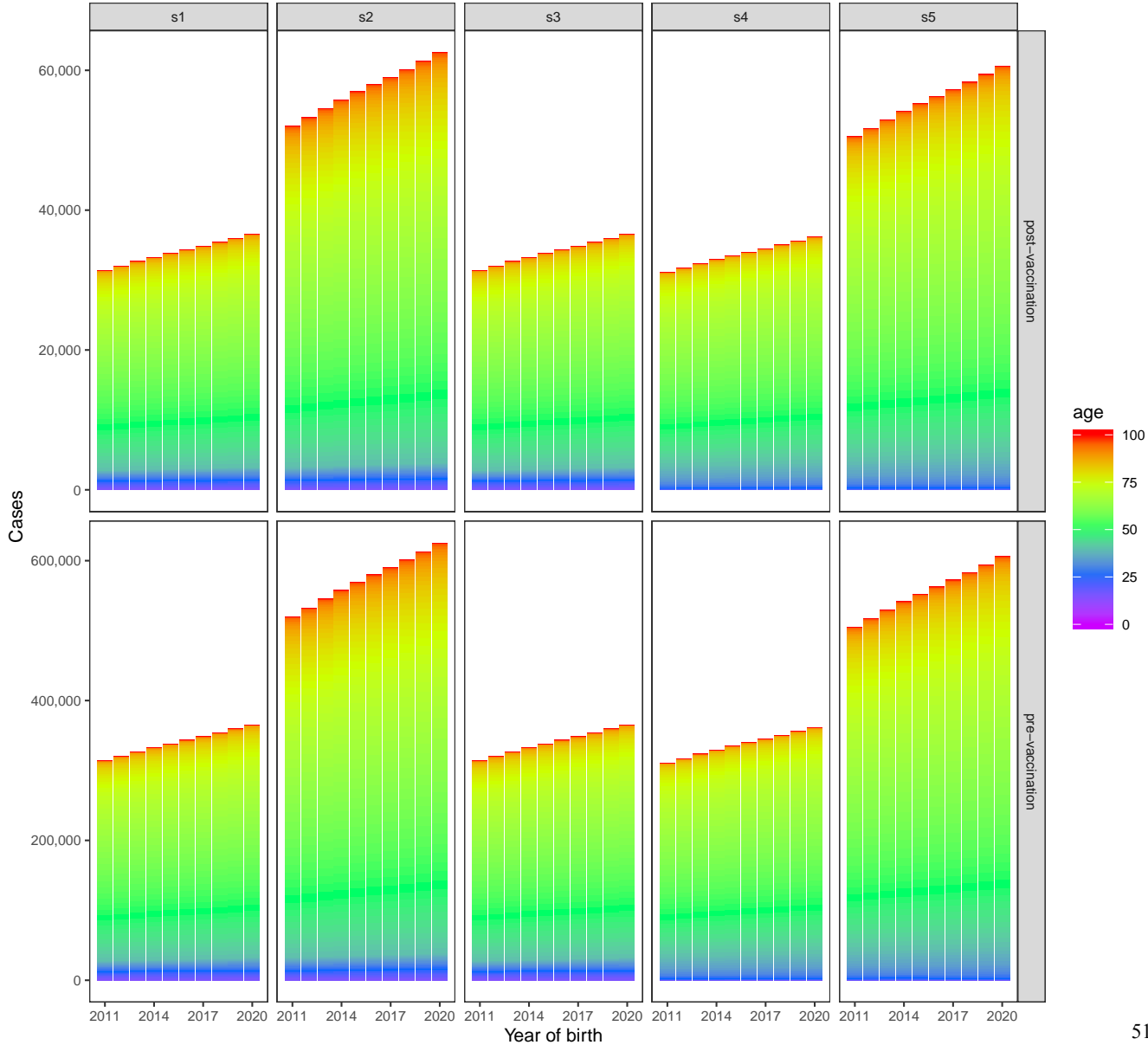




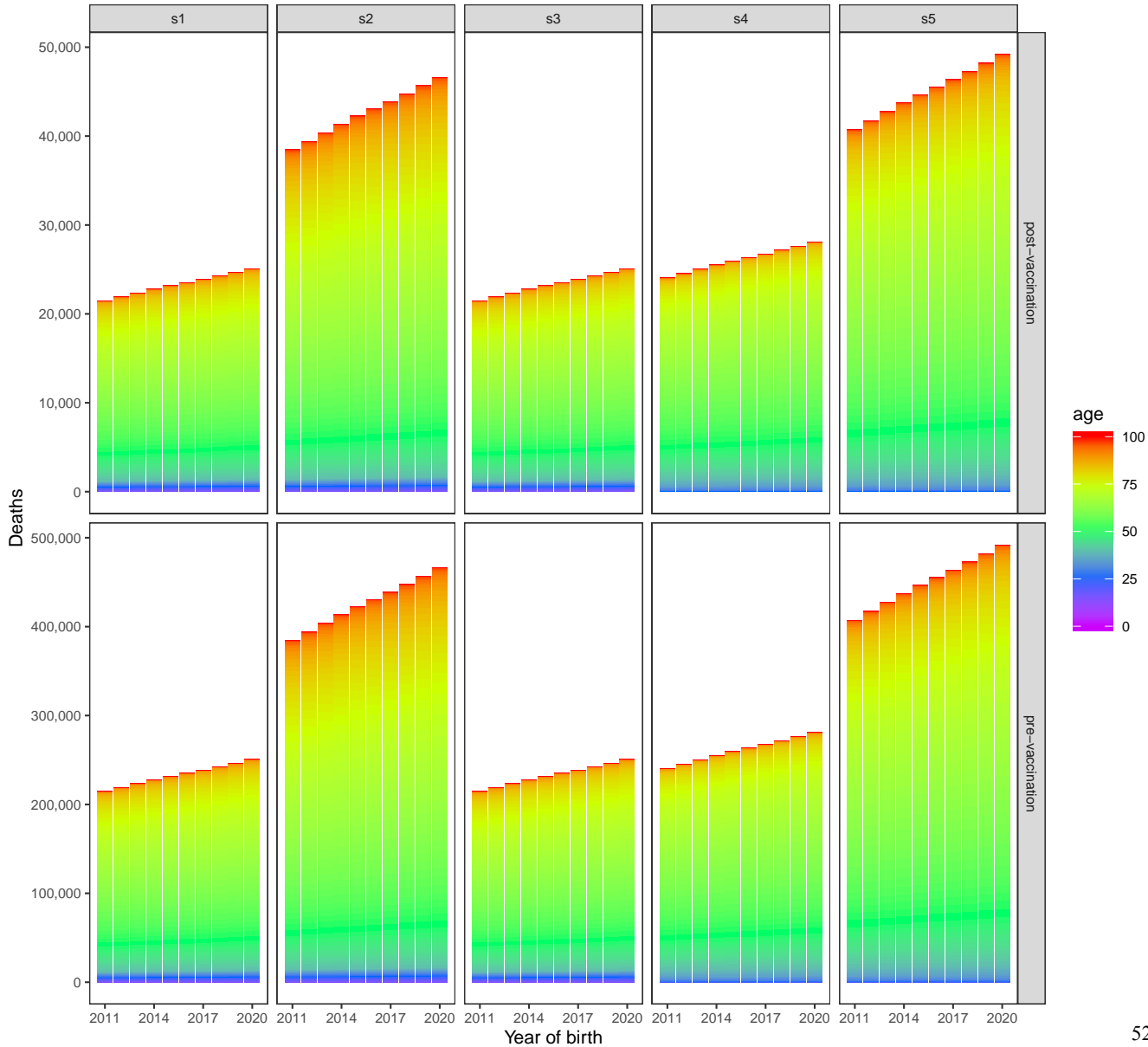
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



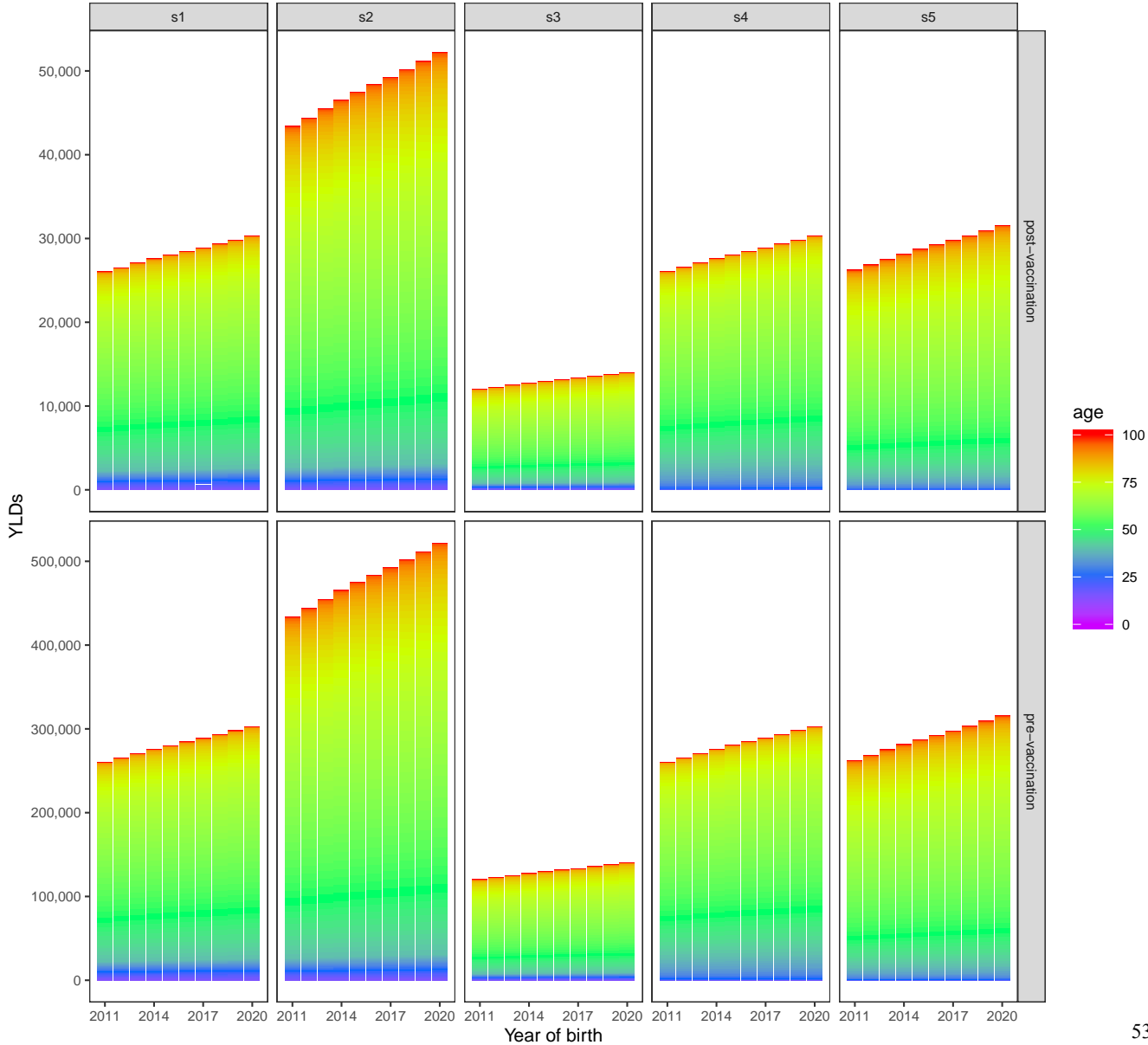
African Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



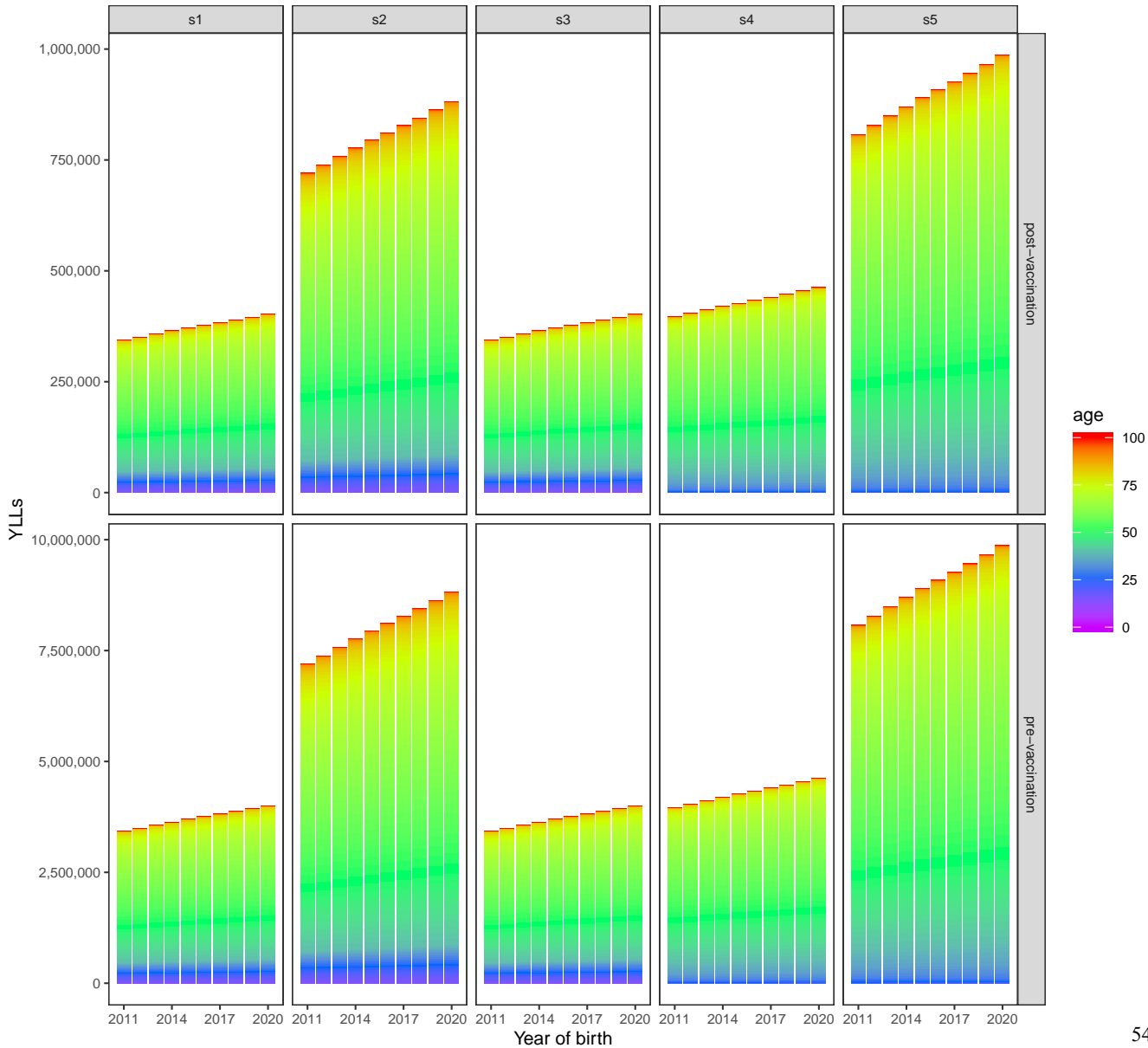
African Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



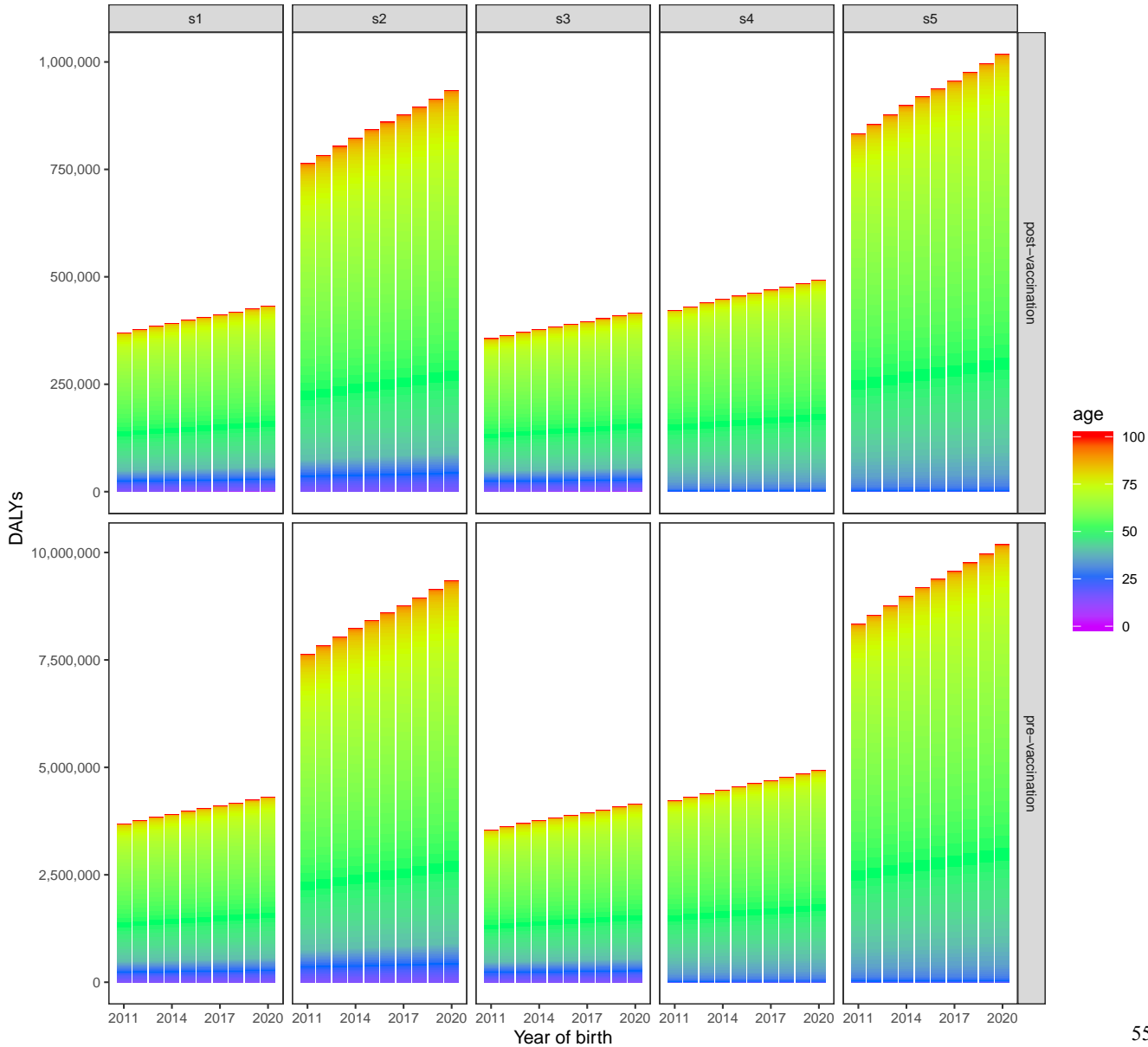
African Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



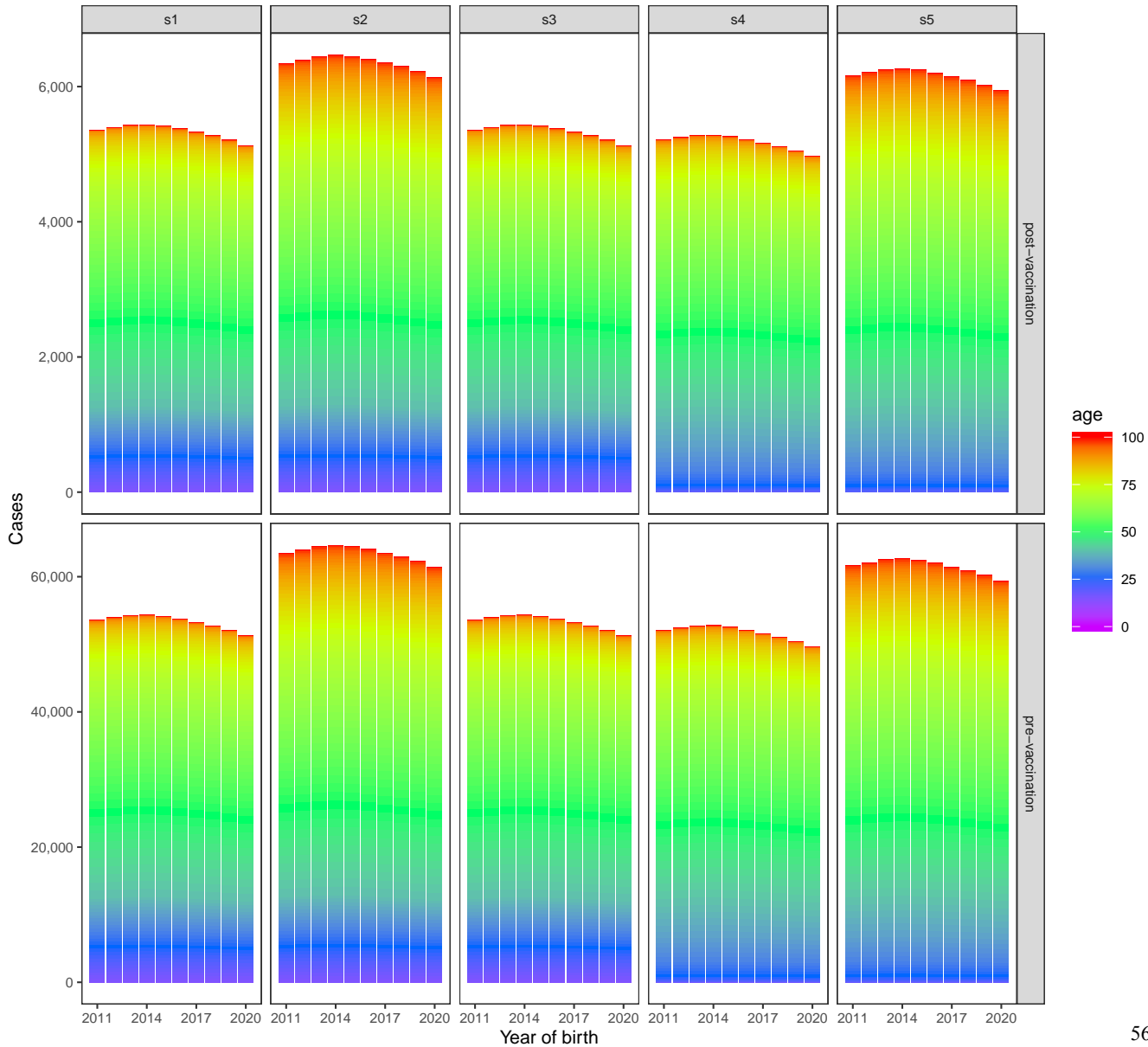
African Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



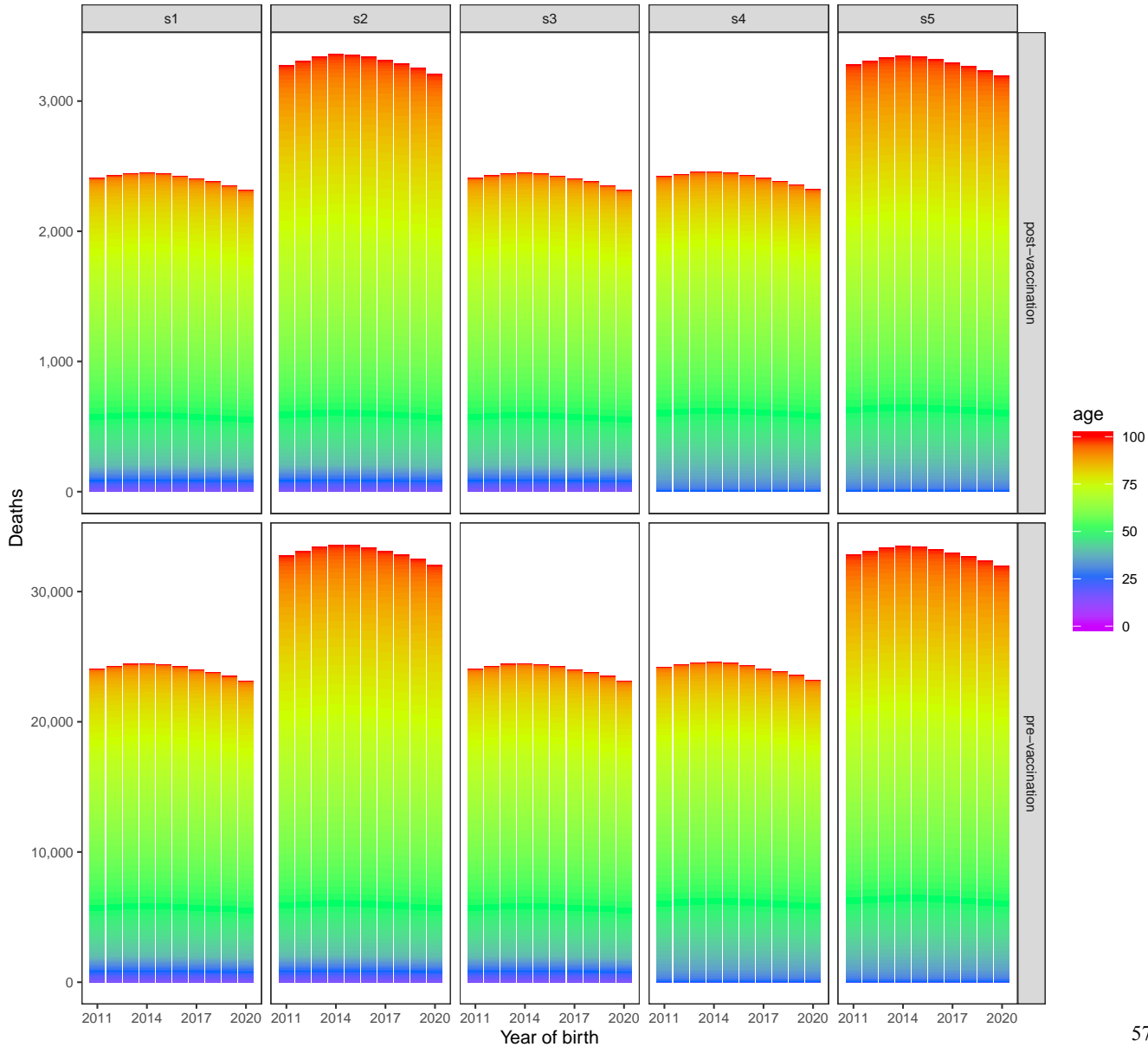
African Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



European Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

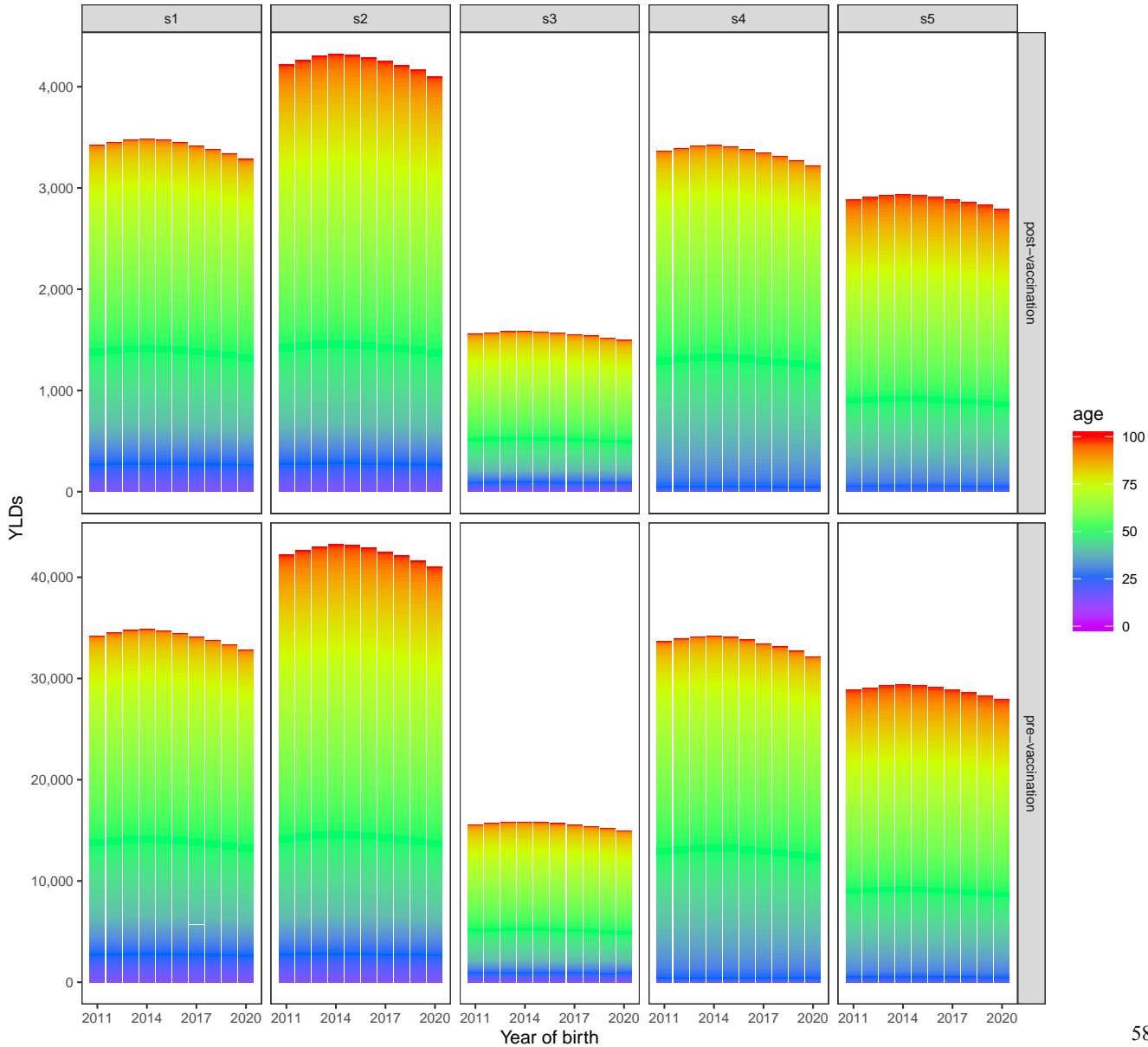


European Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

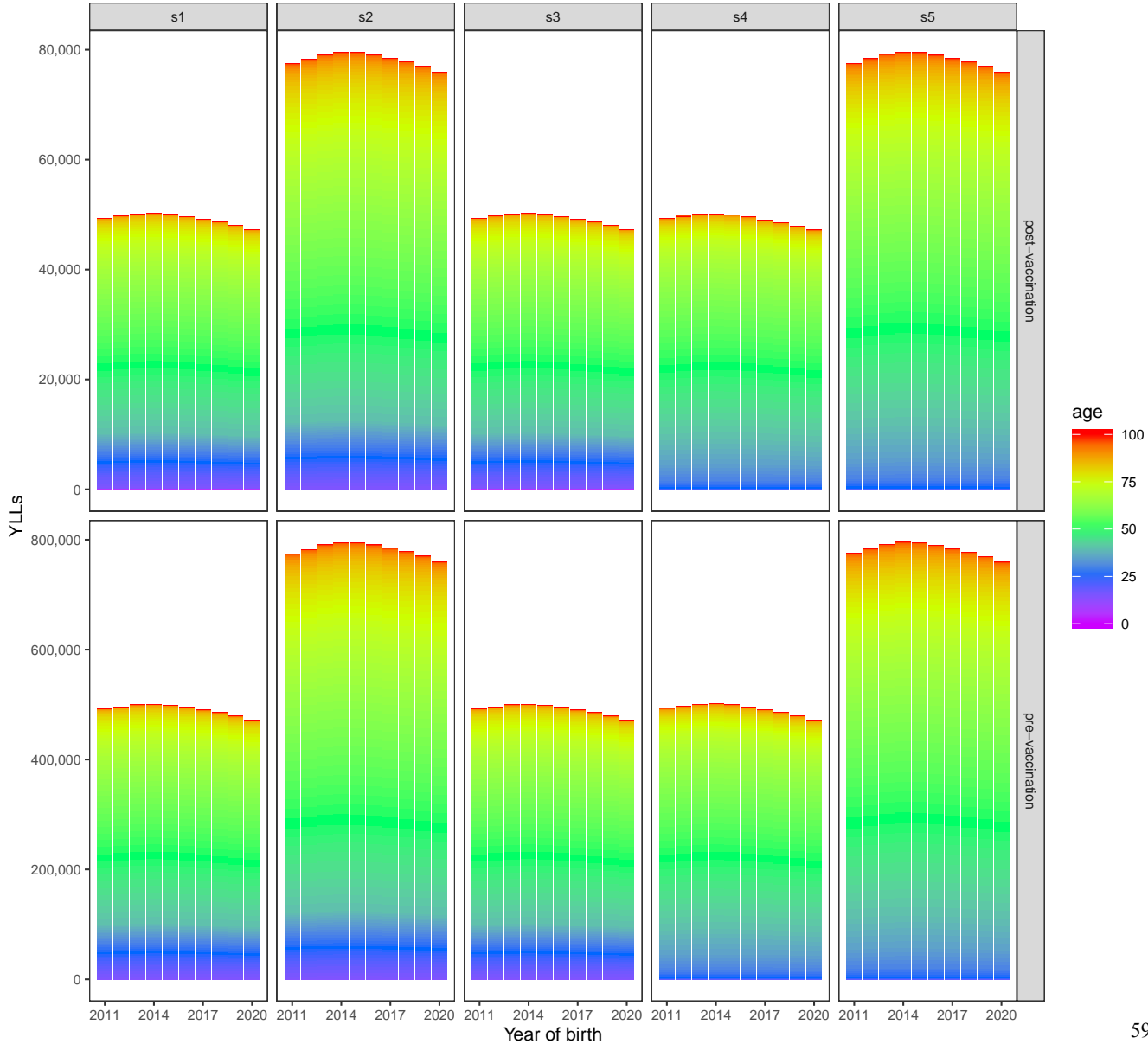




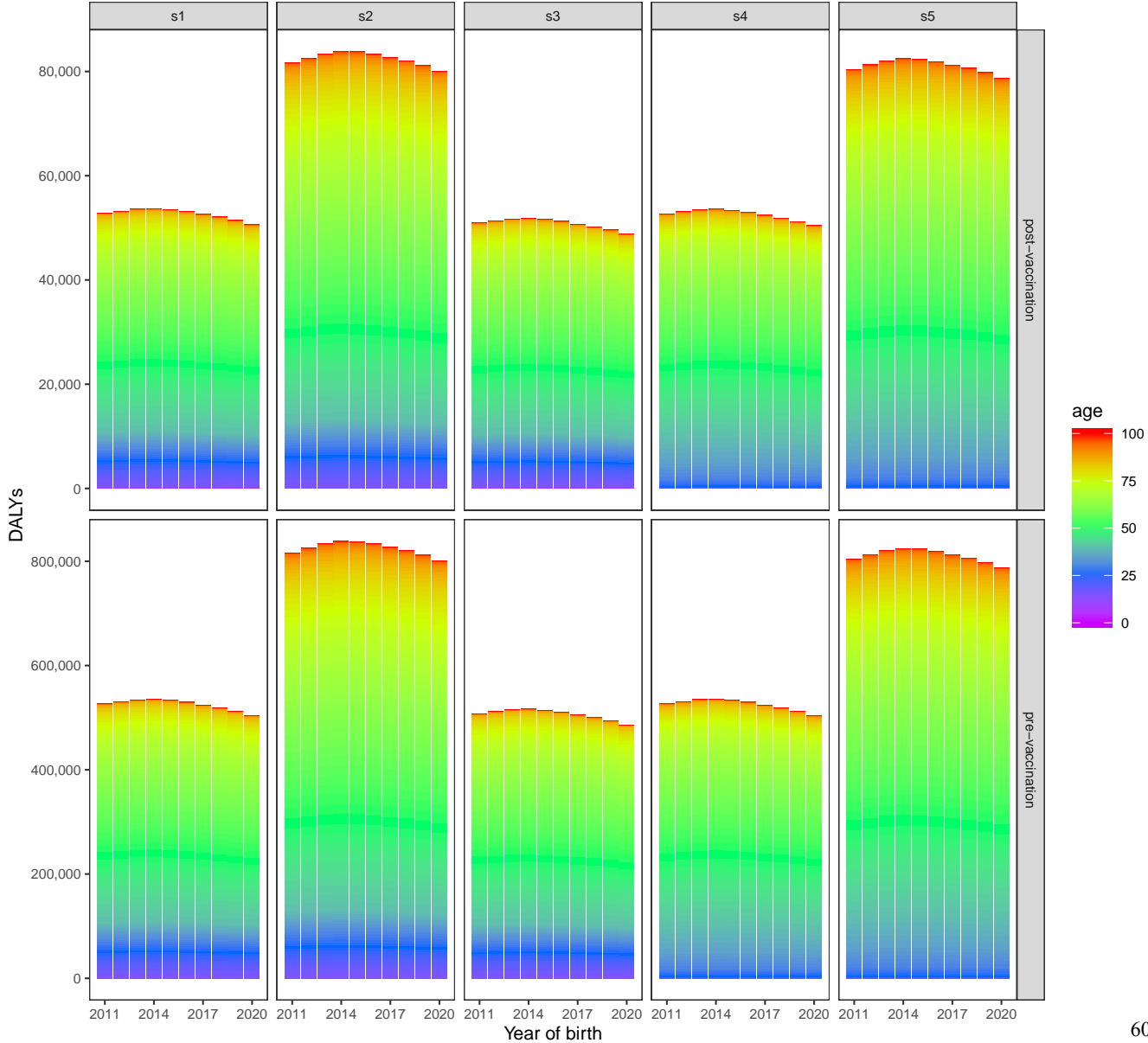
European Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



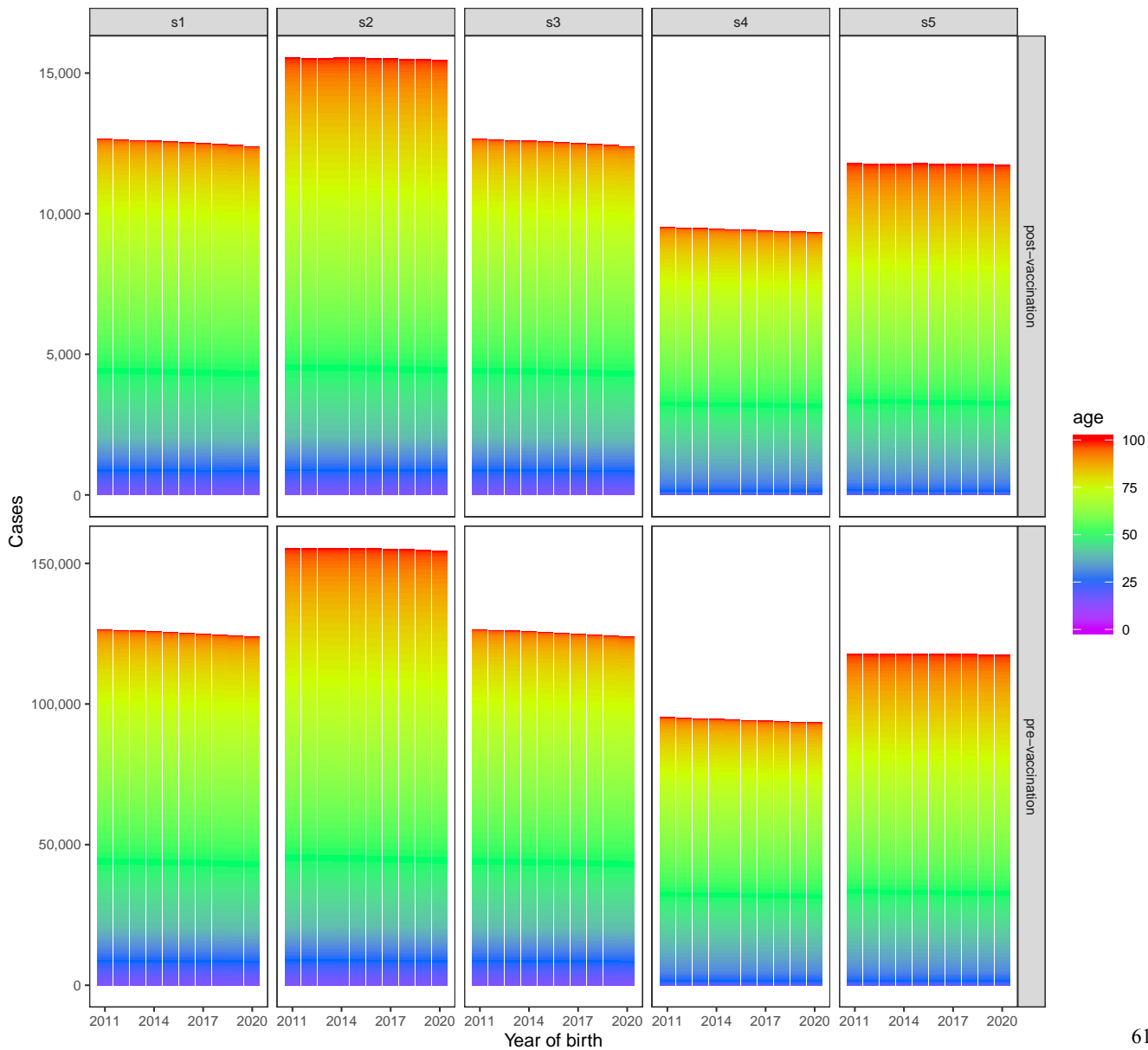
European Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



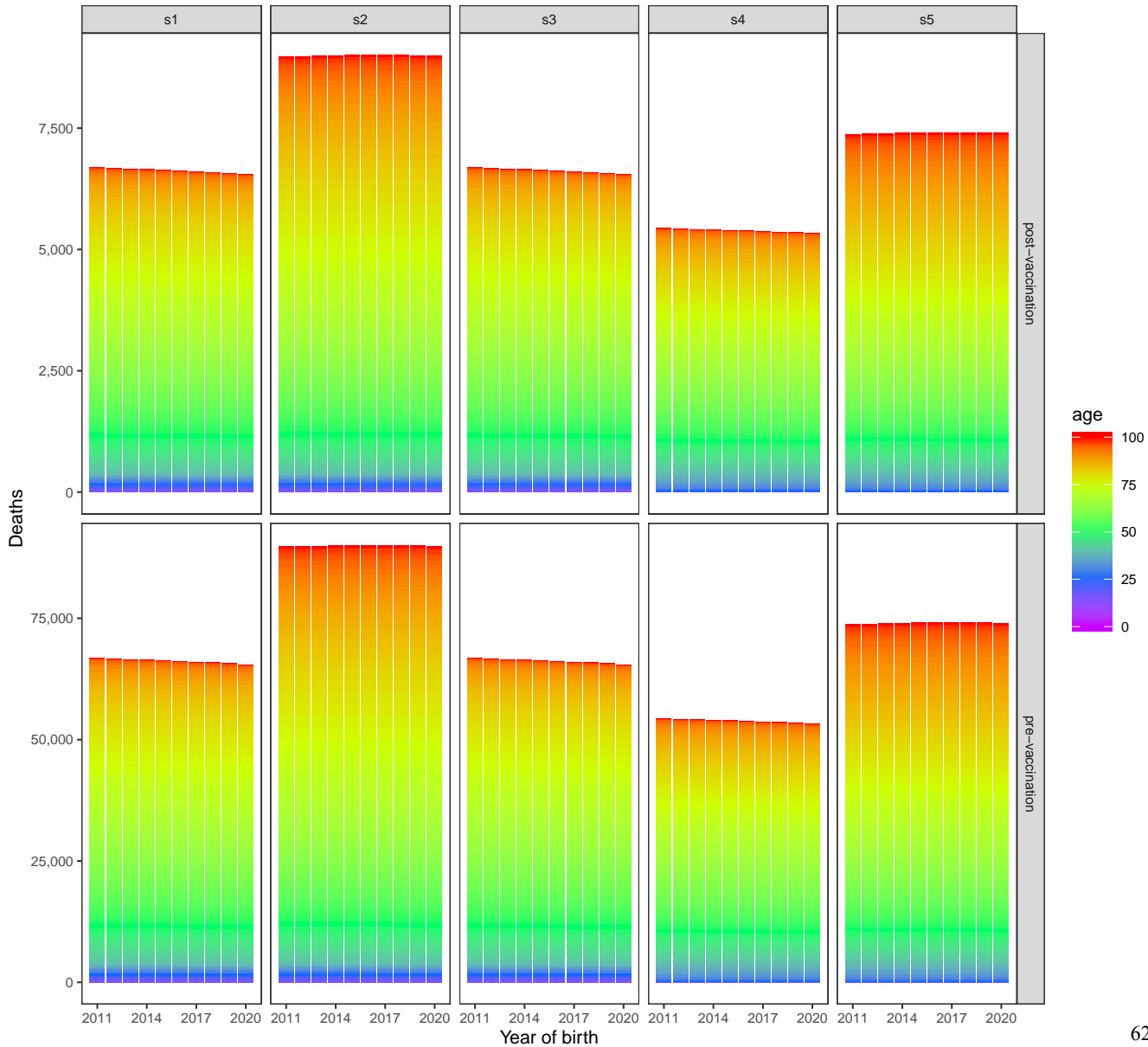
European Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



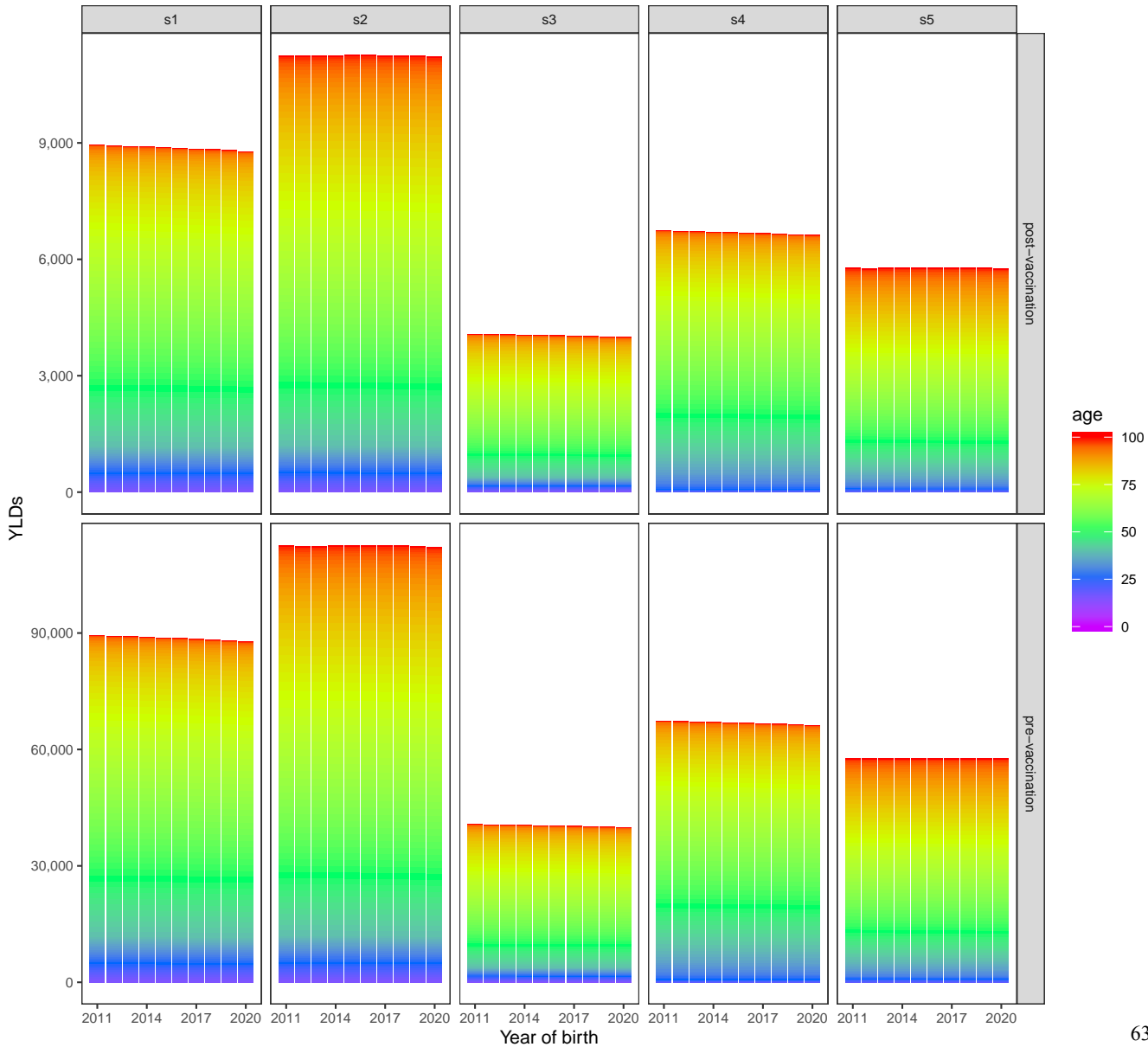
Region of the Americas  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



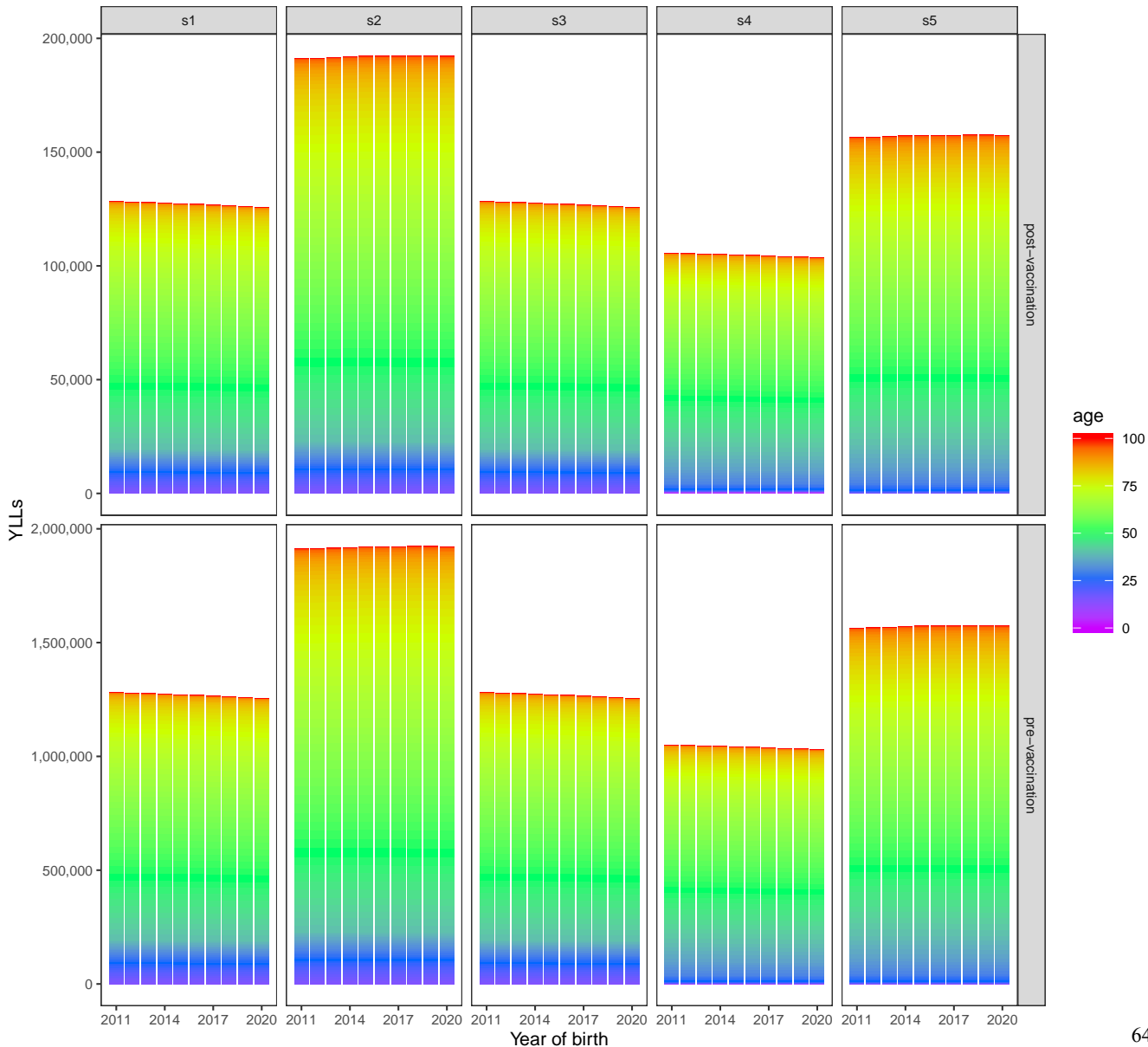
Region of the Americas  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



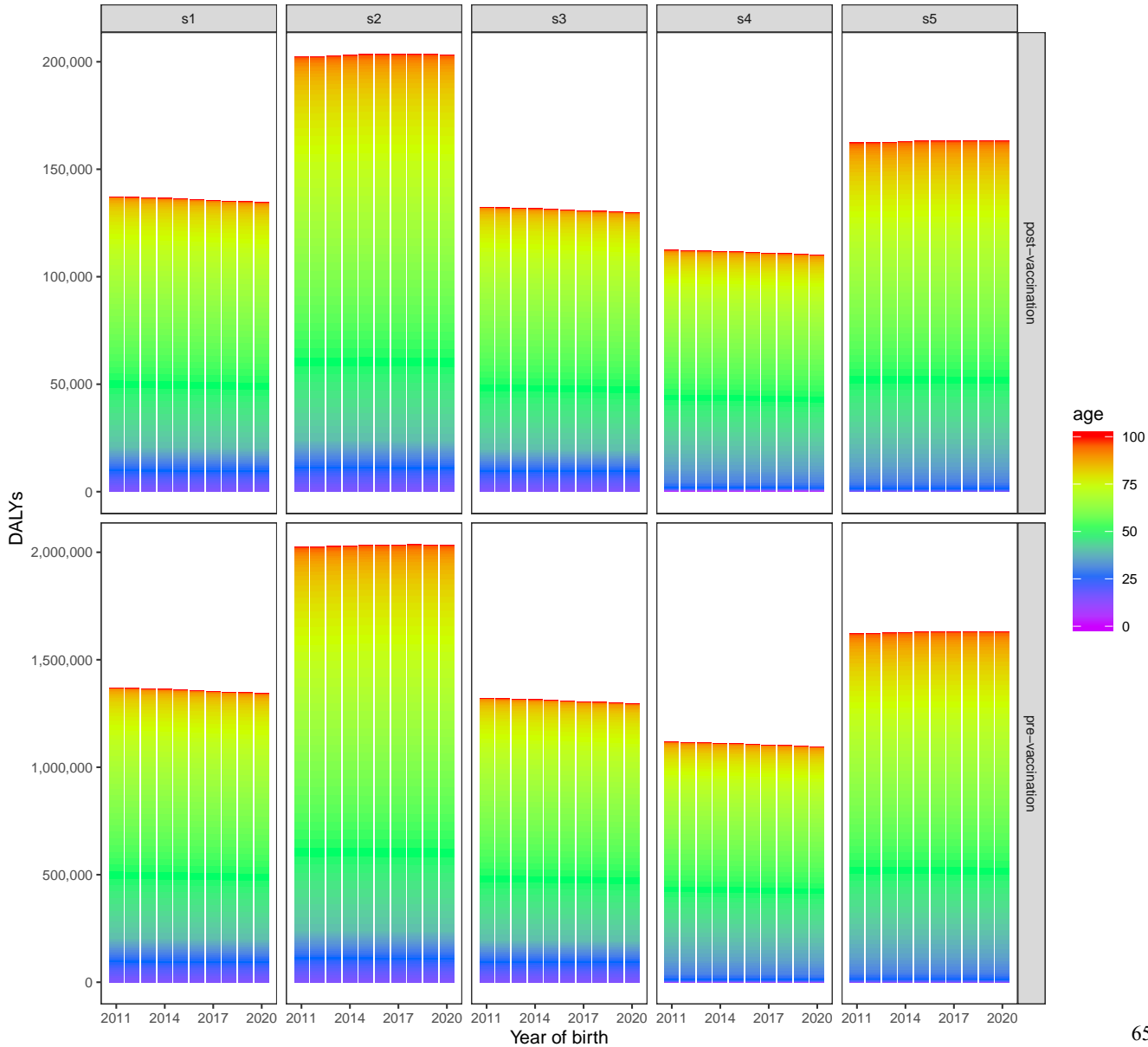
Region of the Americas  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



Region of the Americas  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

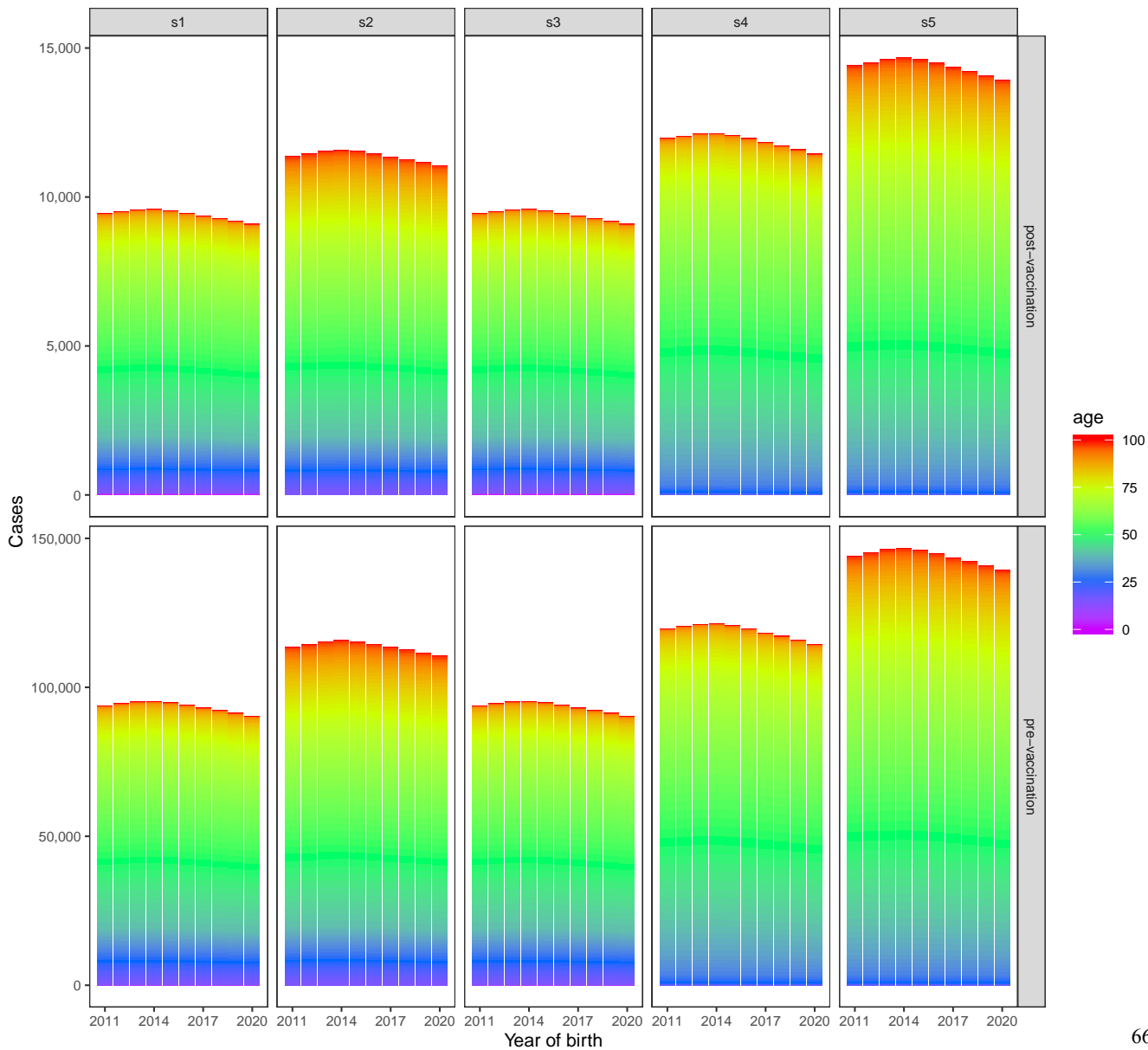


Region of the Americas  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

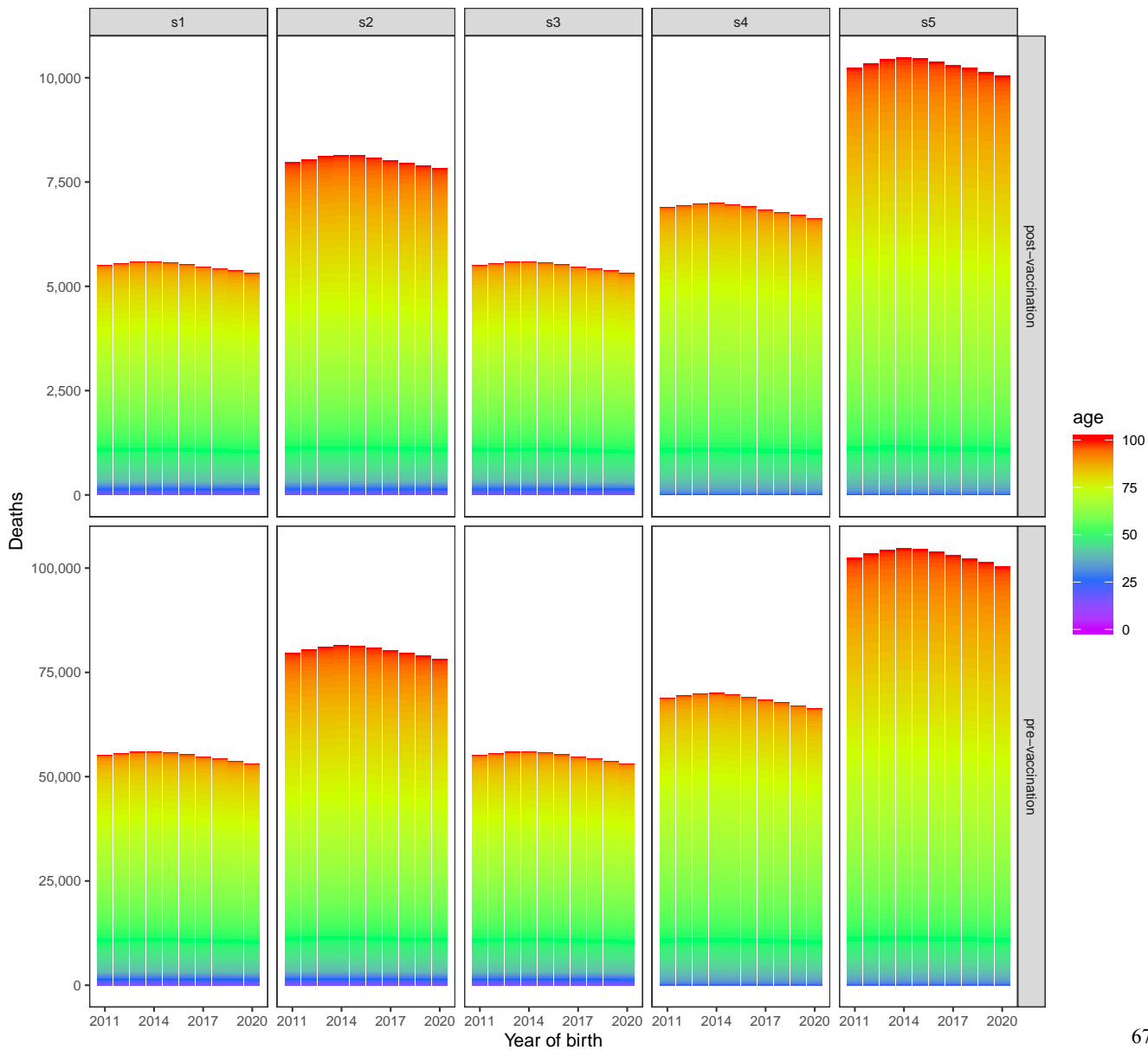




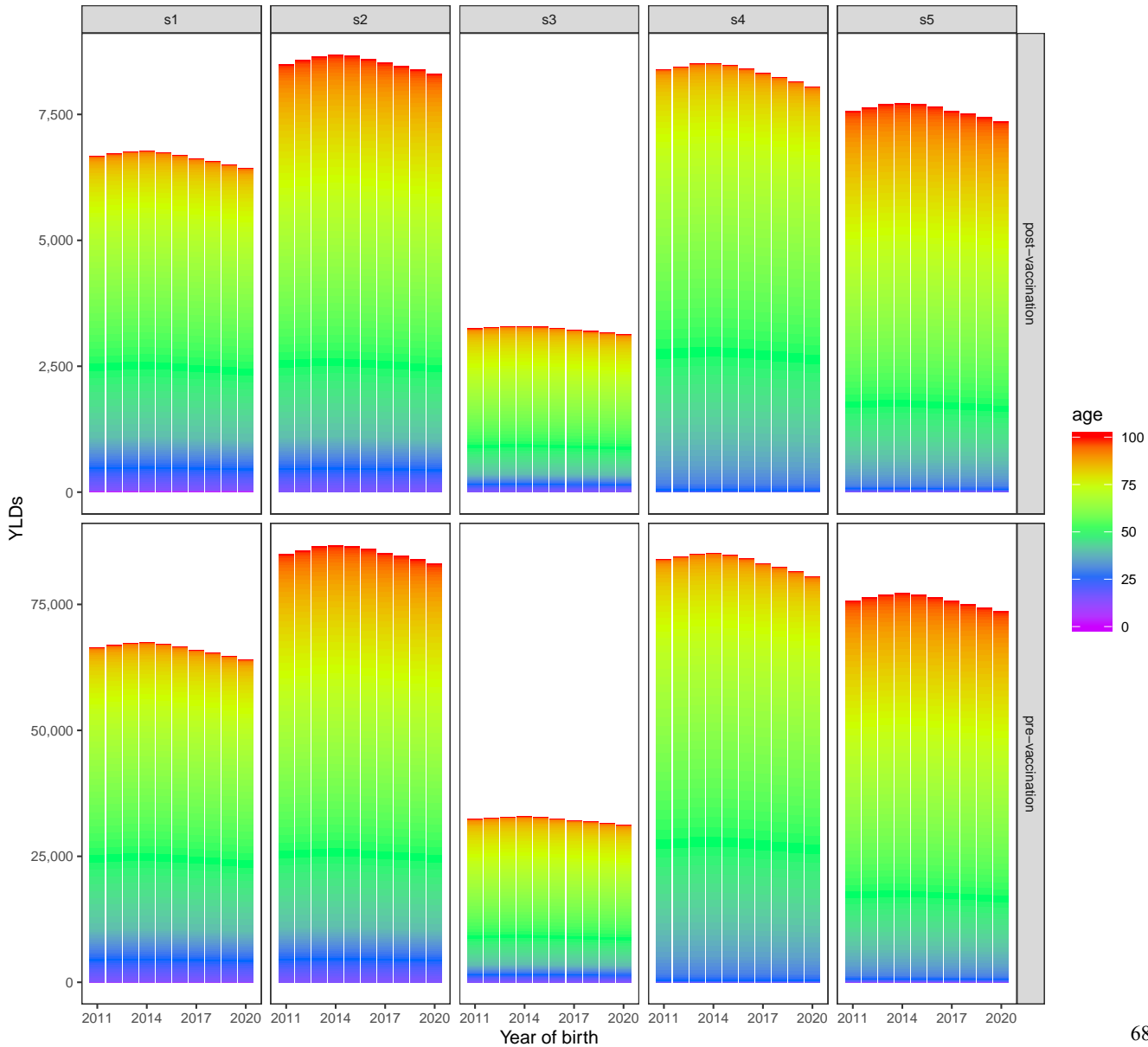
Western Pacific Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



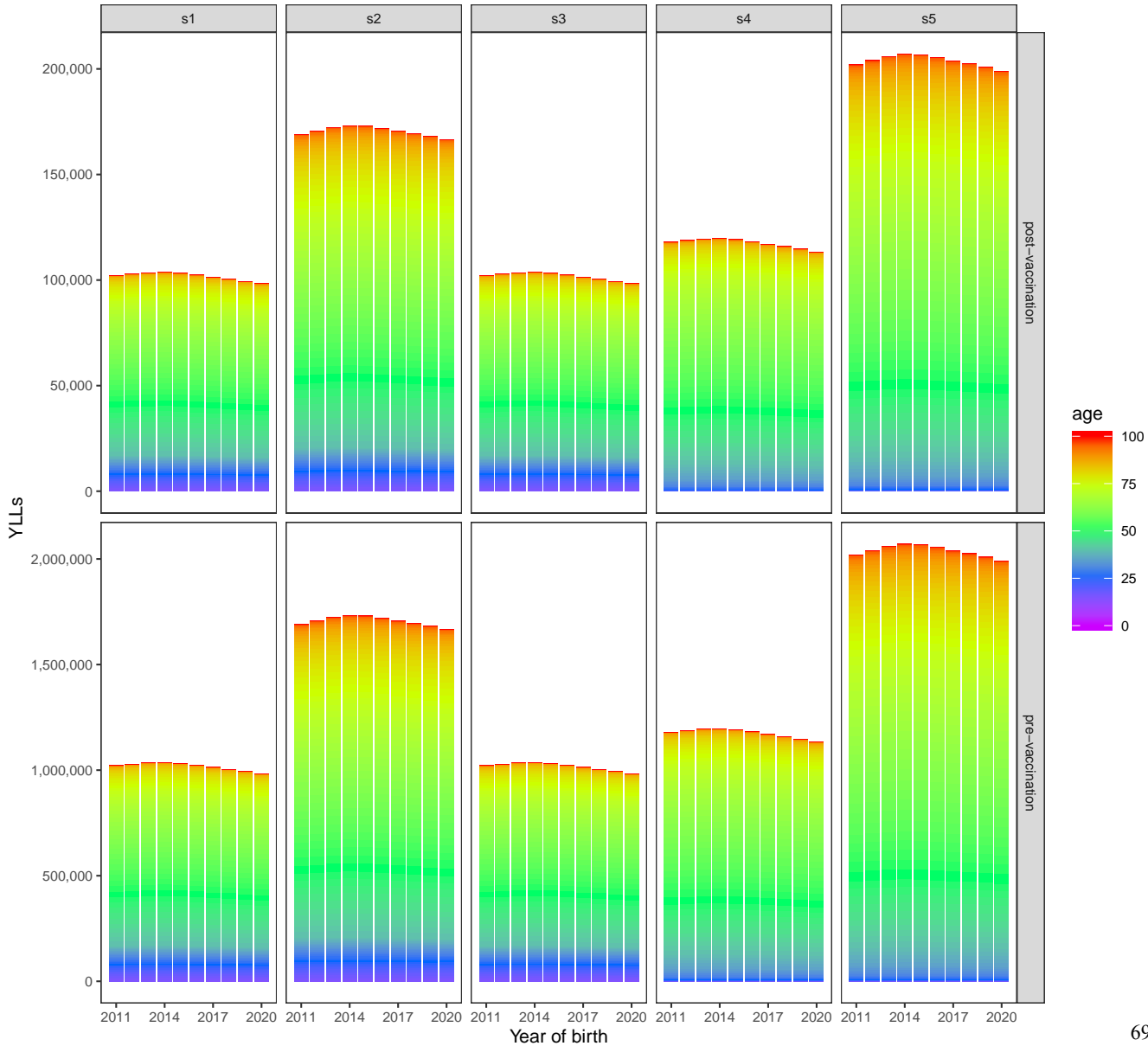
Western Pacific Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



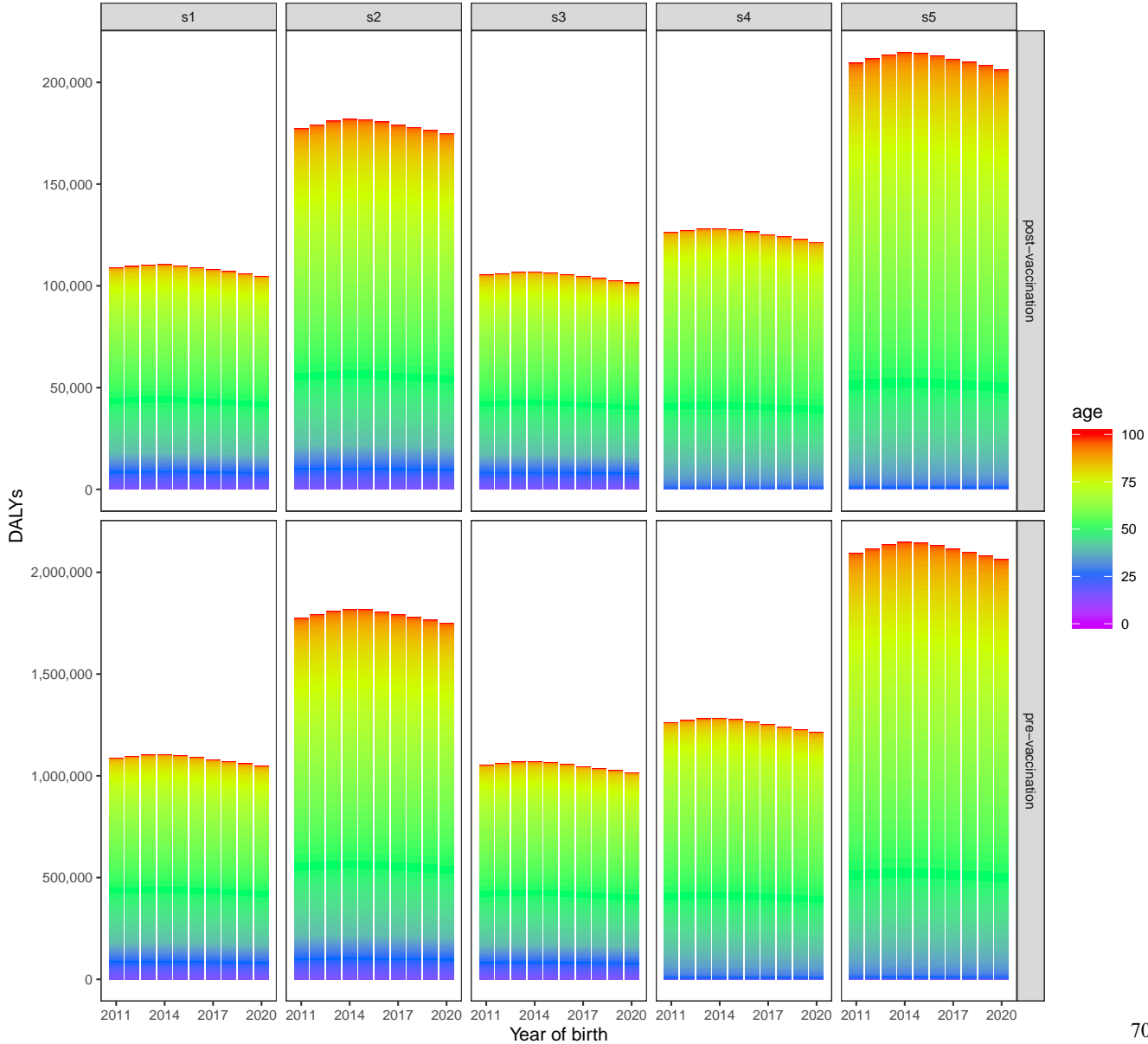
Western Pacific Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



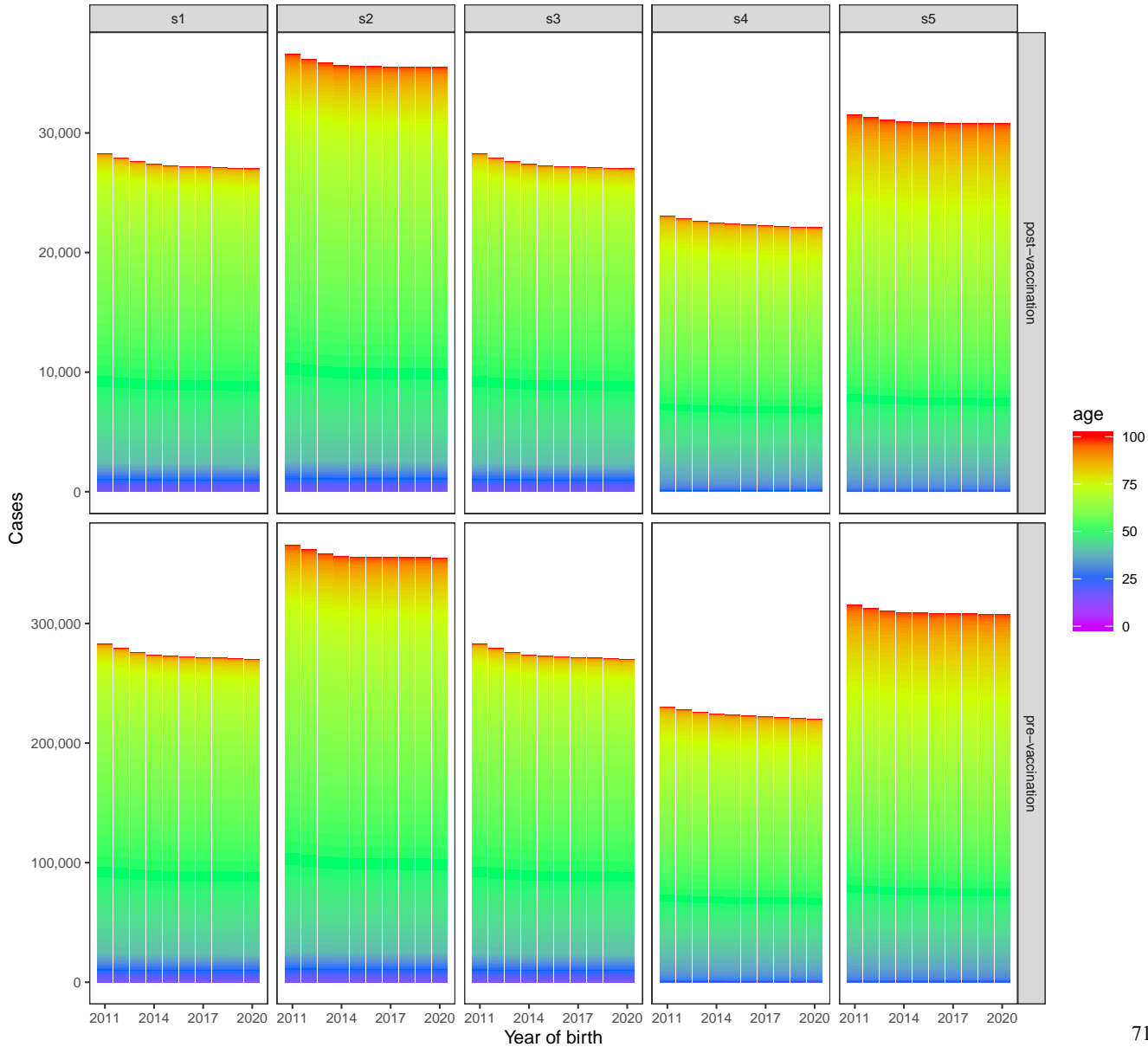
Western Pacific Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



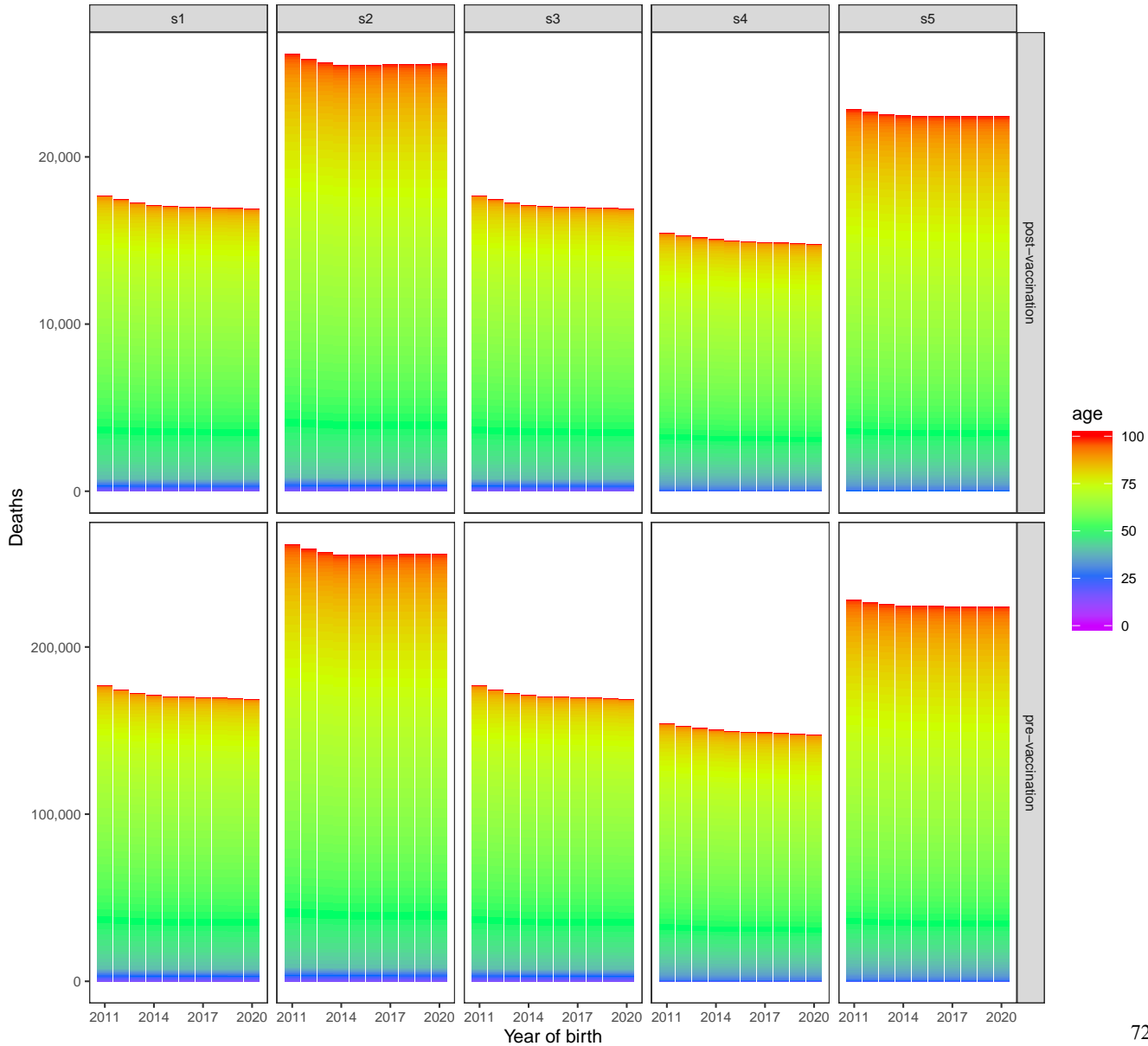
Western Pacific Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



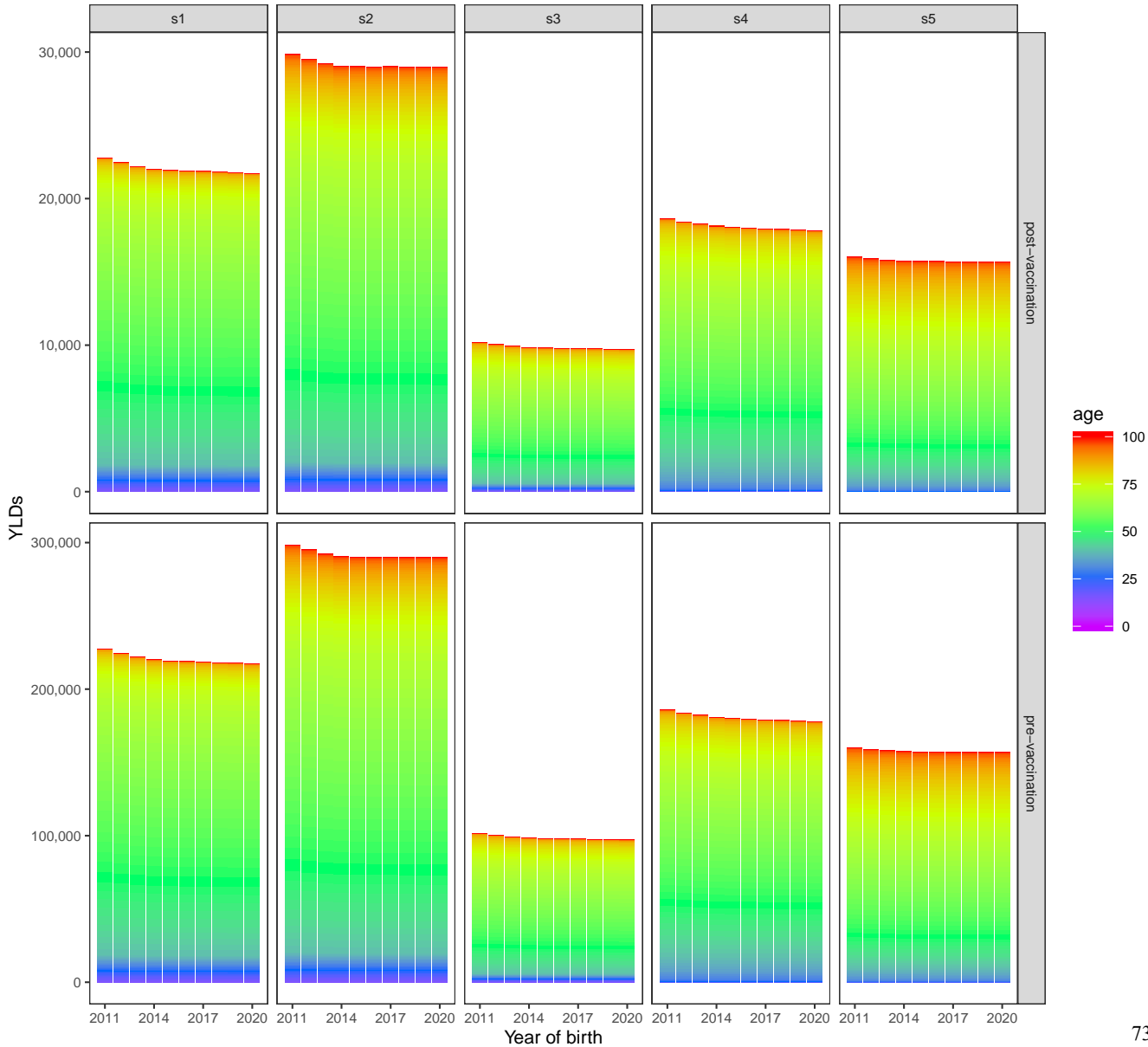
South-East Asia Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



South-East Asia Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

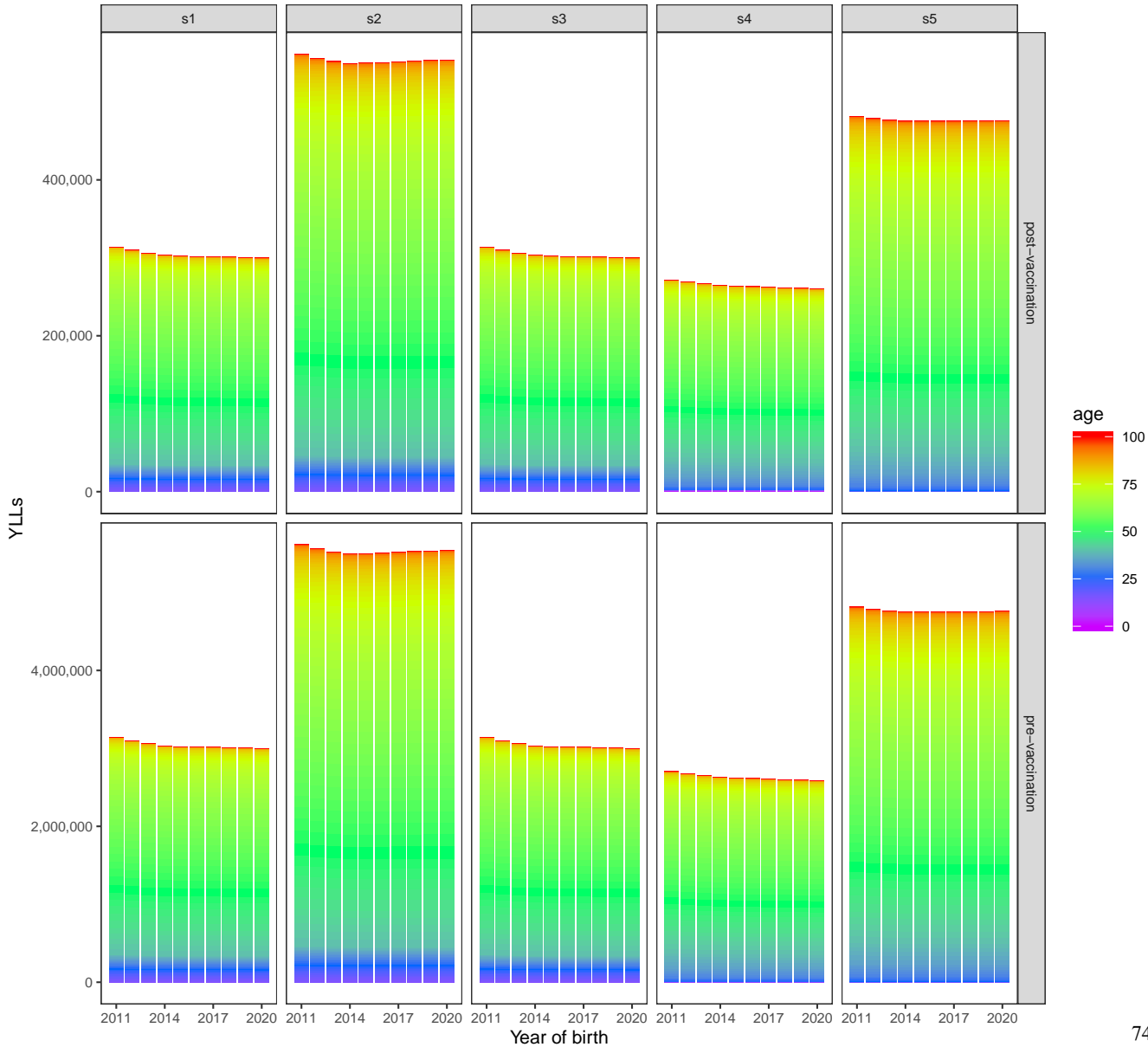


South-East Asia Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)

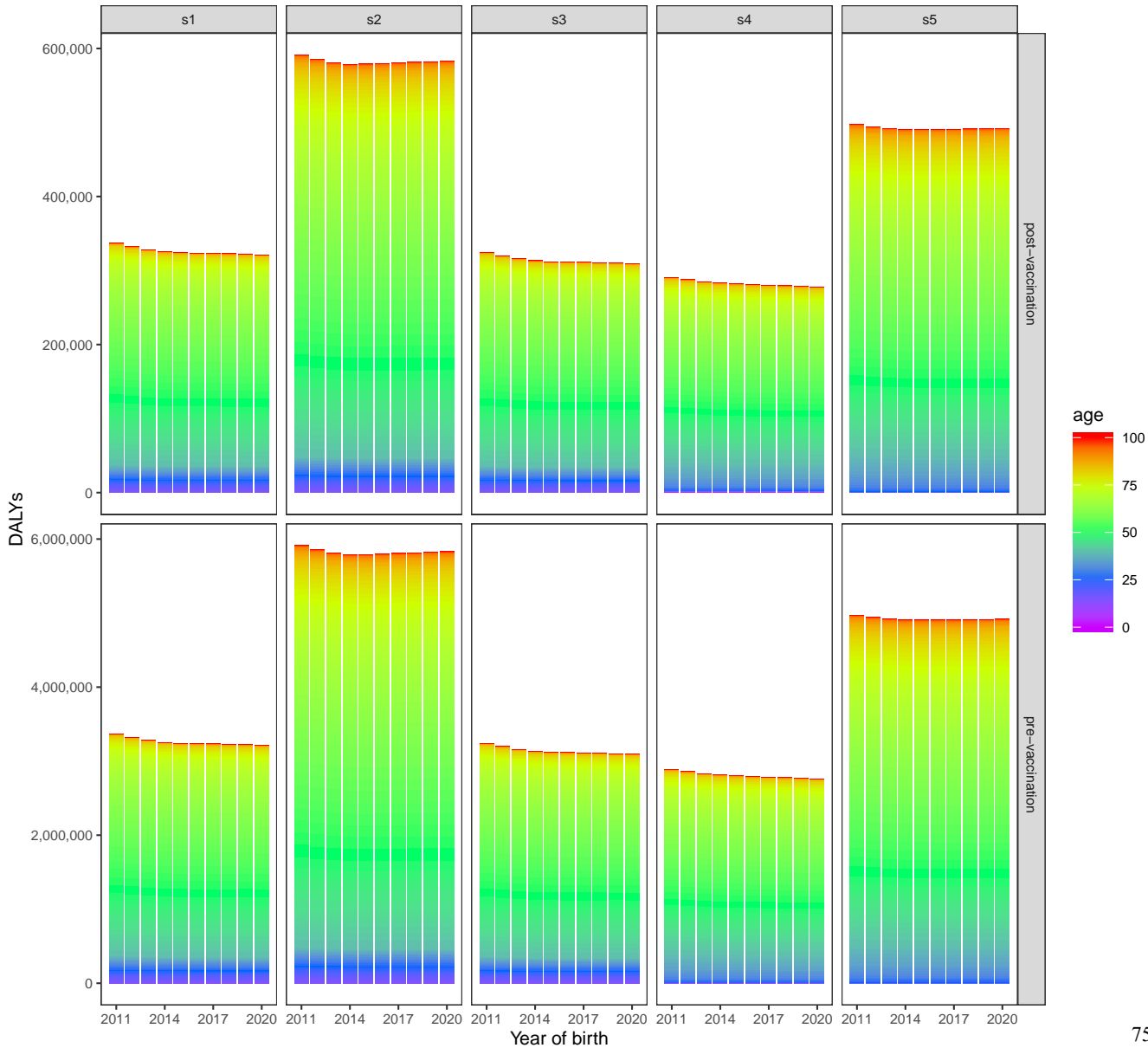




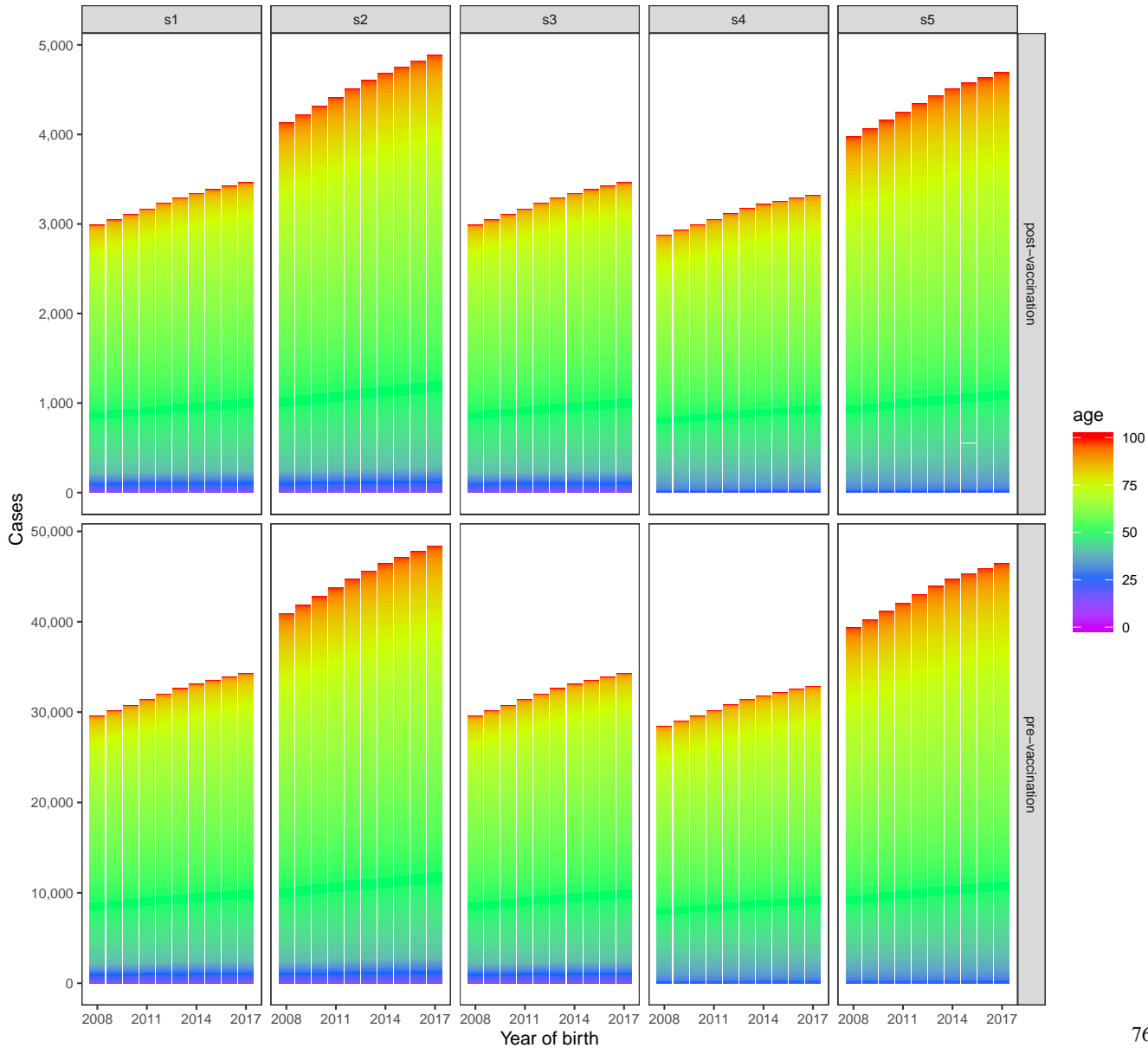
South-East Asia Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



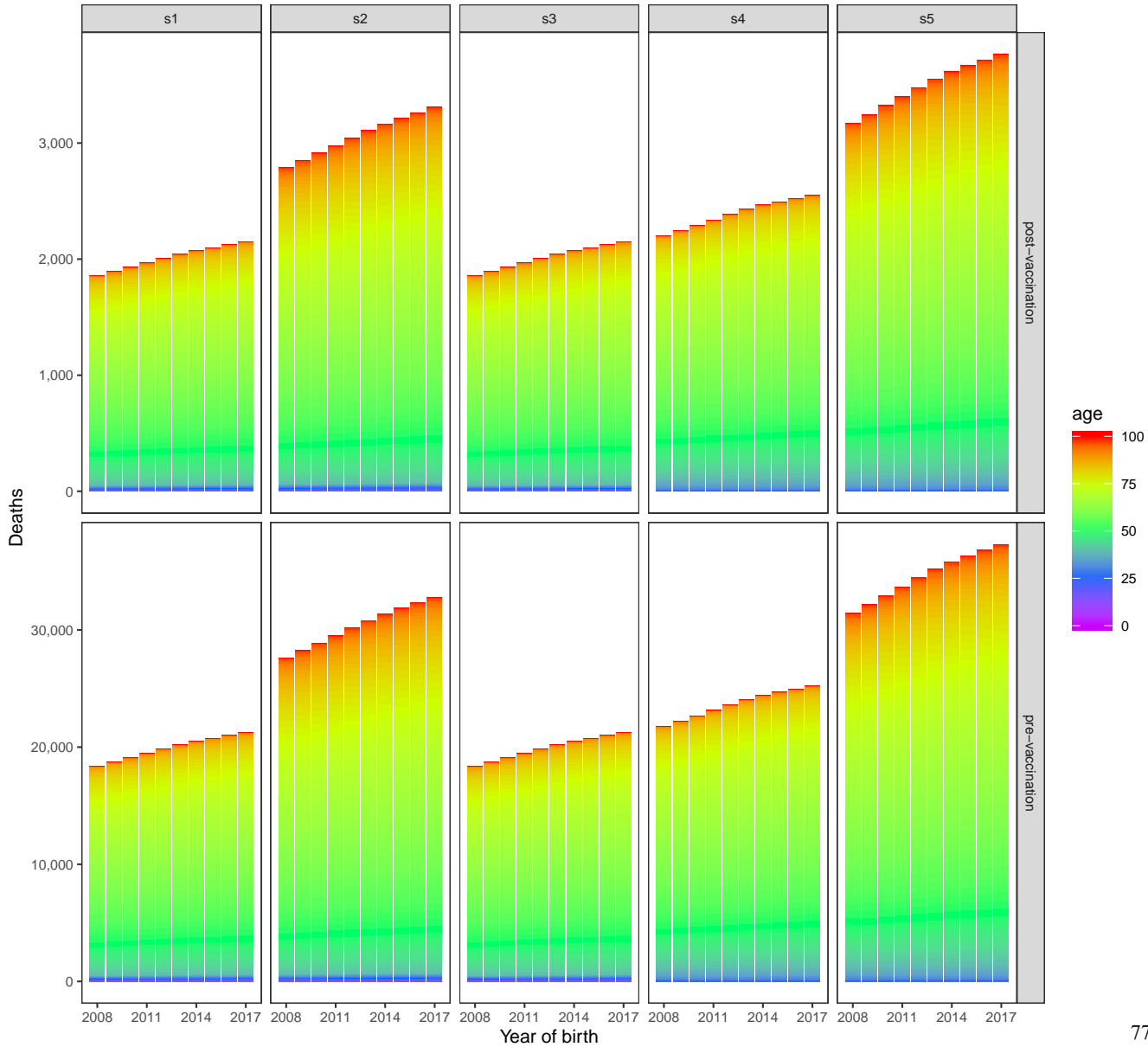
South-East Asia Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 9 years / nonavalent vaccine)



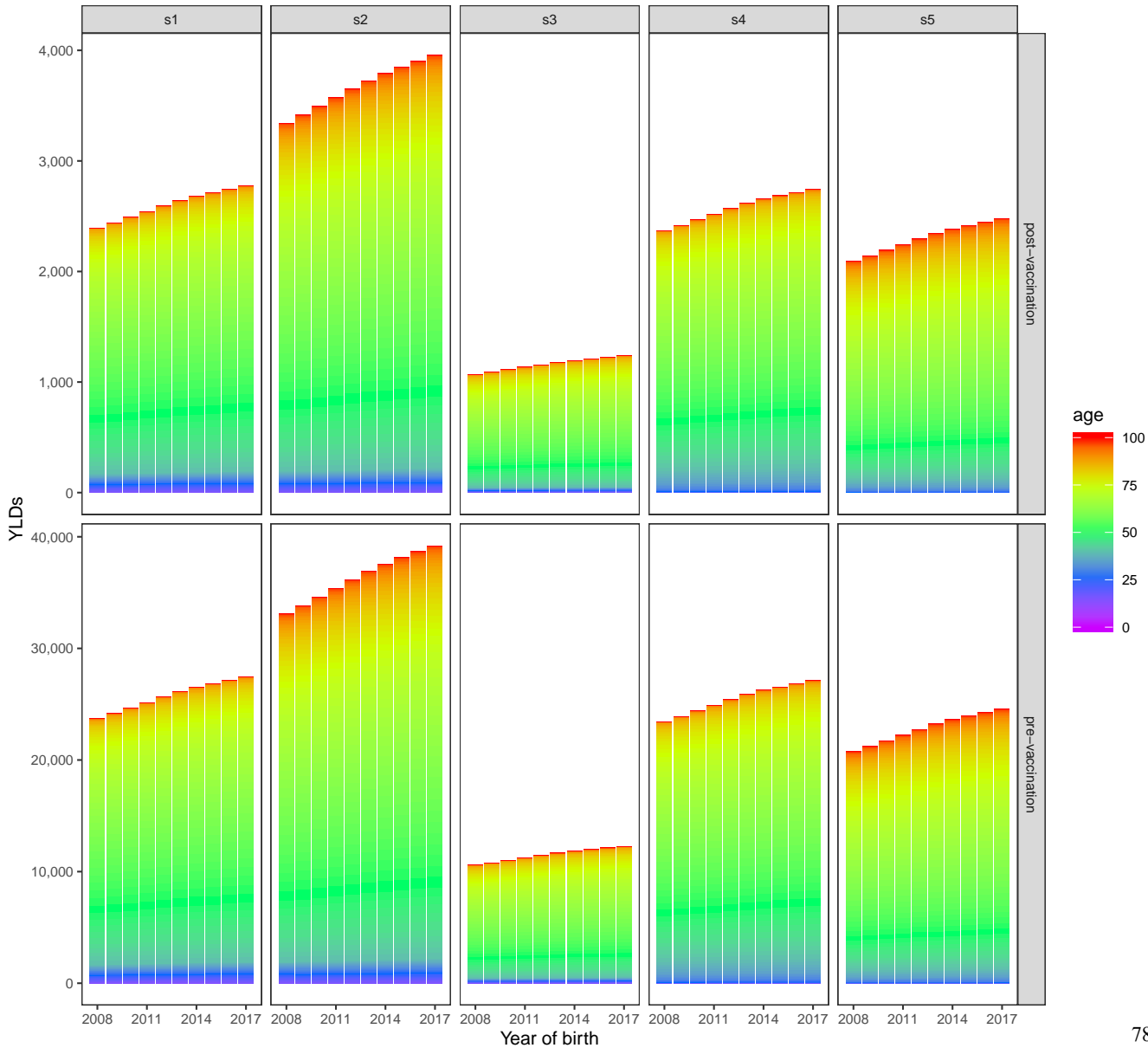
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



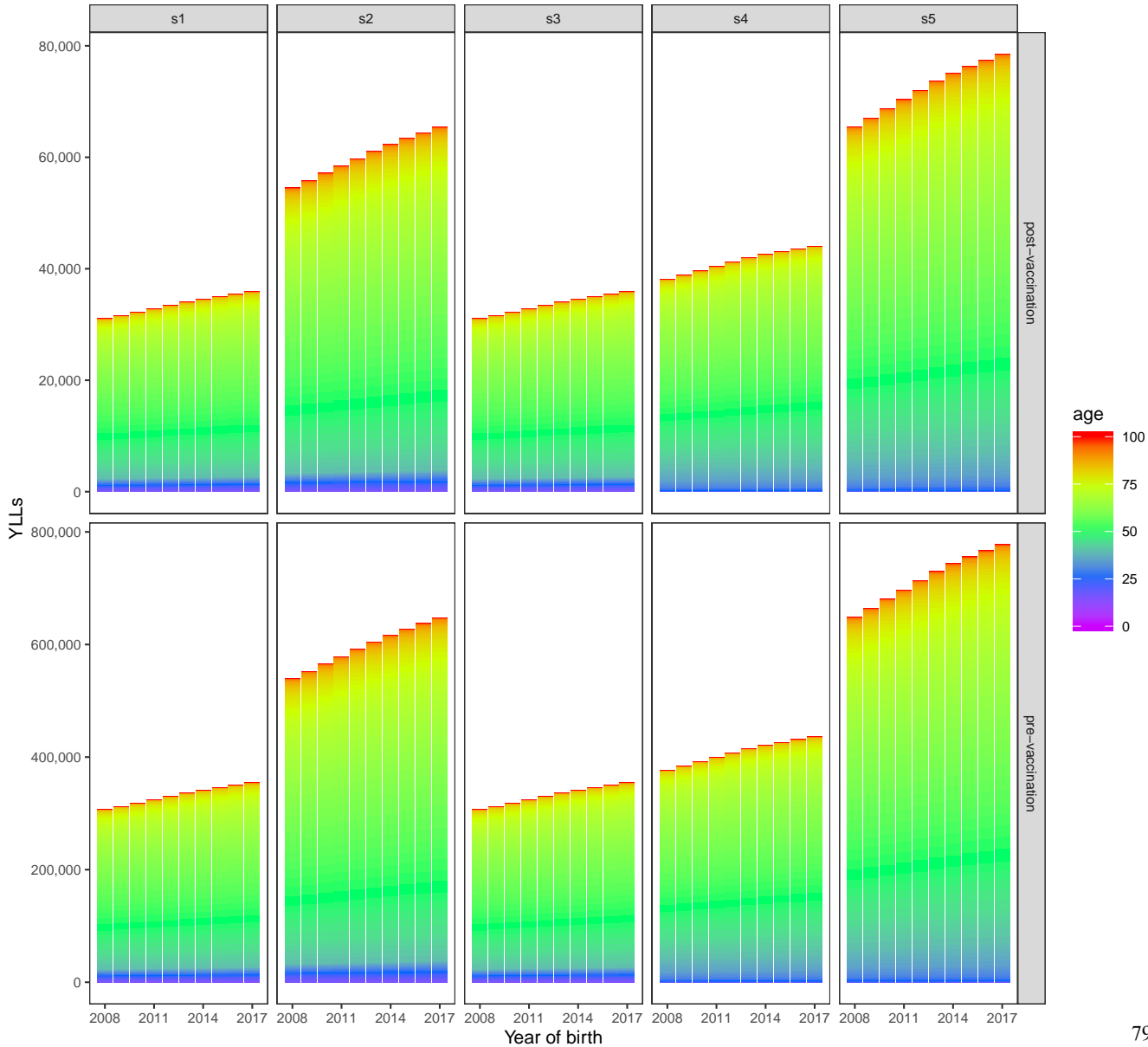
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



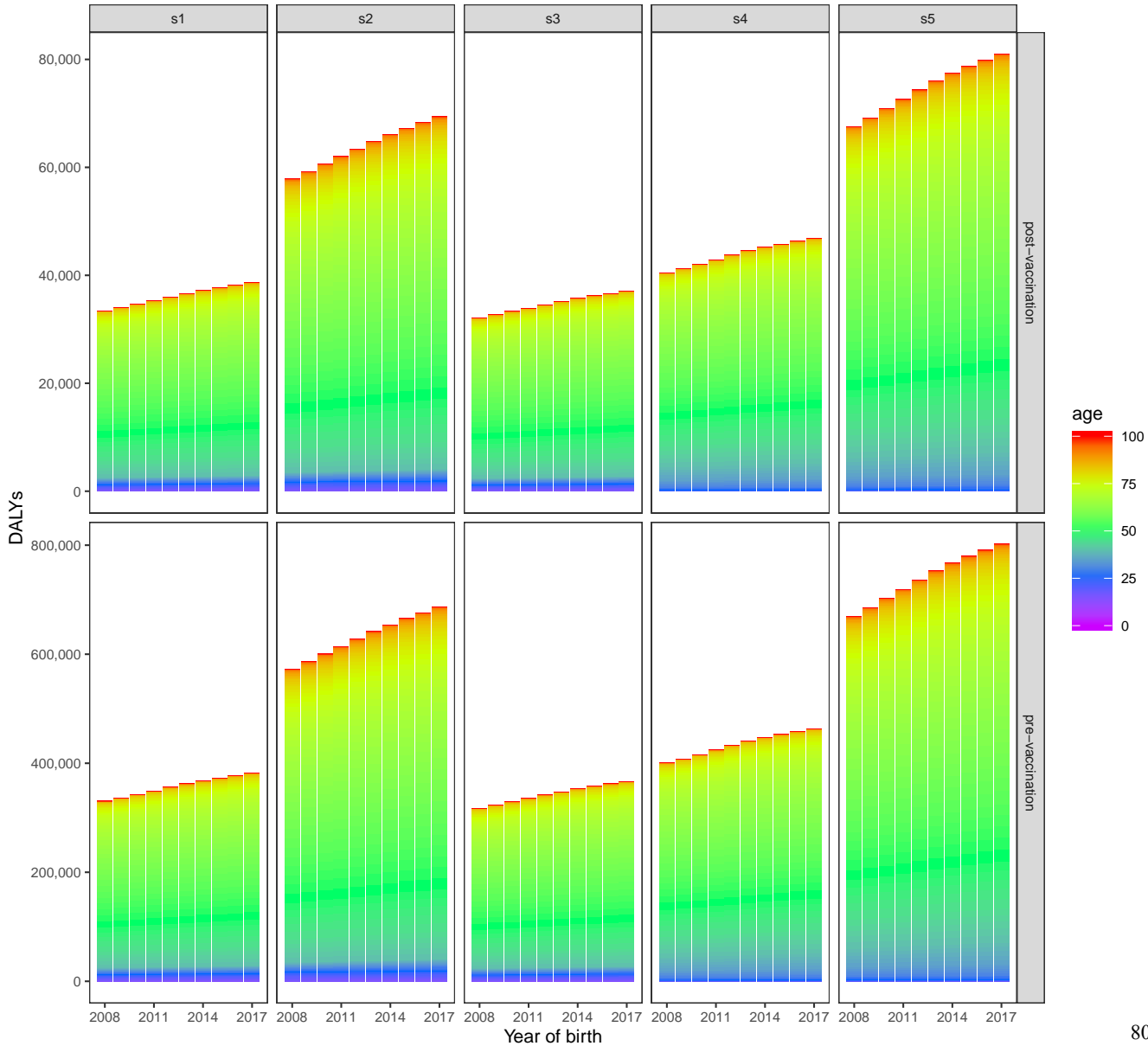
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



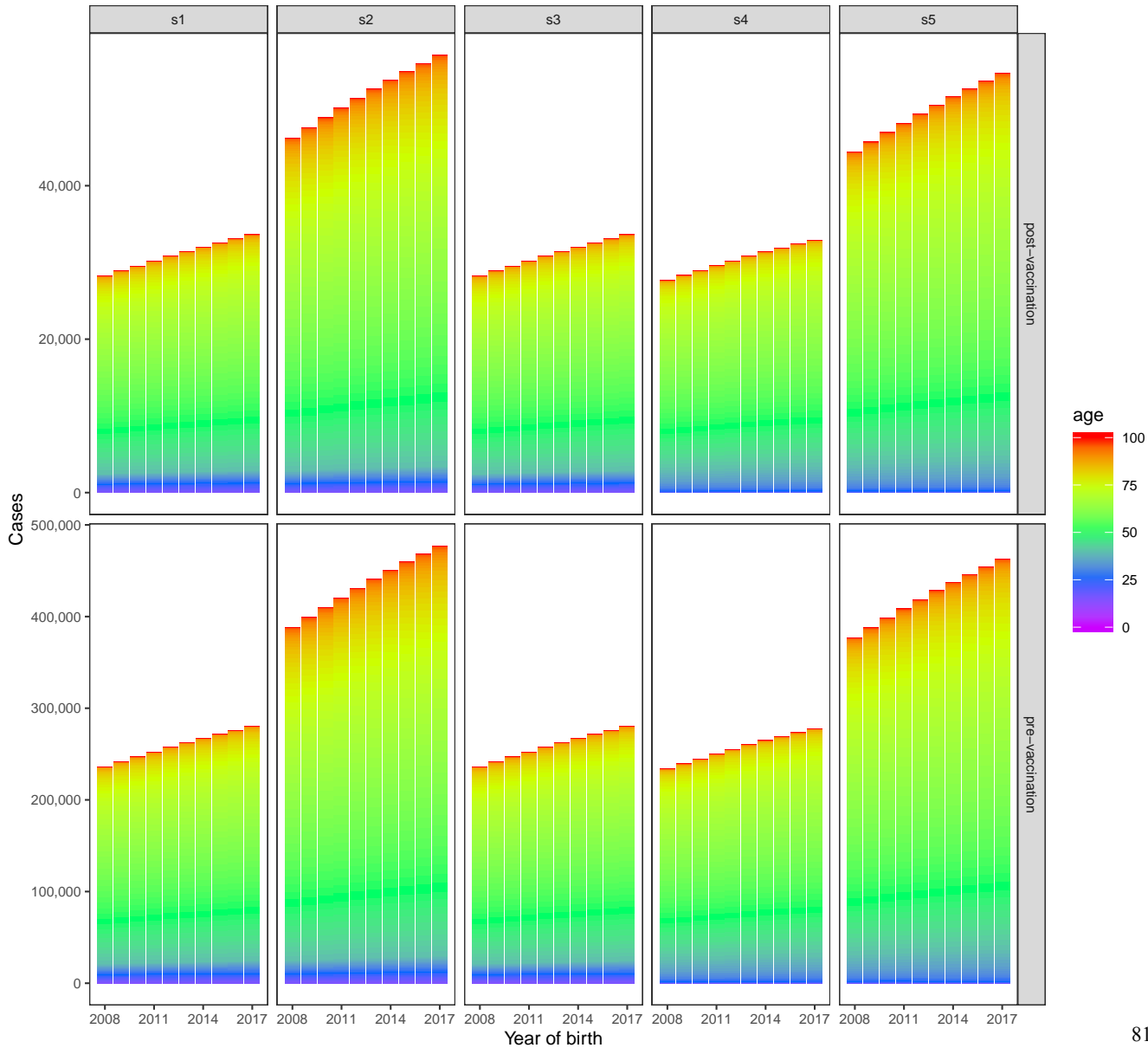
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



Eastern Mediterranean Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

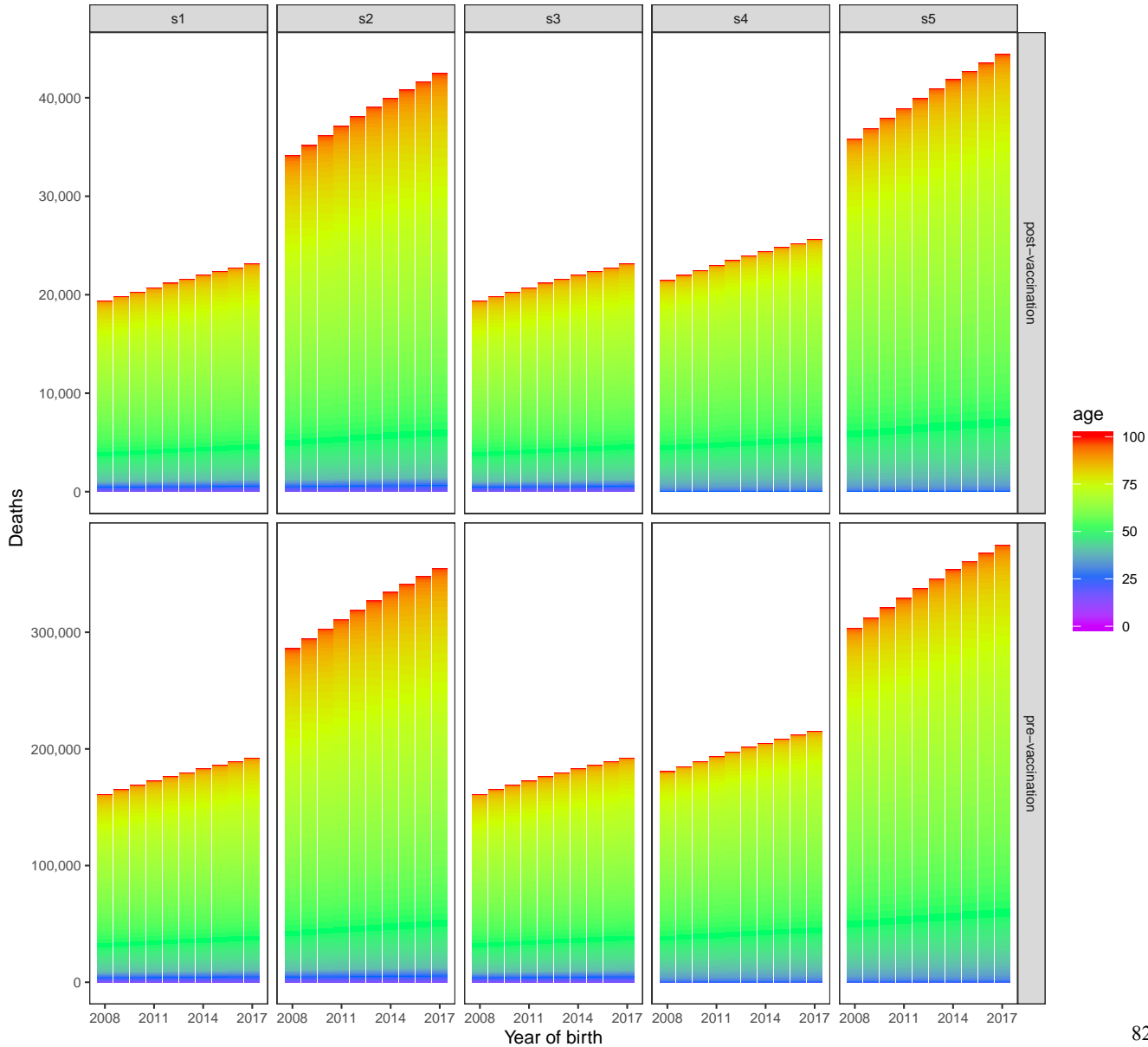


African Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

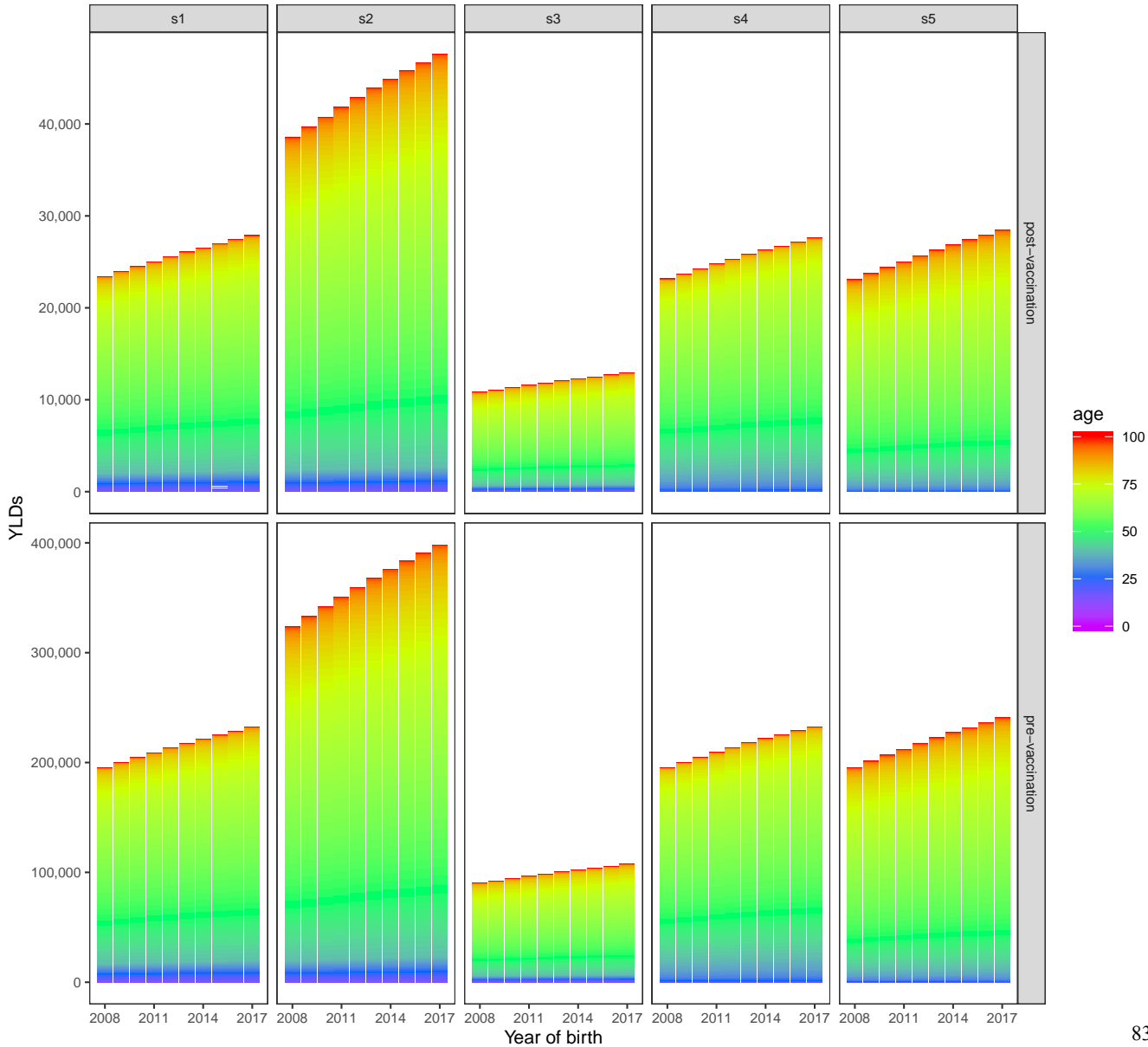




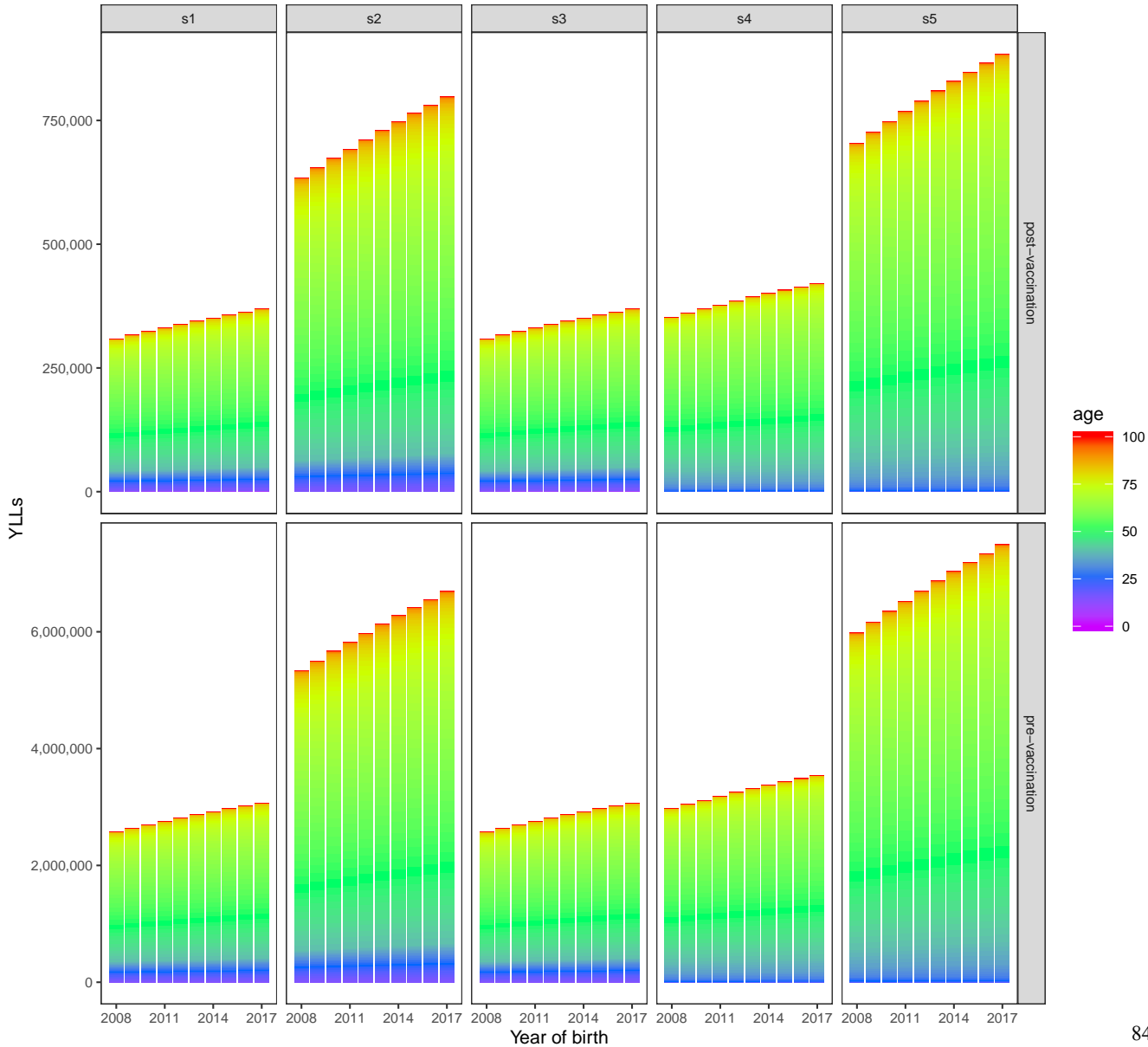
African Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



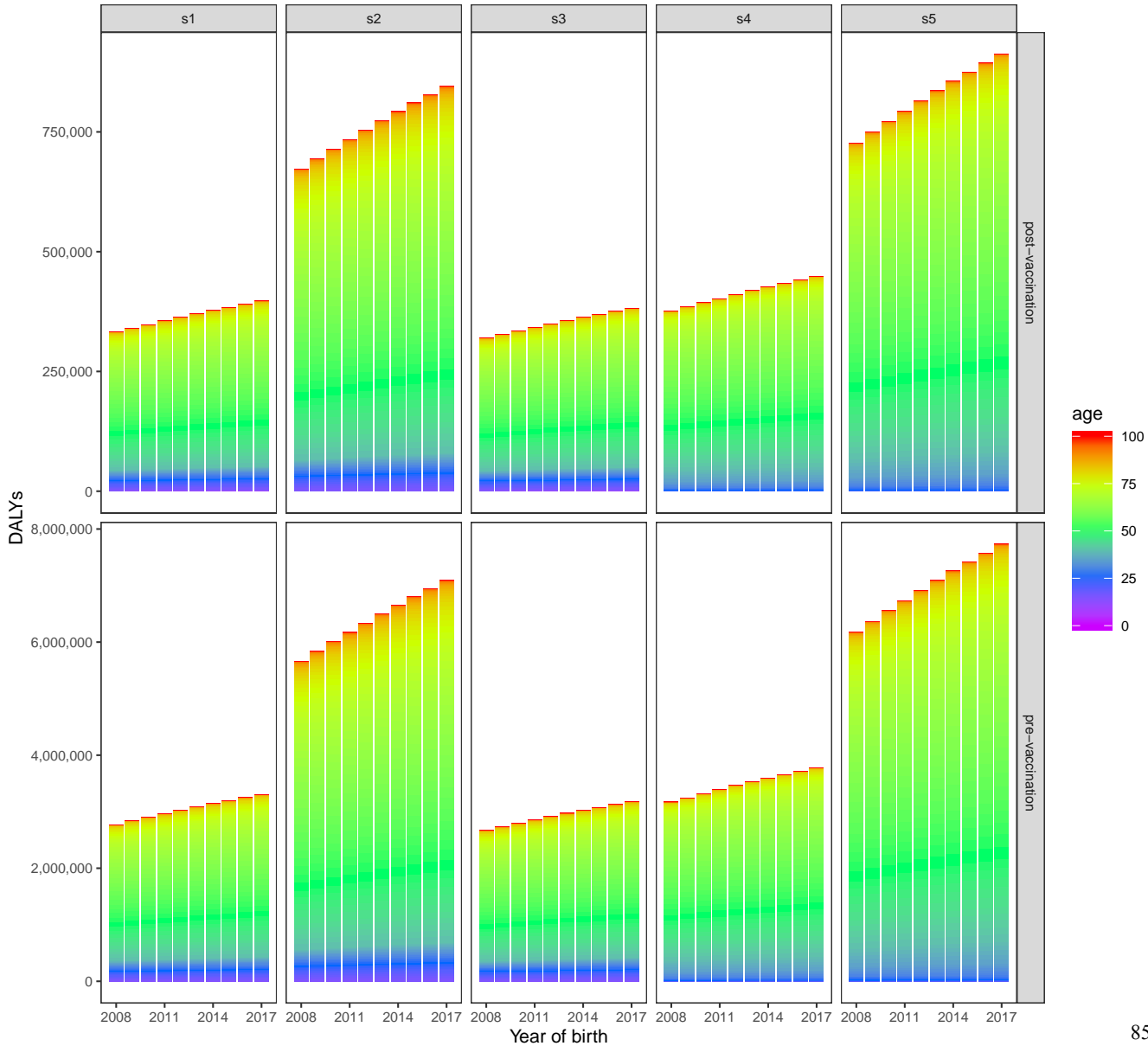
African Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



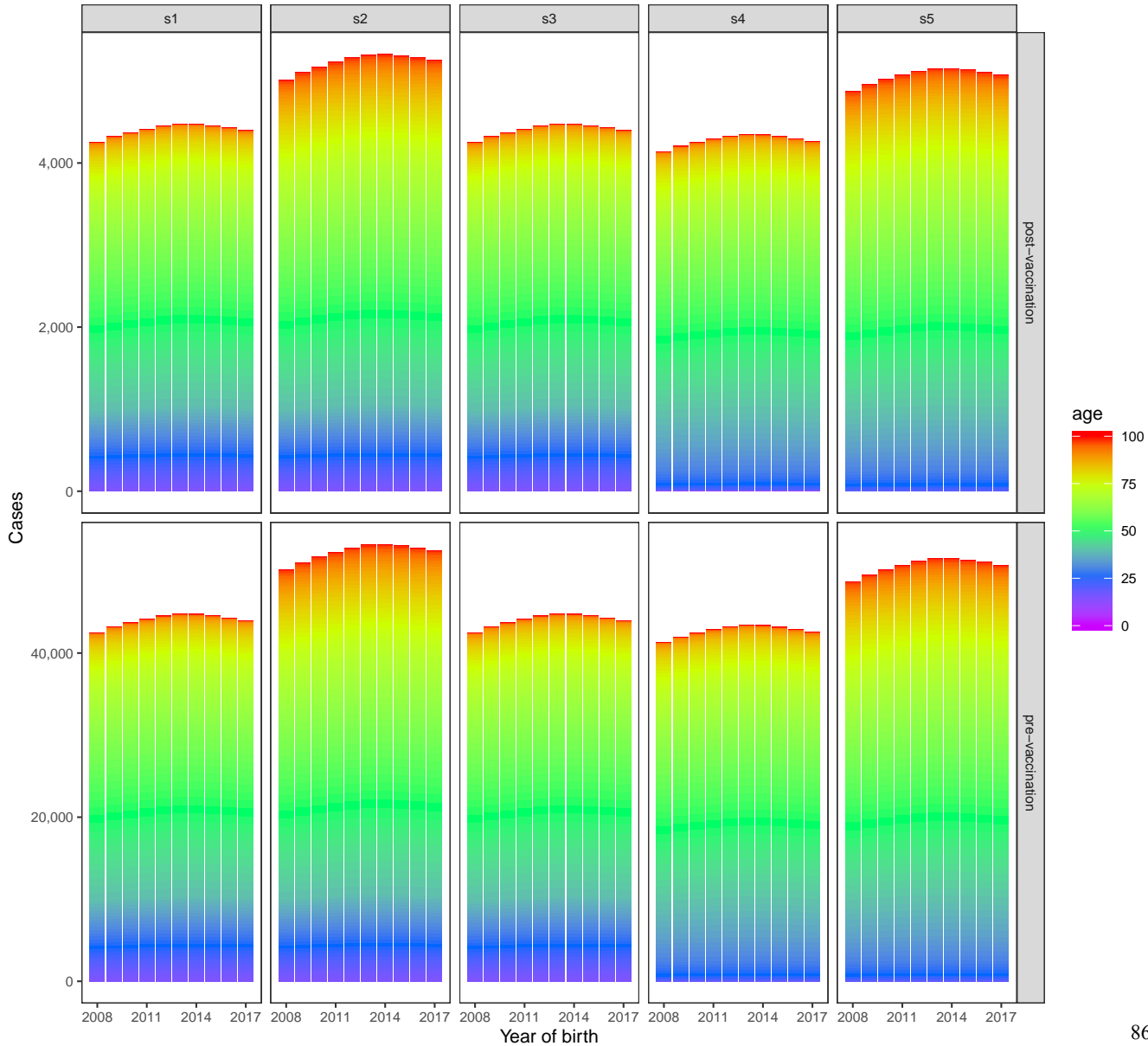
African Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



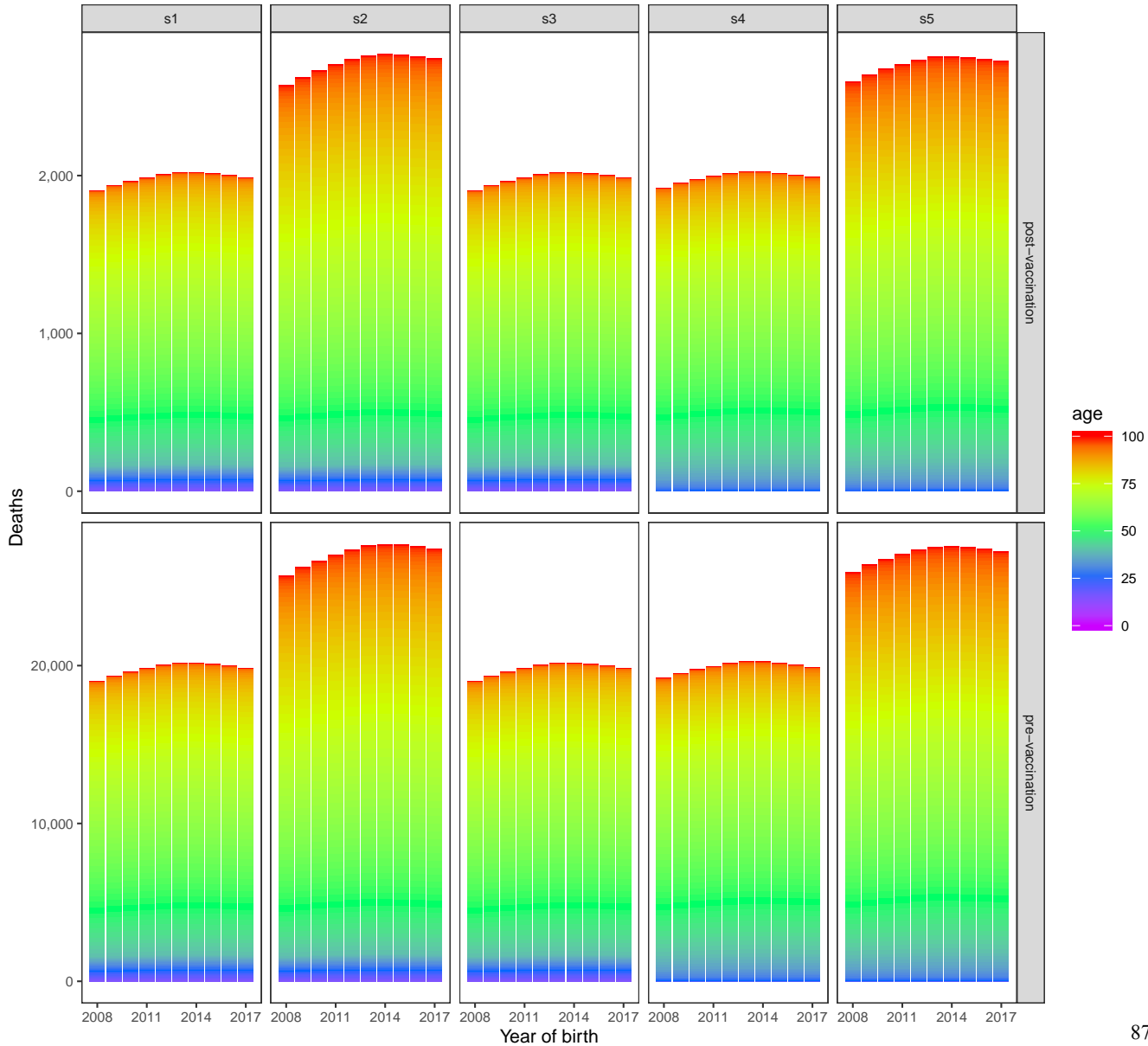
African Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



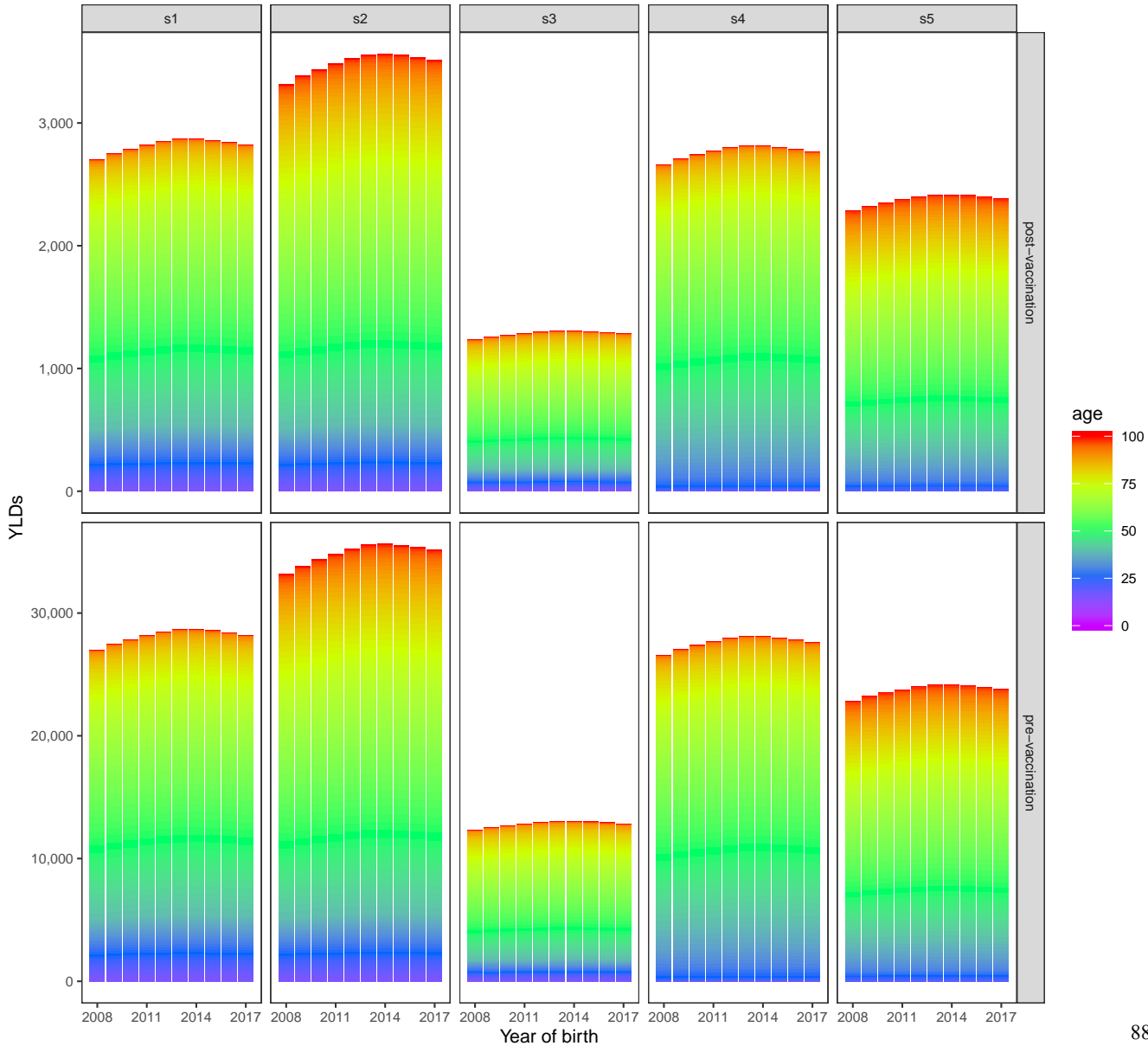
European Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



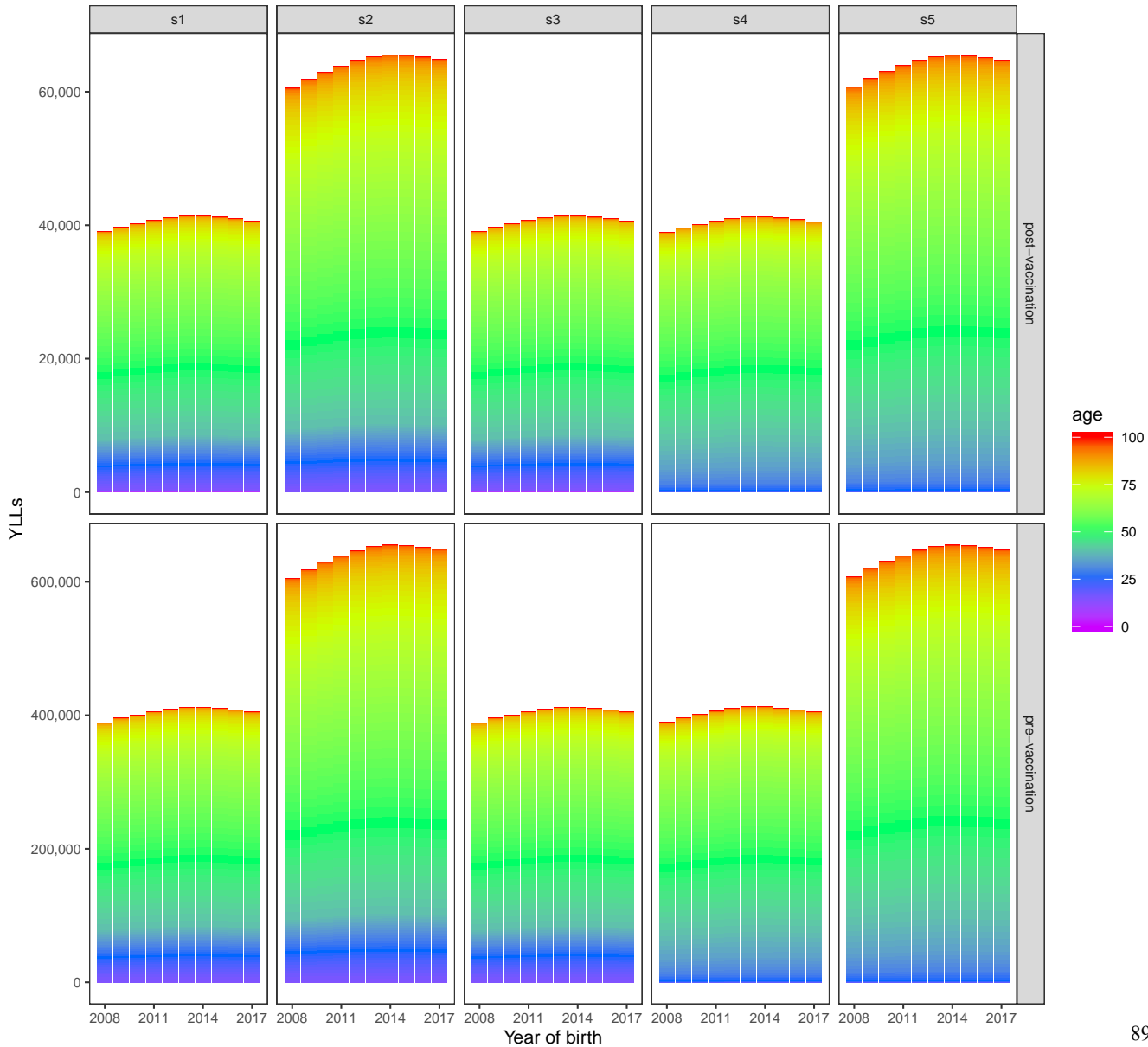
European Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



European Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

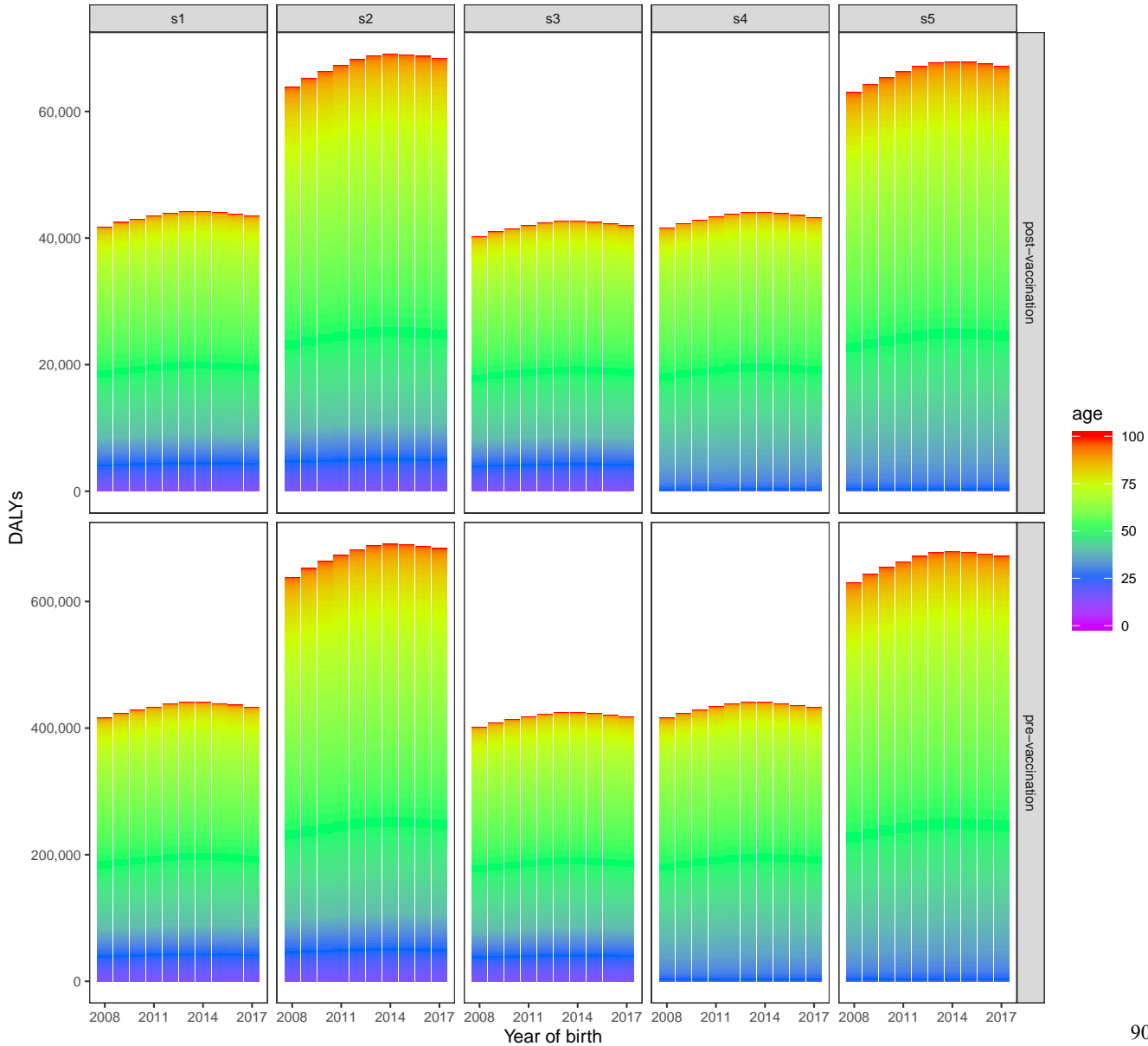


European Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

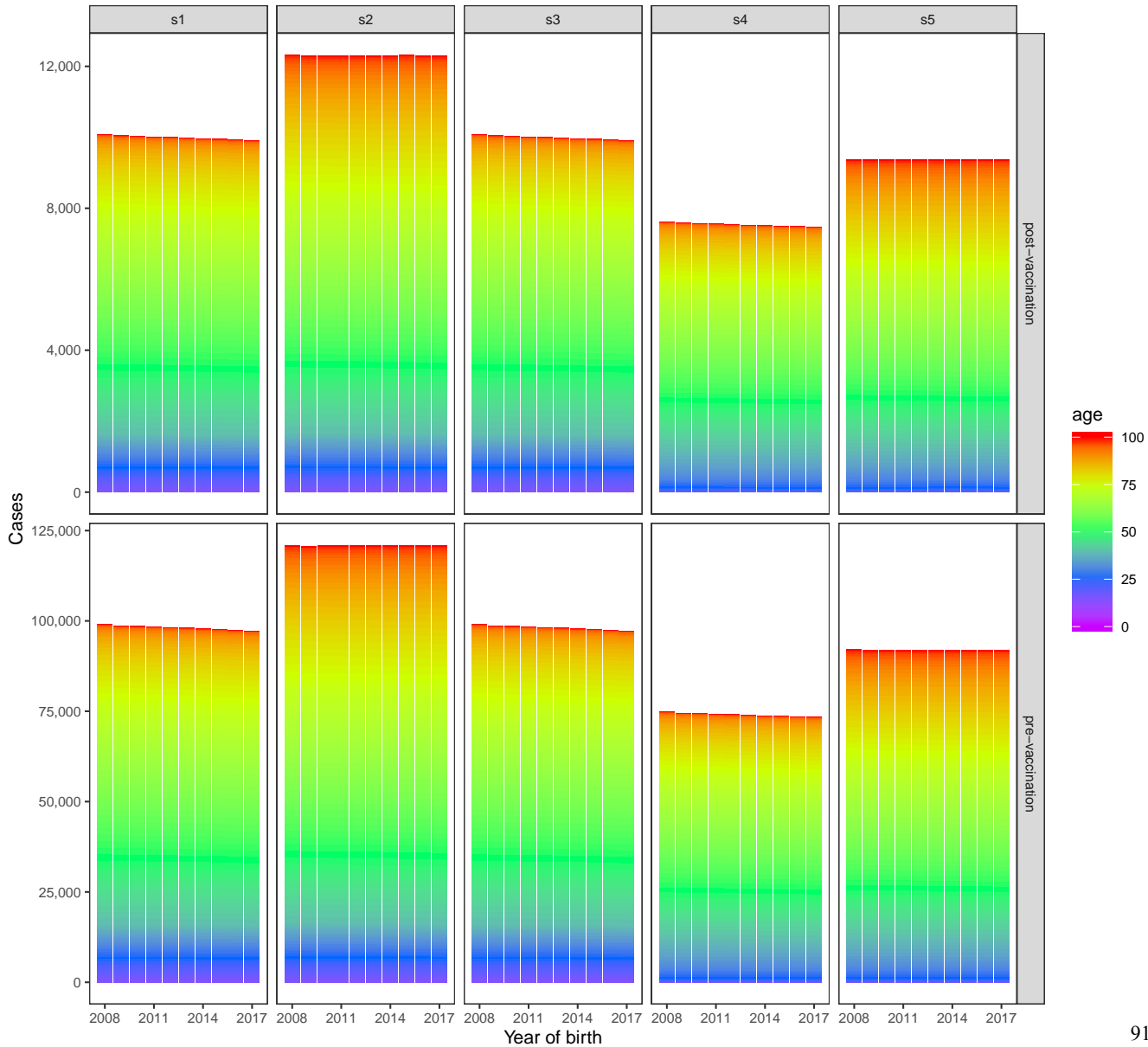




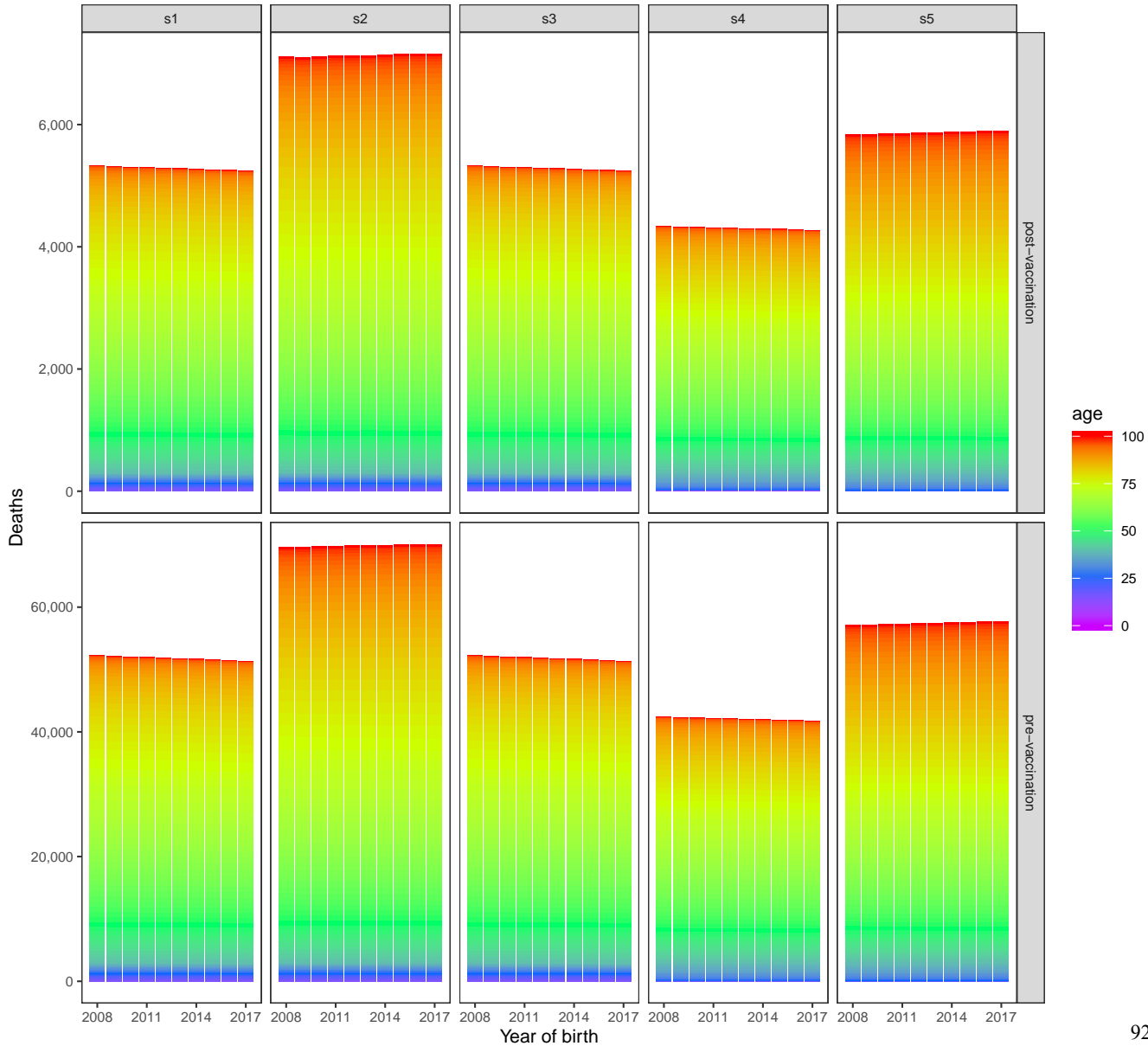
European Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



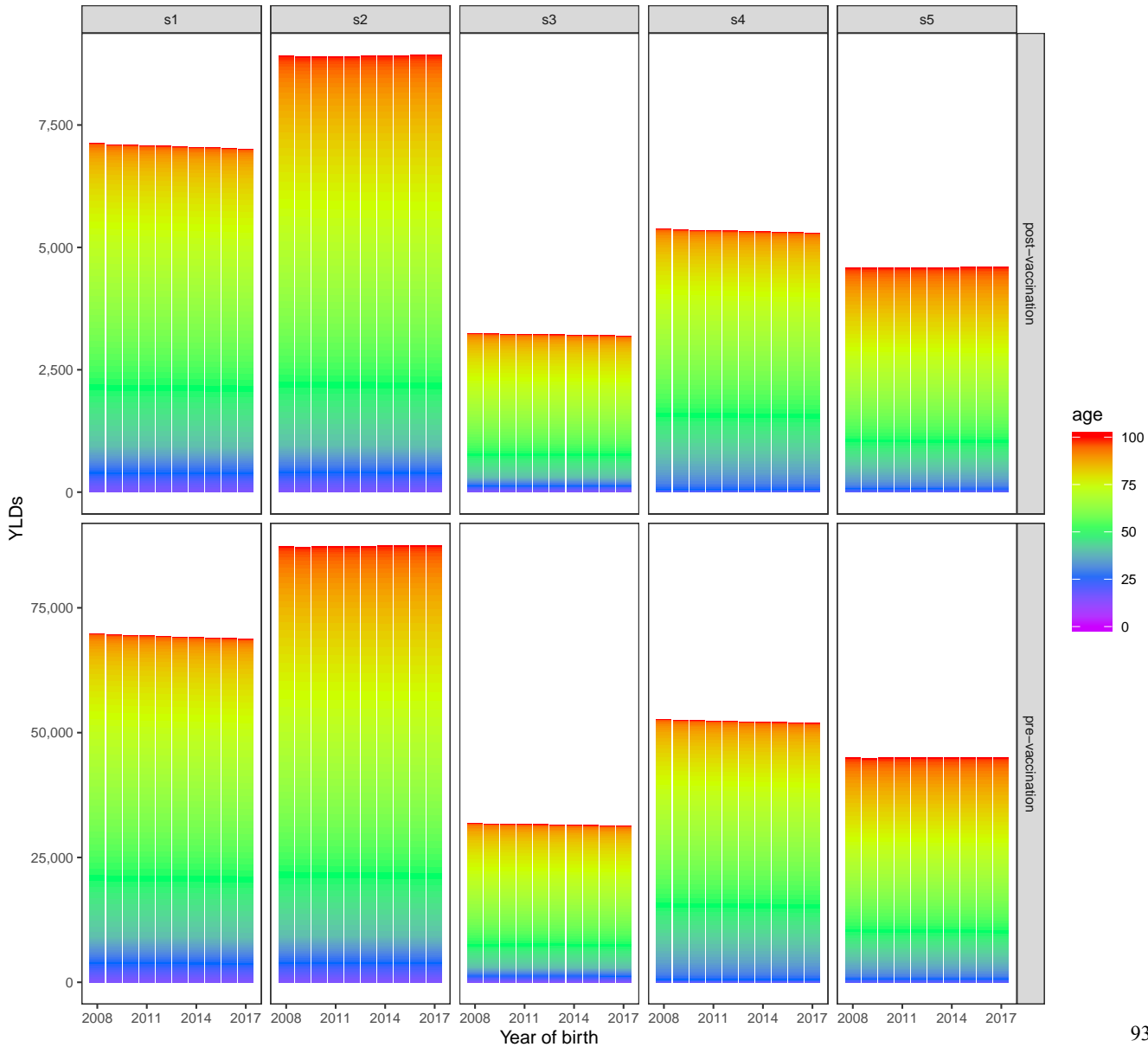
Region of the Americas  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



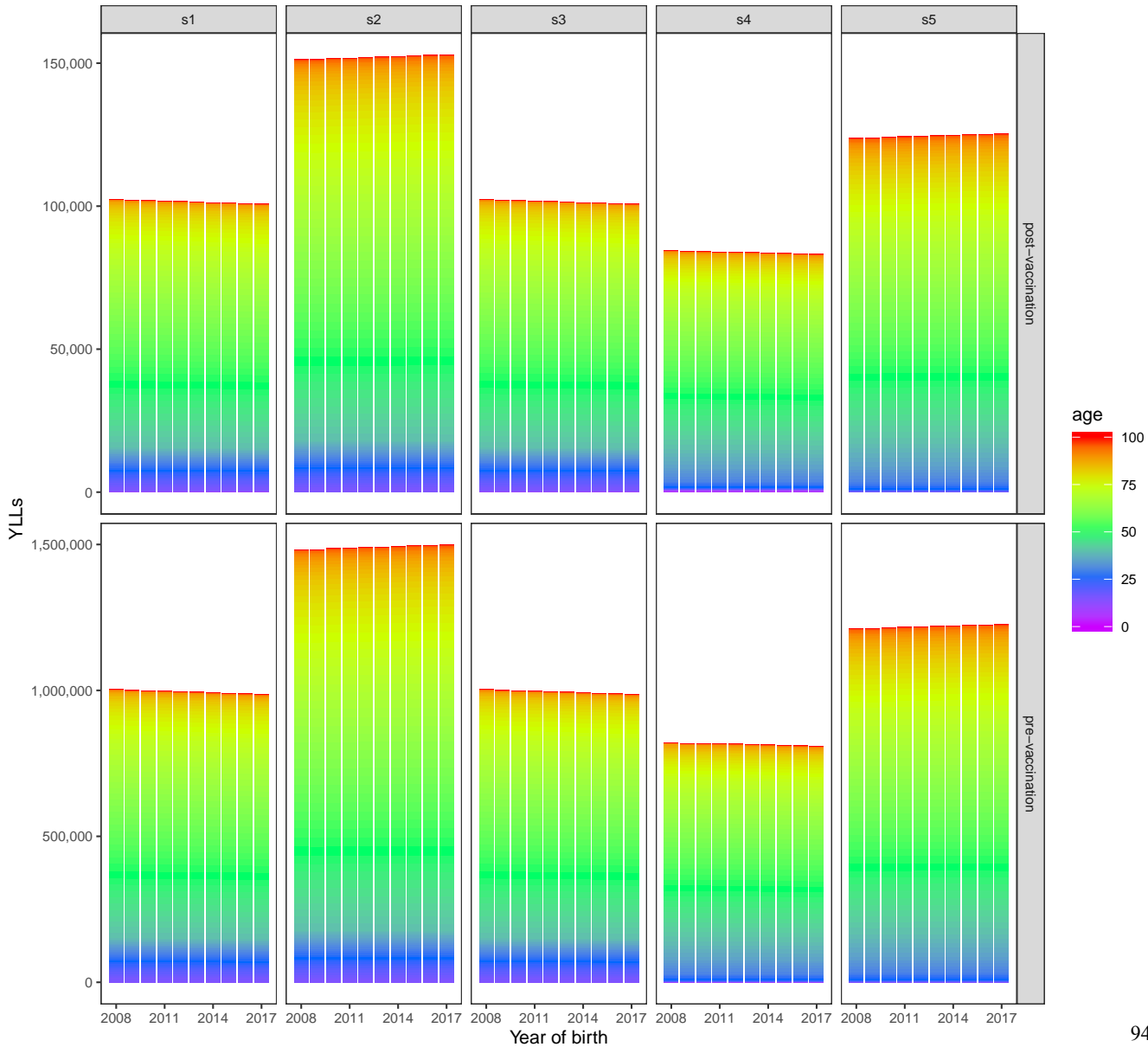
Region of the Americas  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



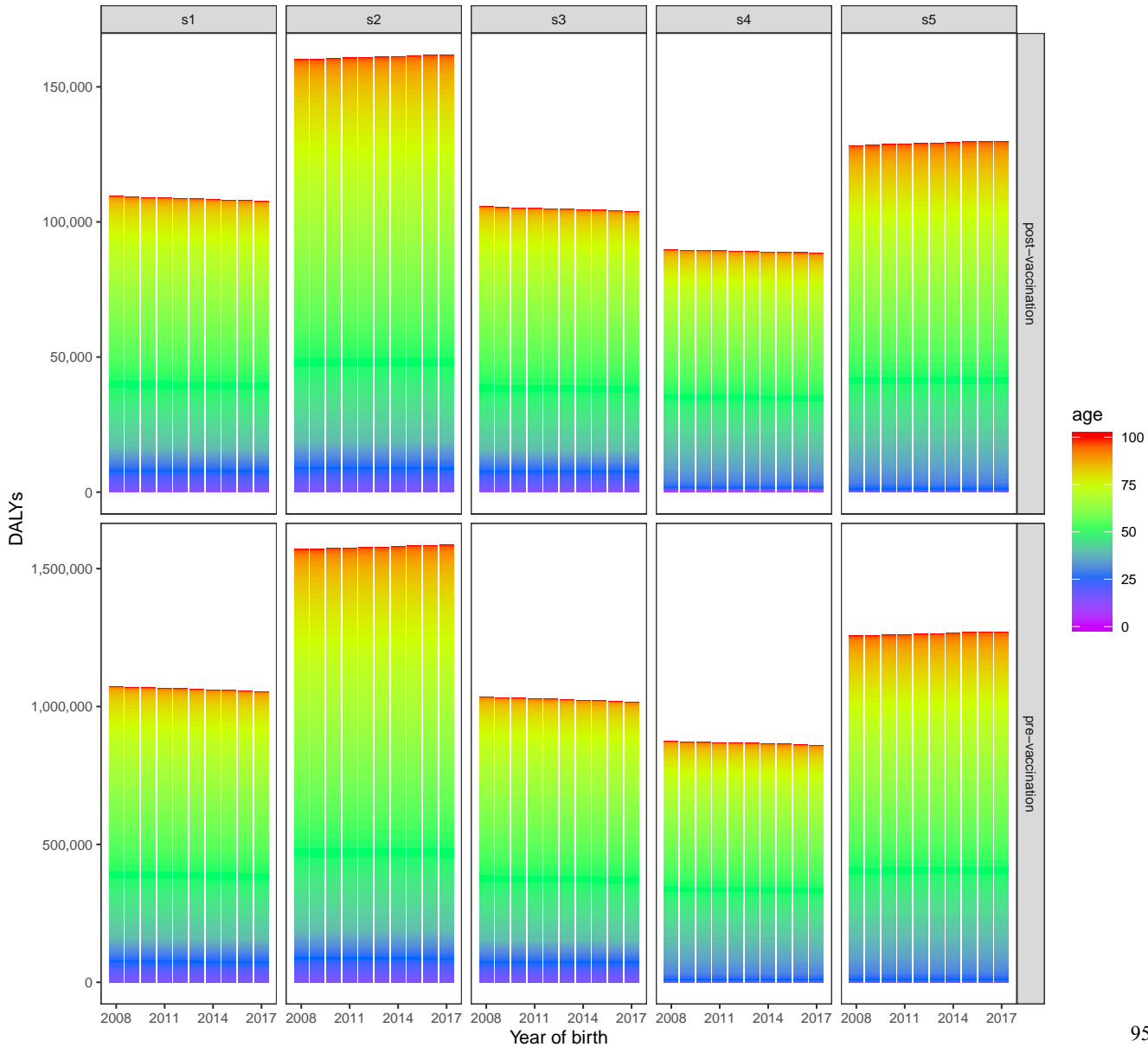
Region of the Americas  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



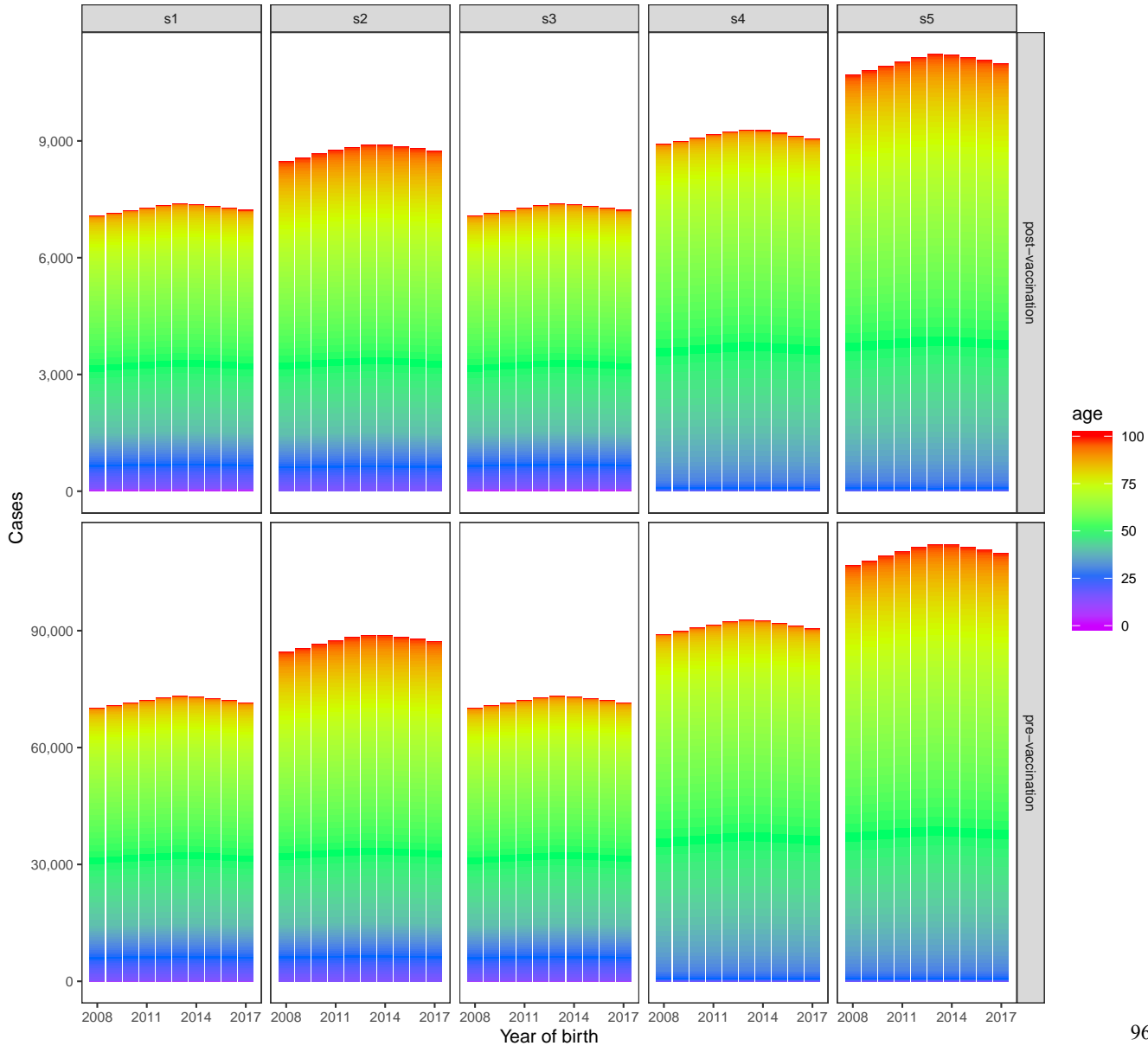
Region of the Americas  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



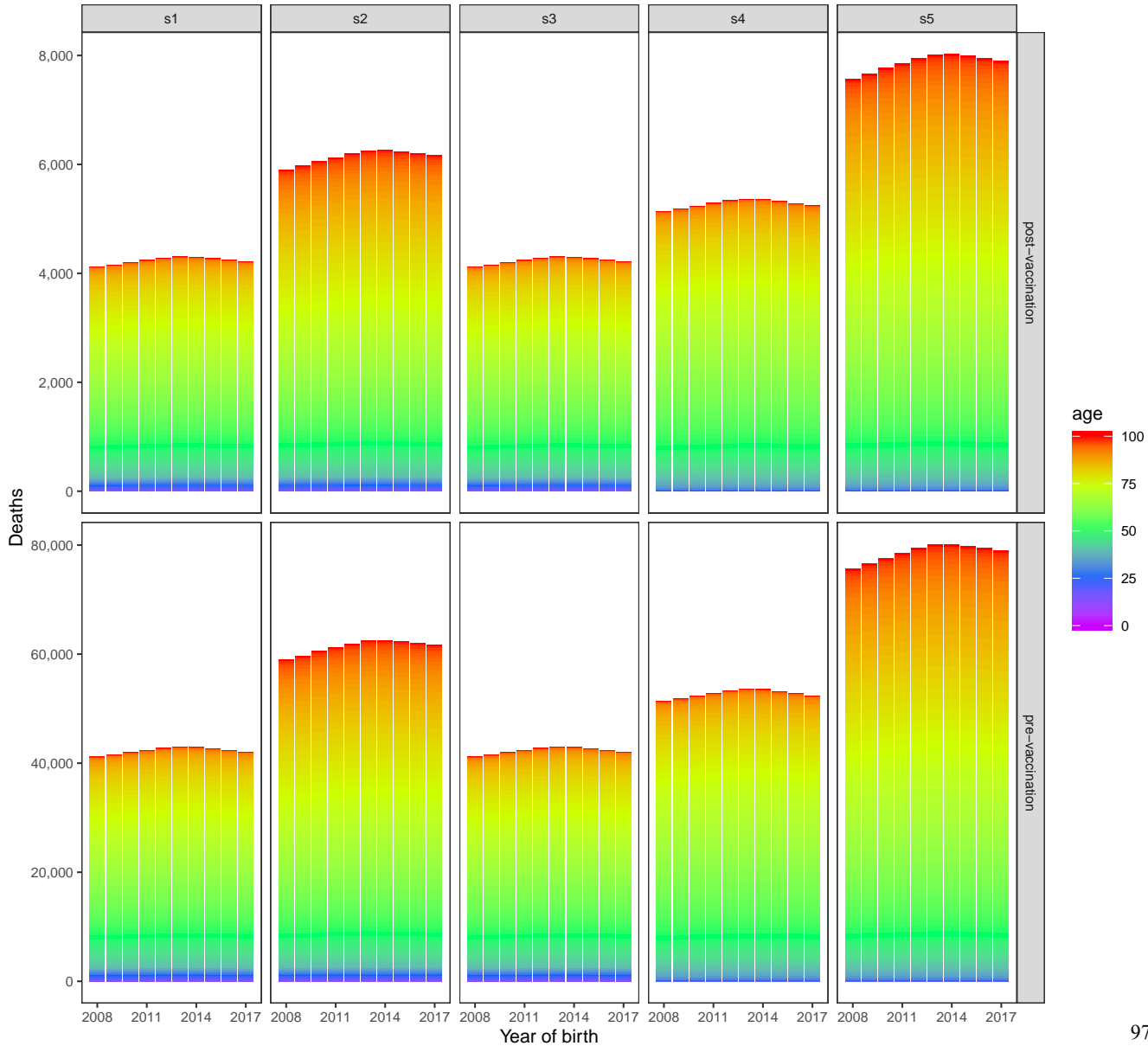
Region of the Americas  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



Western Pacific Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

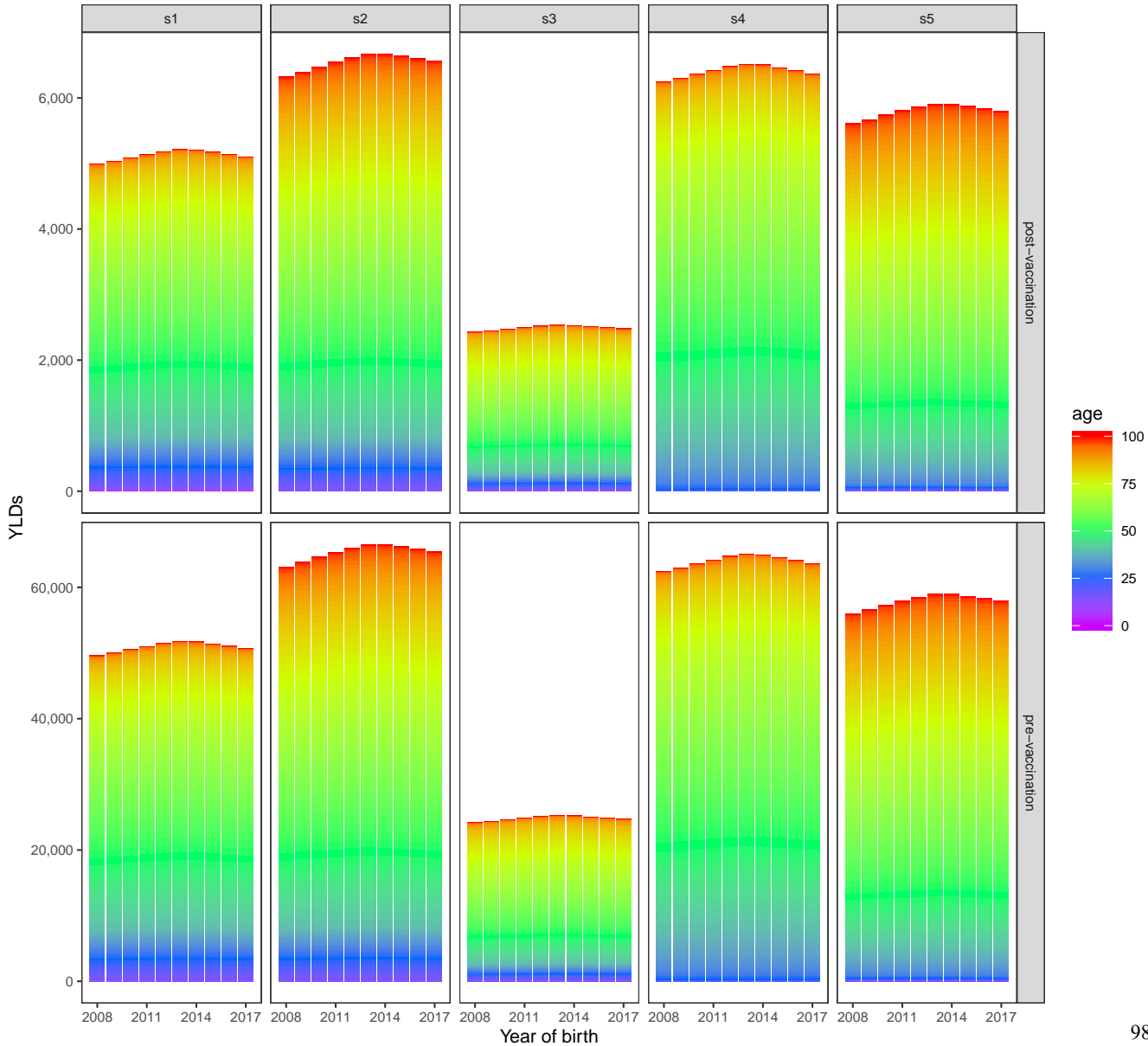


Western Pacific Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

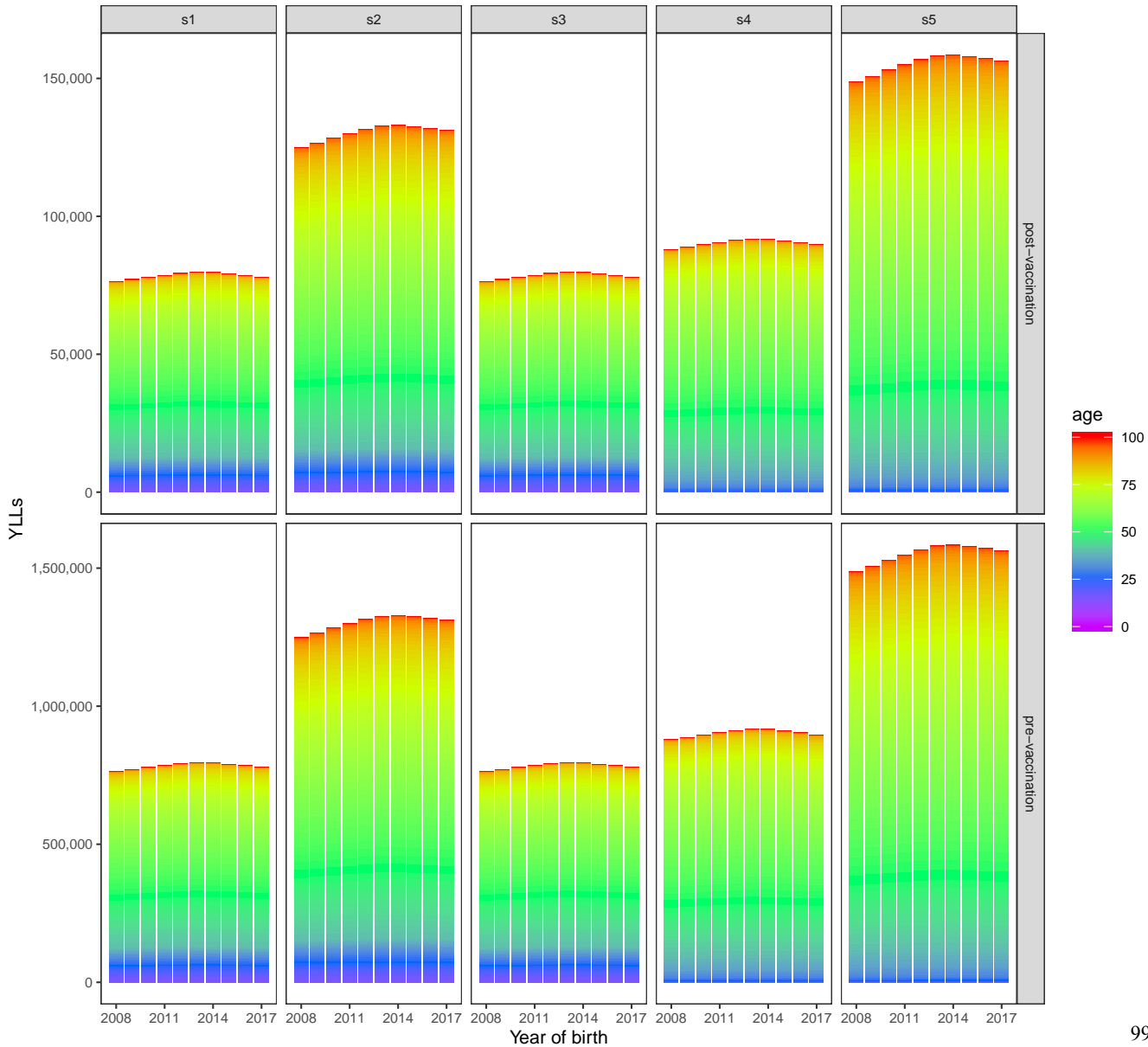




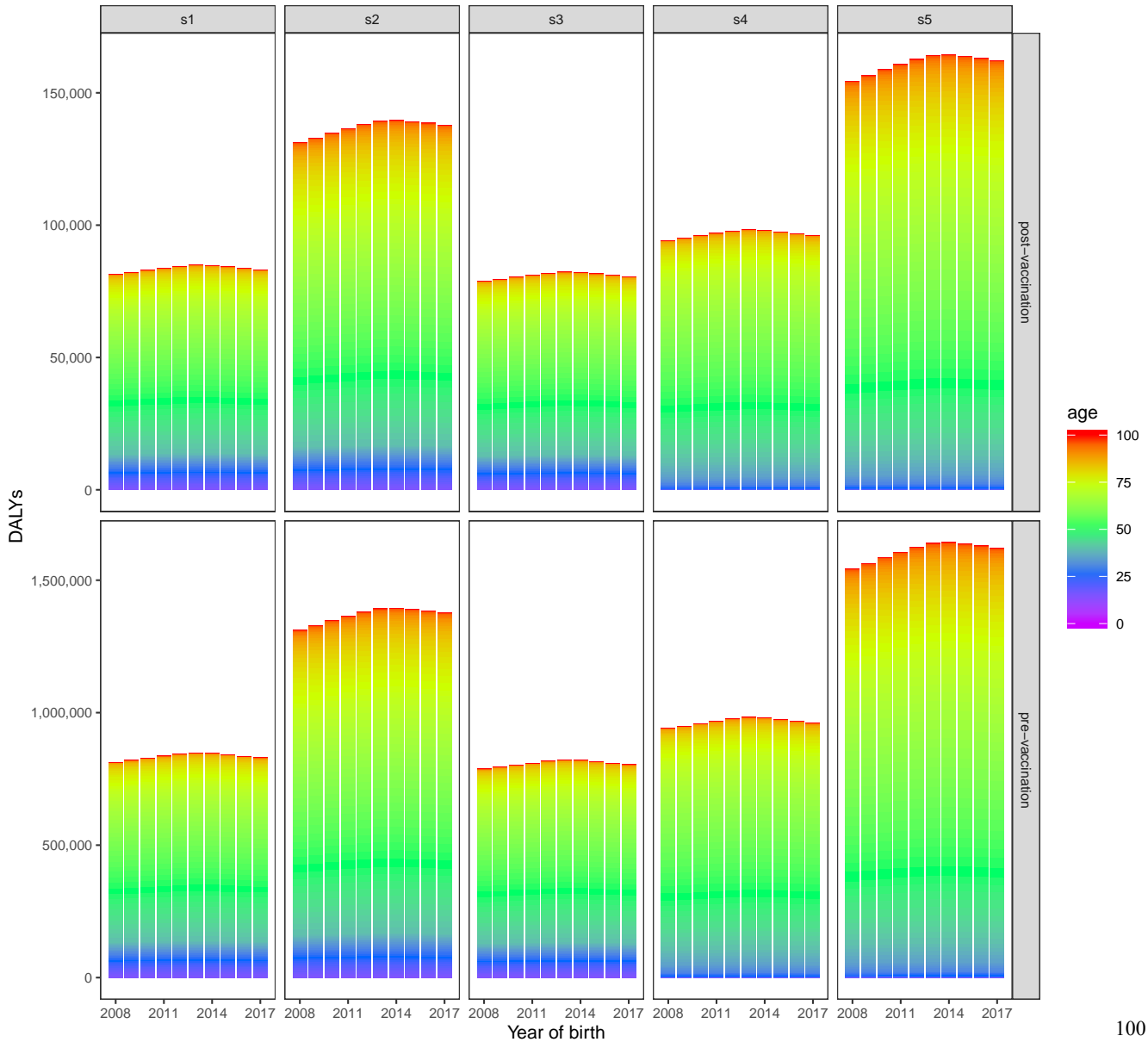
Western Pacific Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



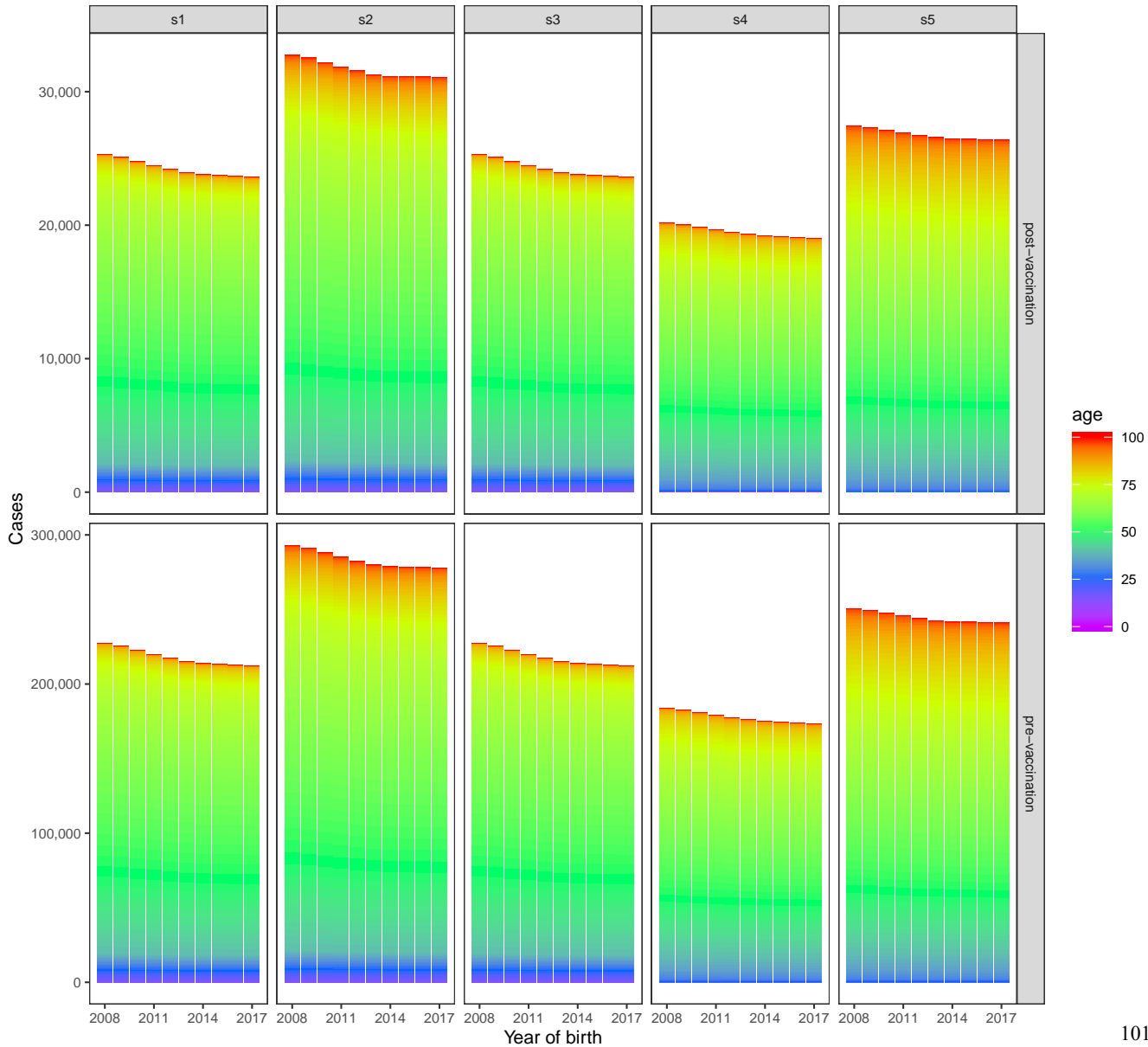
Western Pacific Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



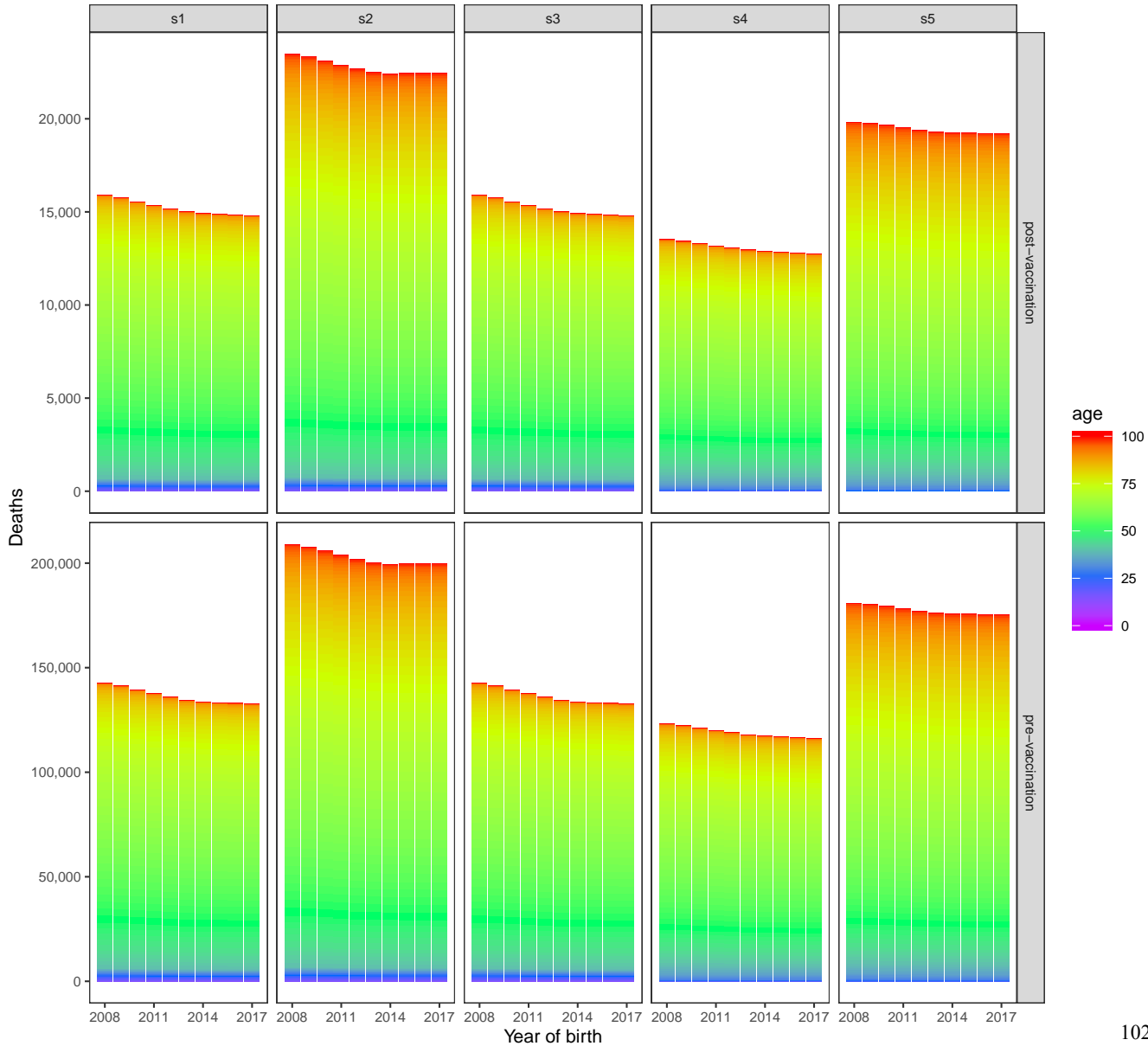
Western Pacific Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



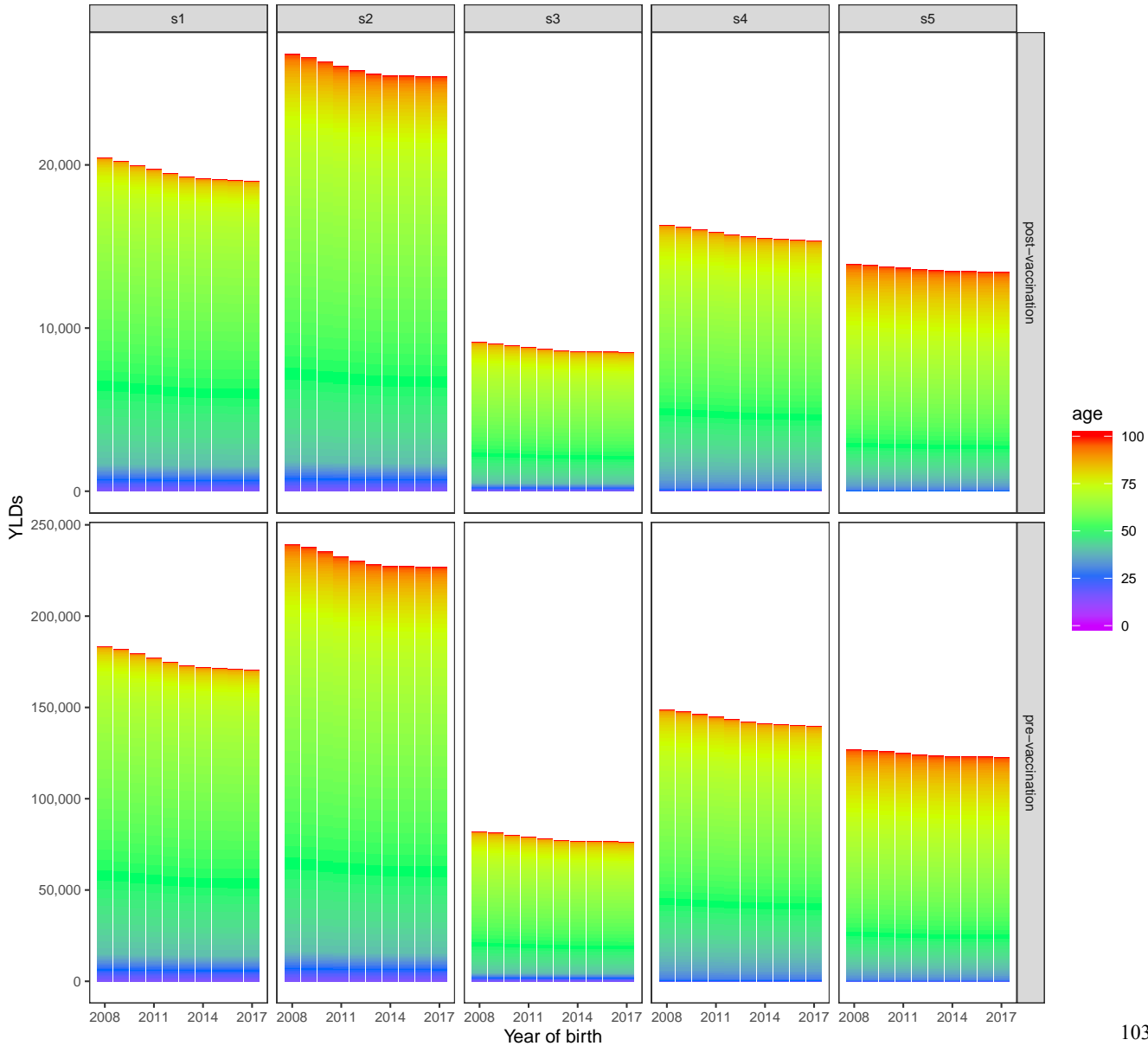
South-East Asia Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



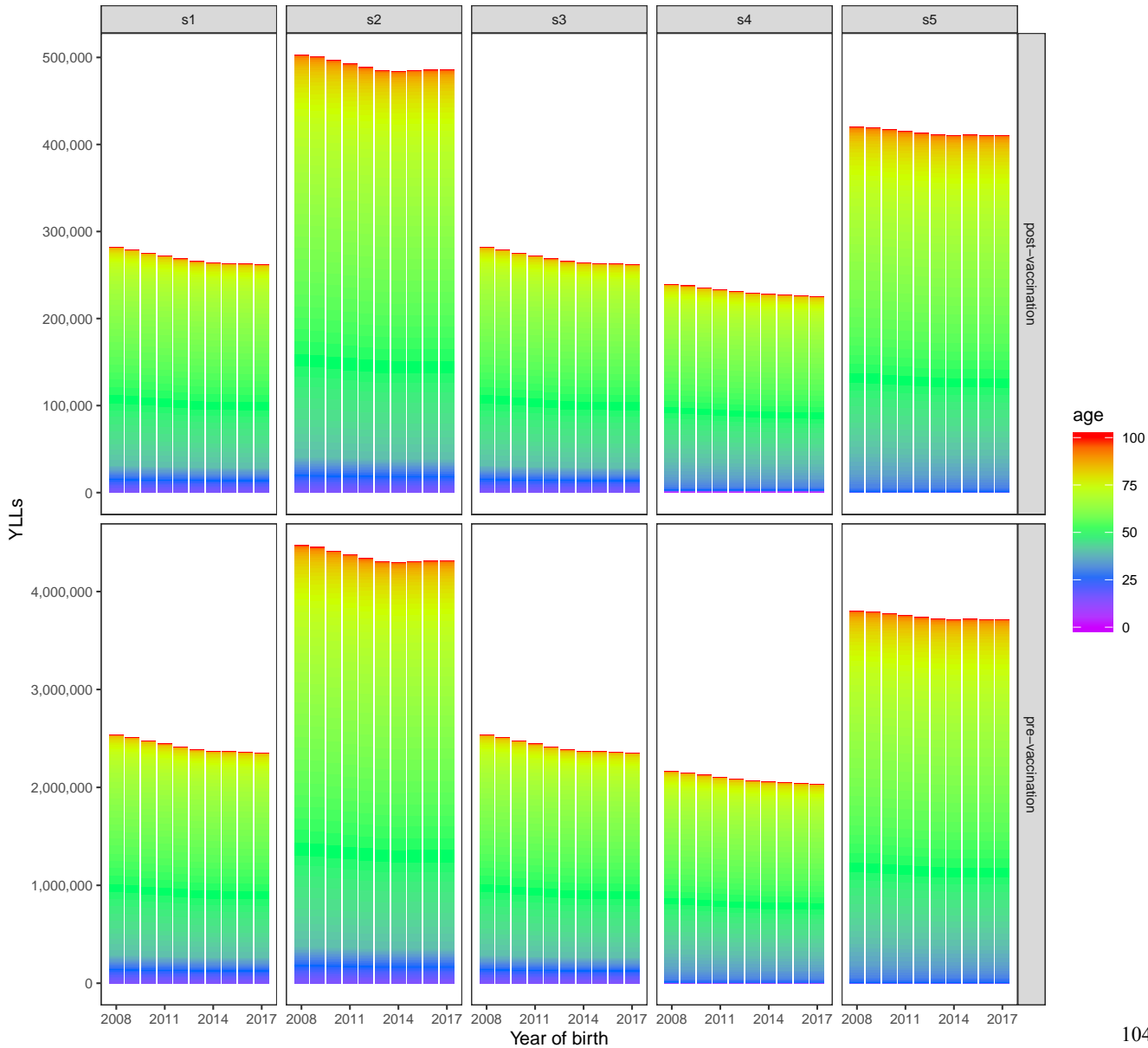
South-East Asia Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



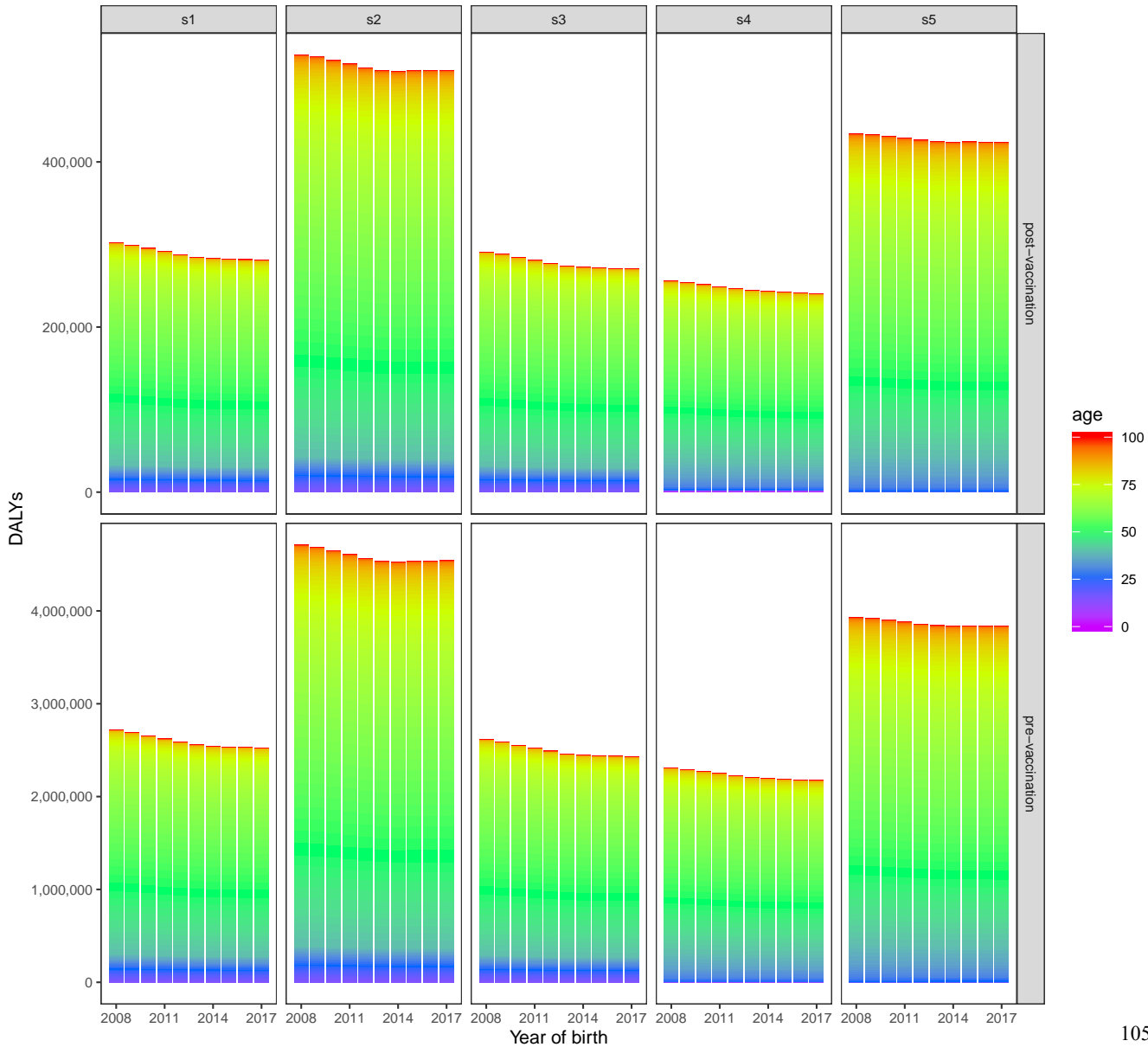
South-East Asia Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)



South-East Asia Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

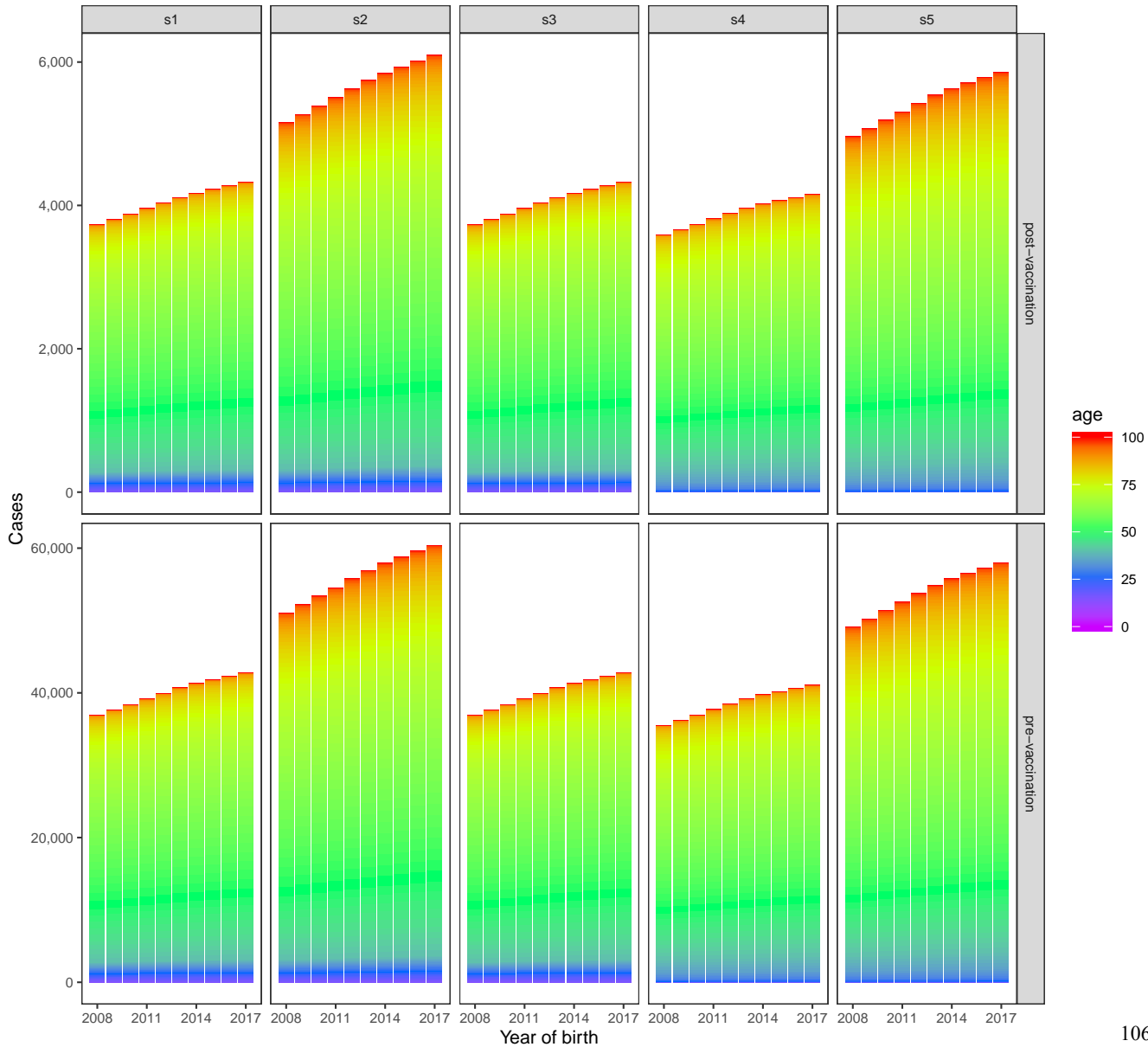


South-East Asia Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18 pre- and post-vaccination  
 (vaccination age = 12 years / bivalent/quadrivalent vaccine)

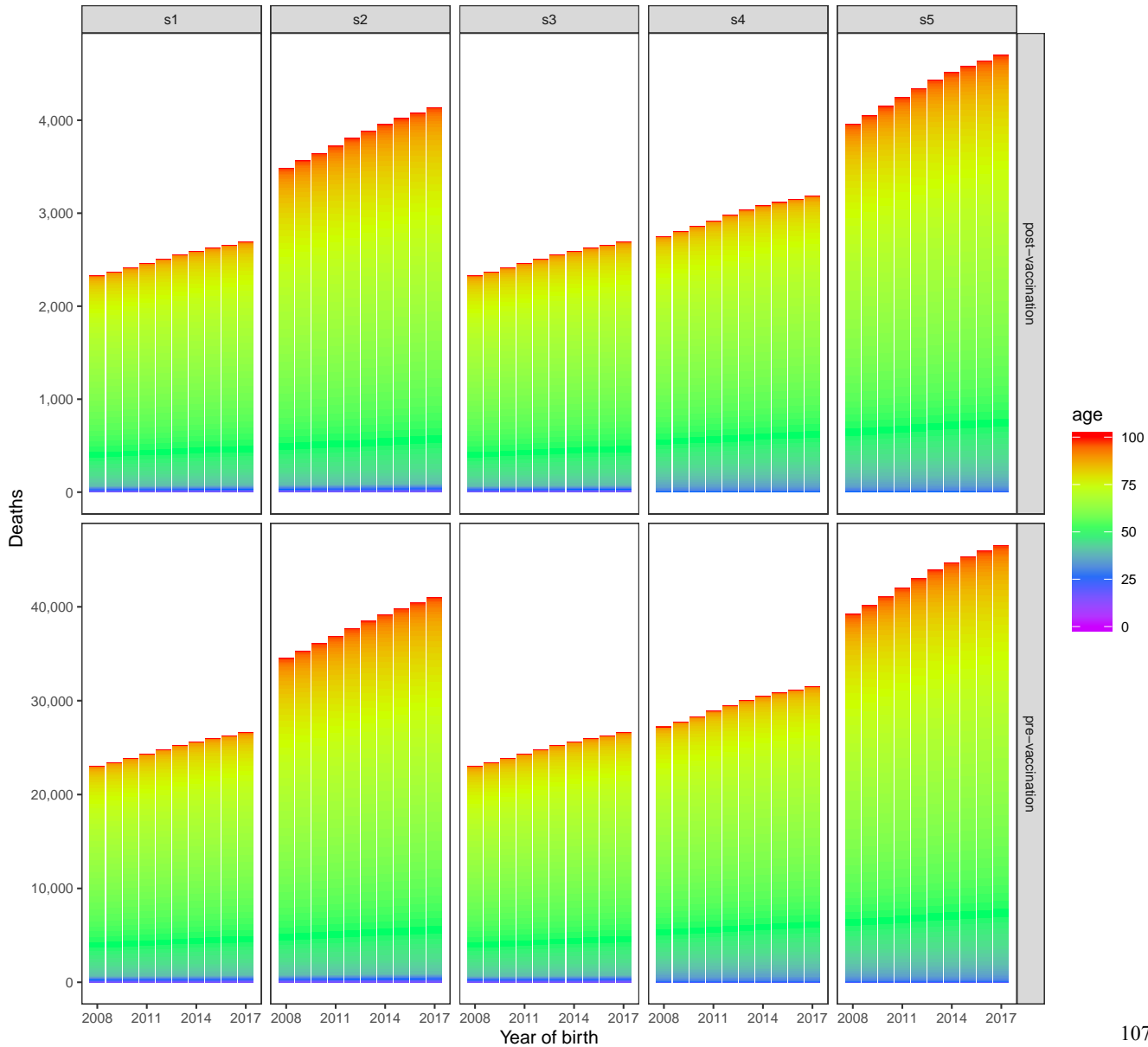




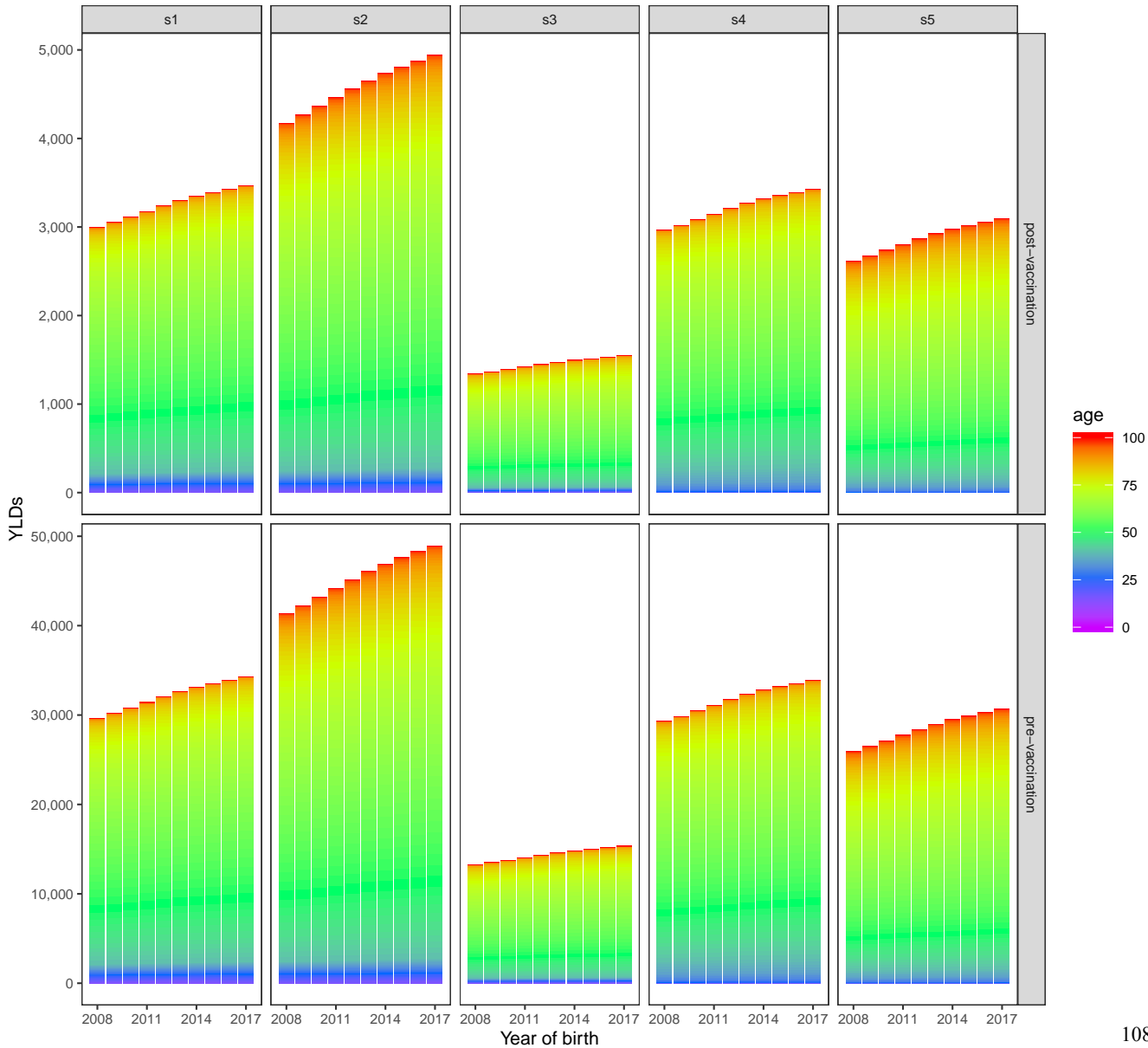
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



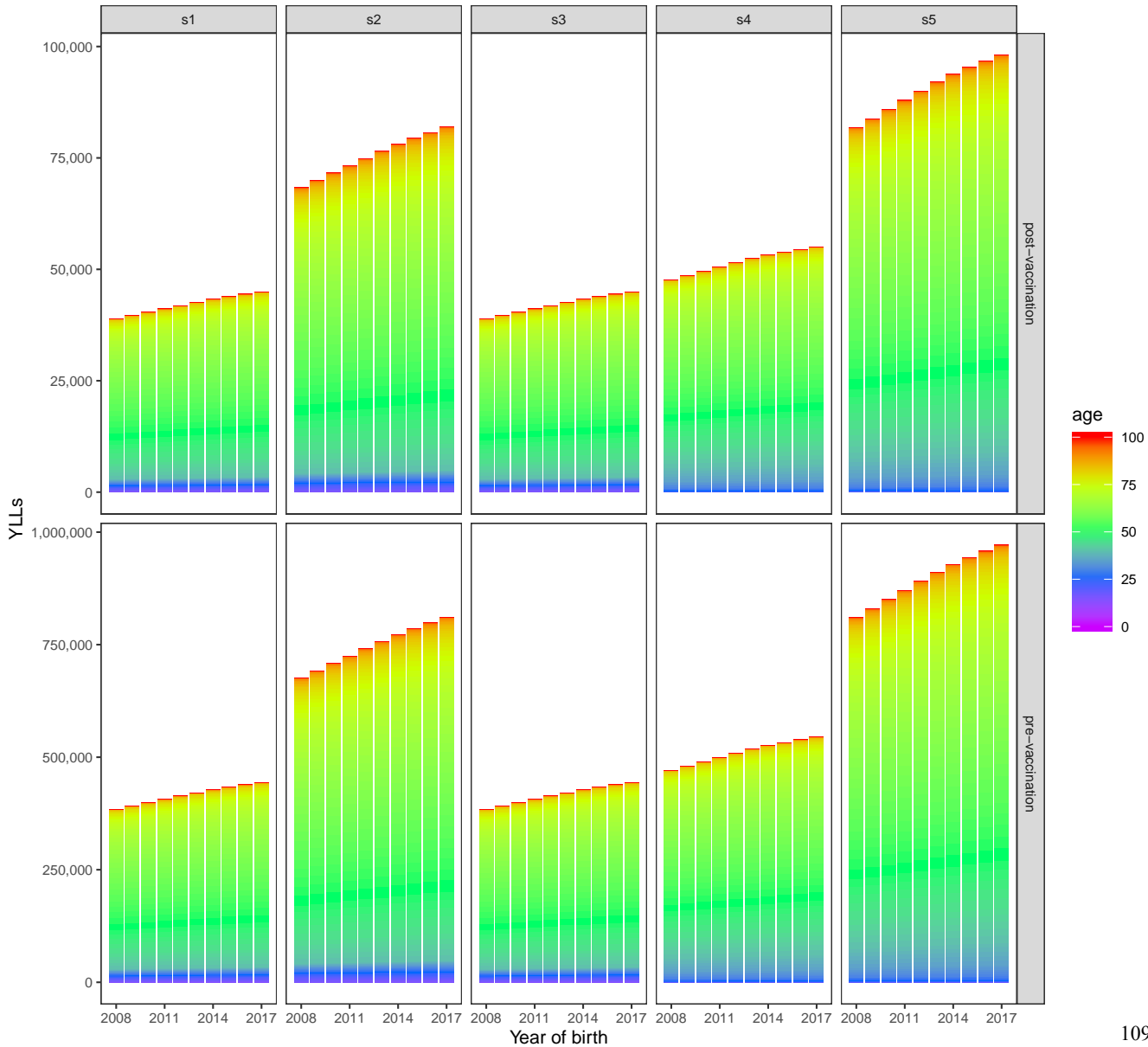
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



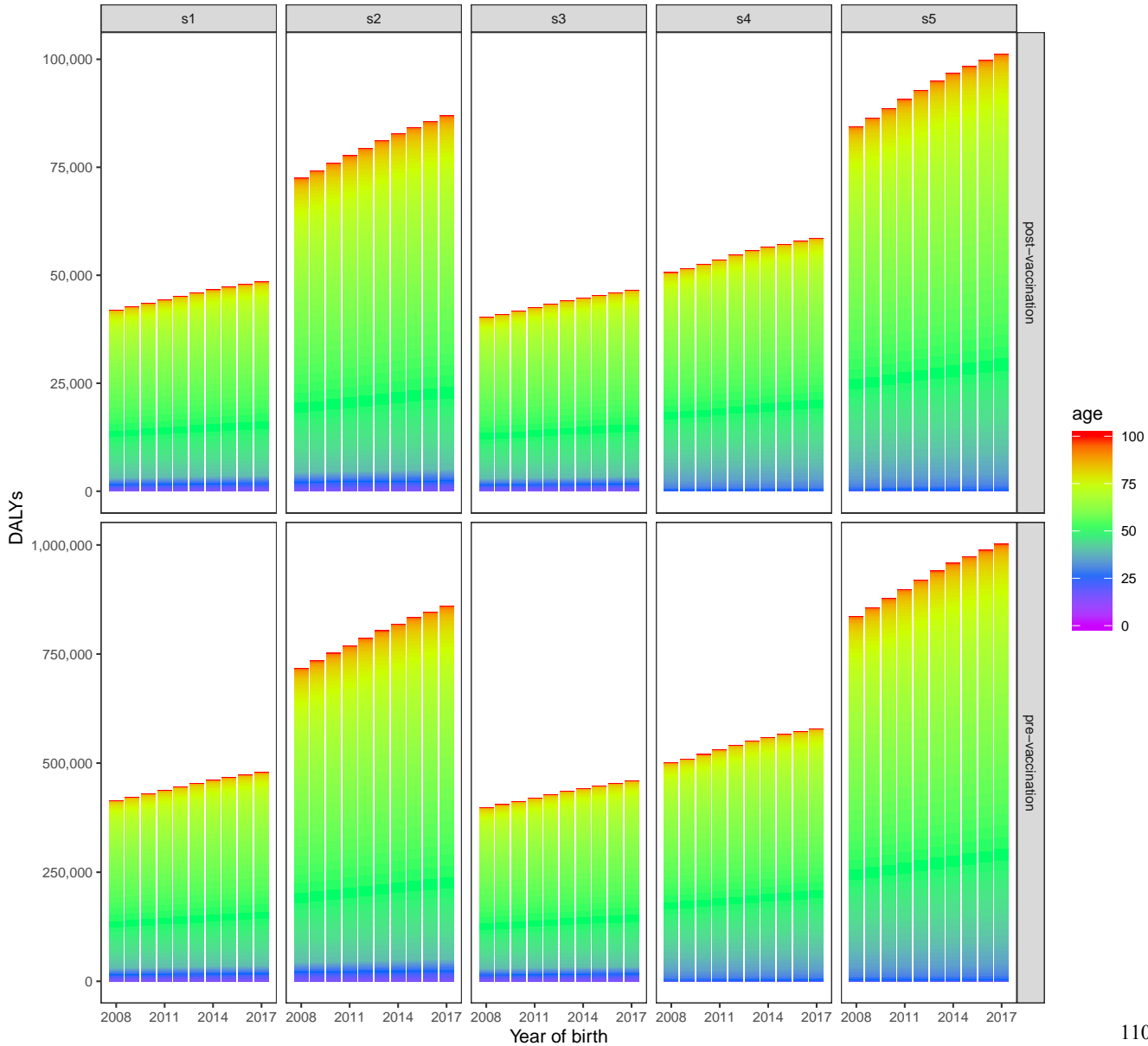
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



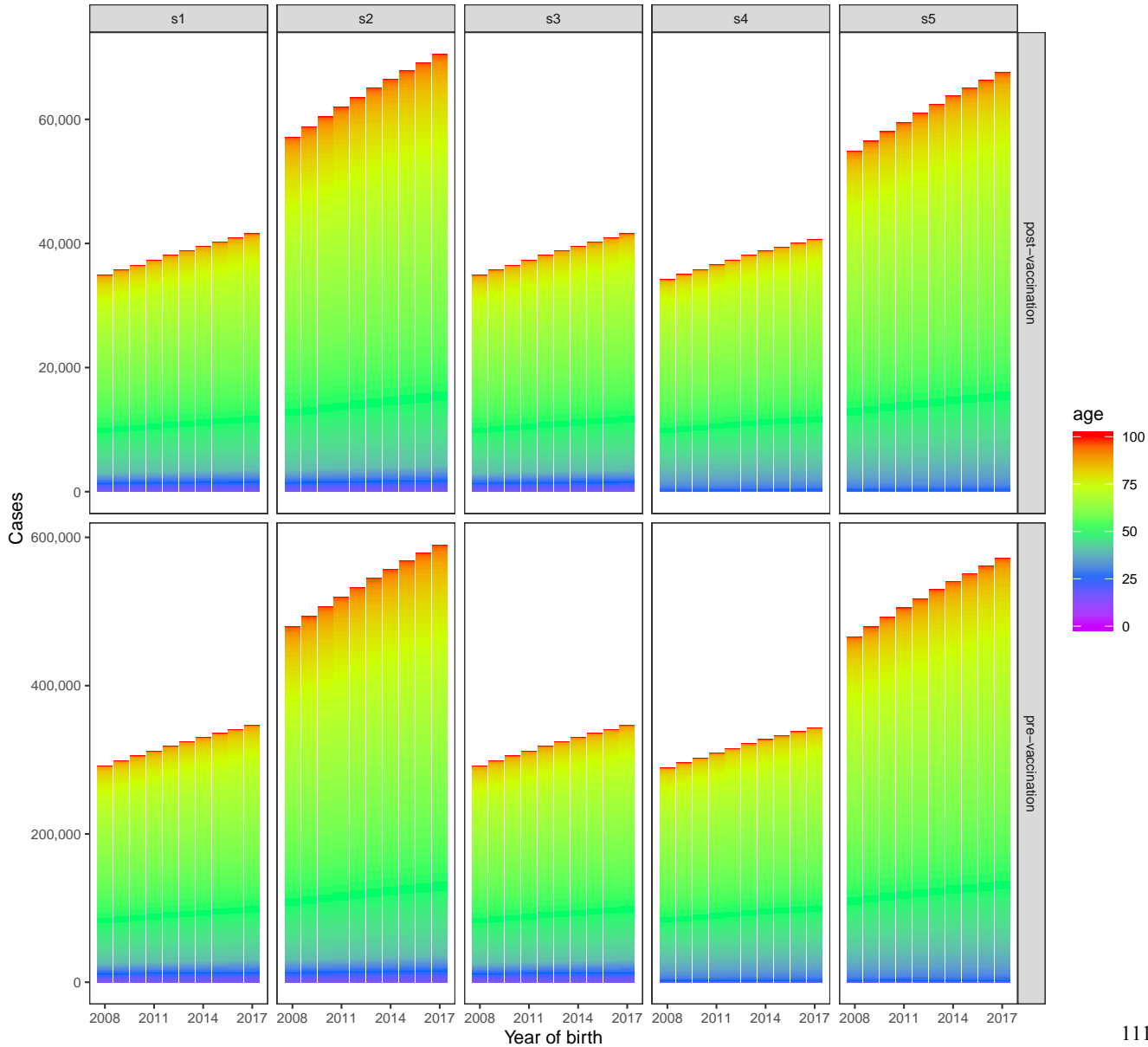
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



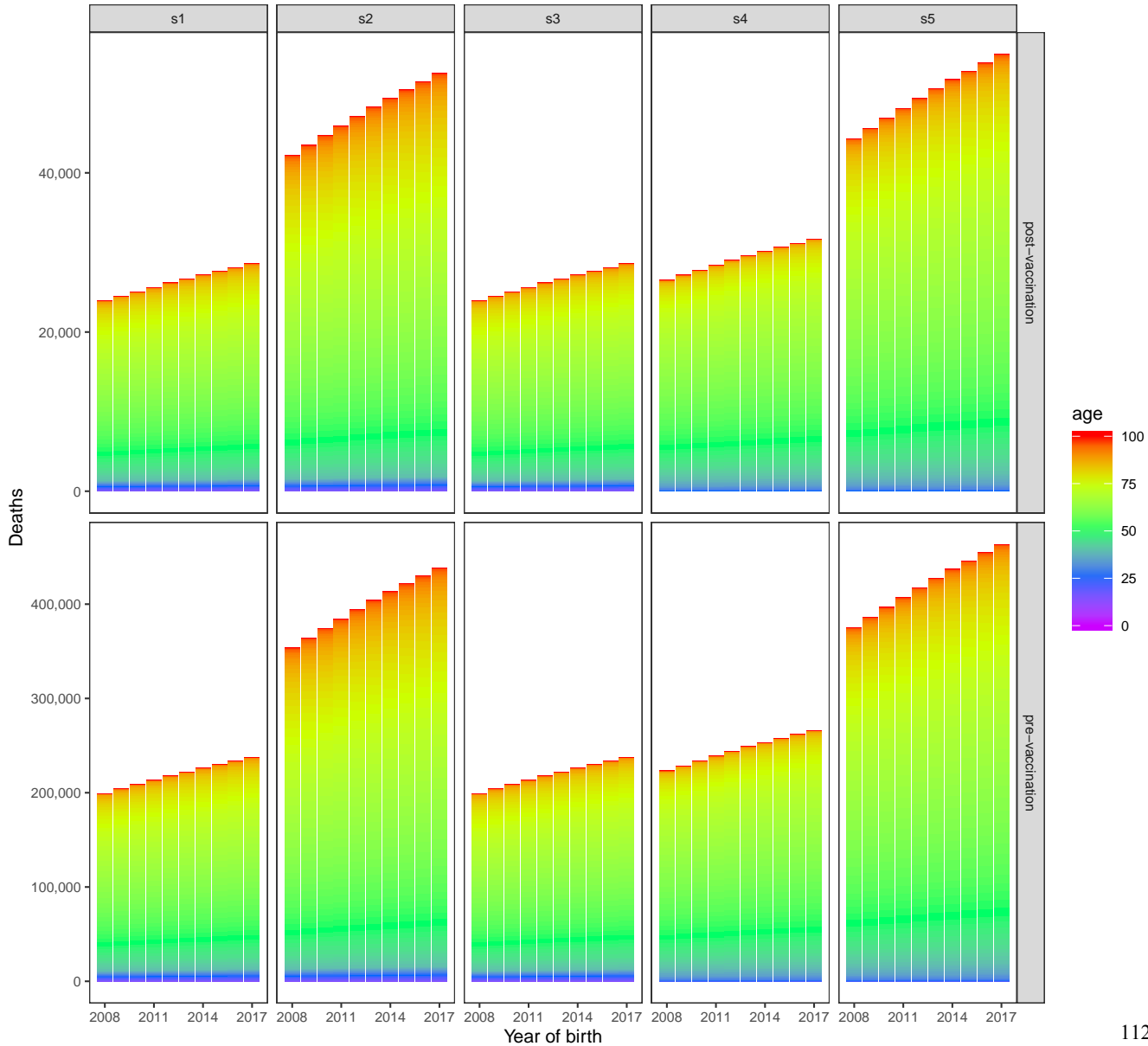
Eastern Mediterranean Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



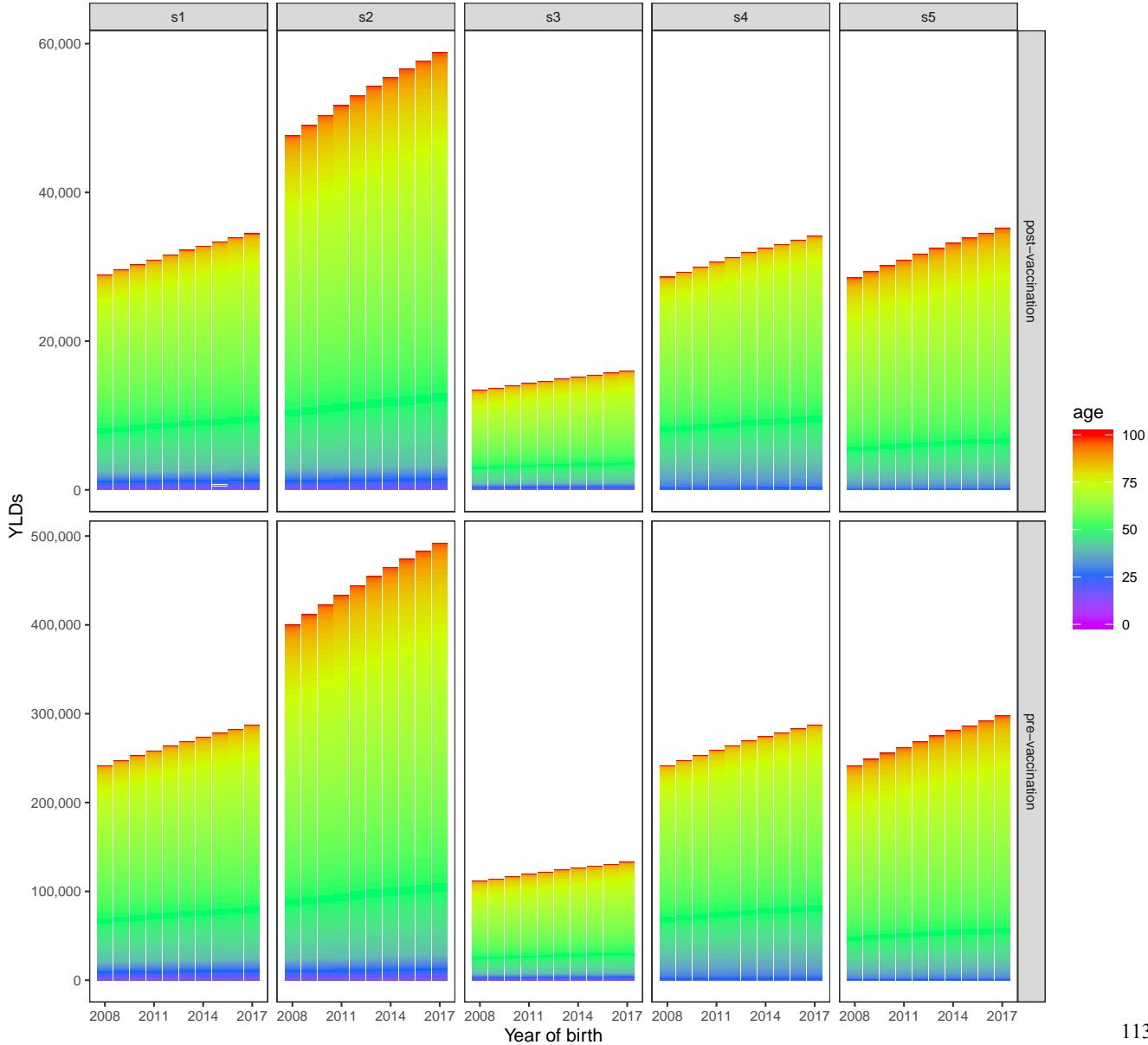
African Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



African Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)

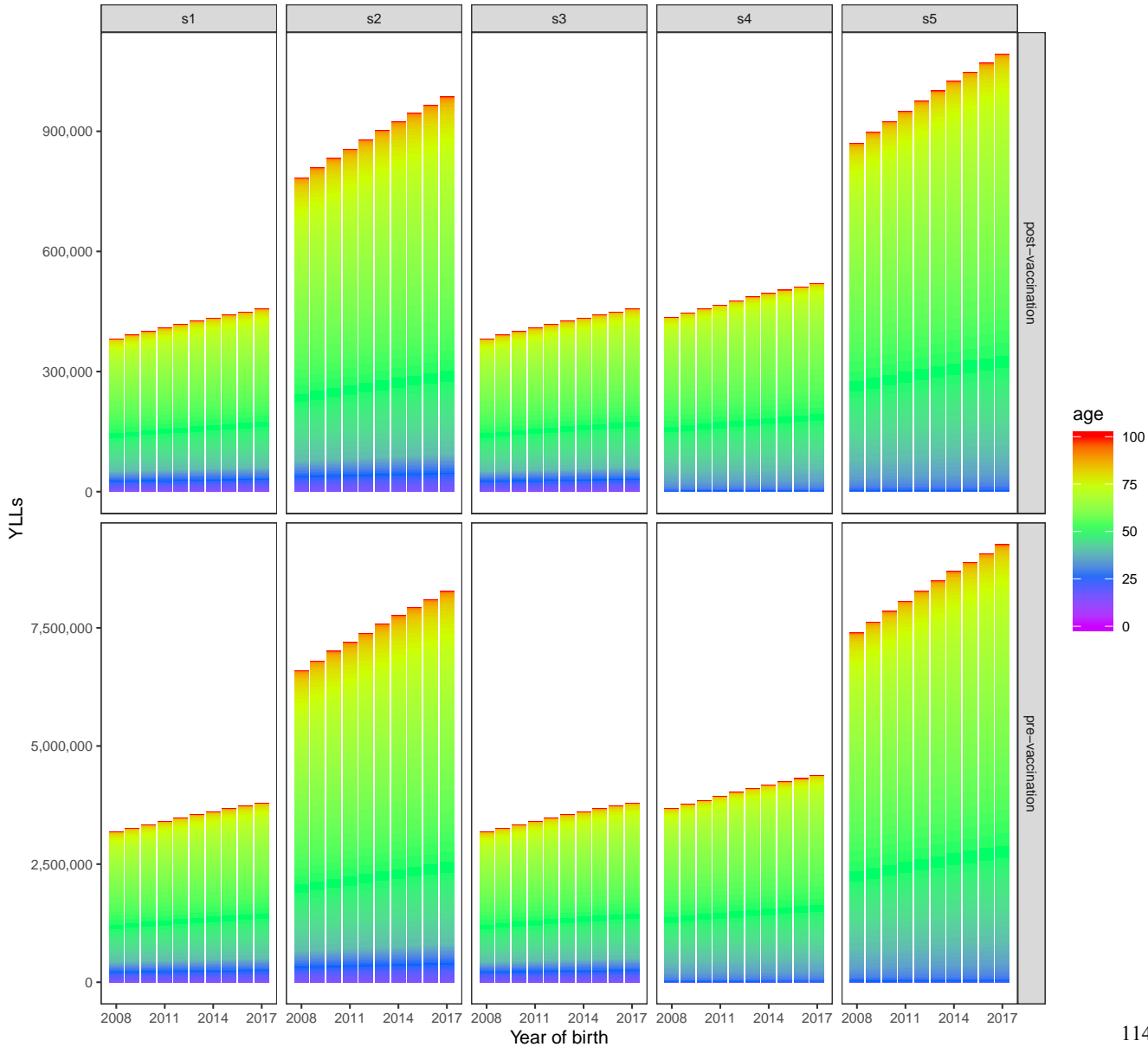


African Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)

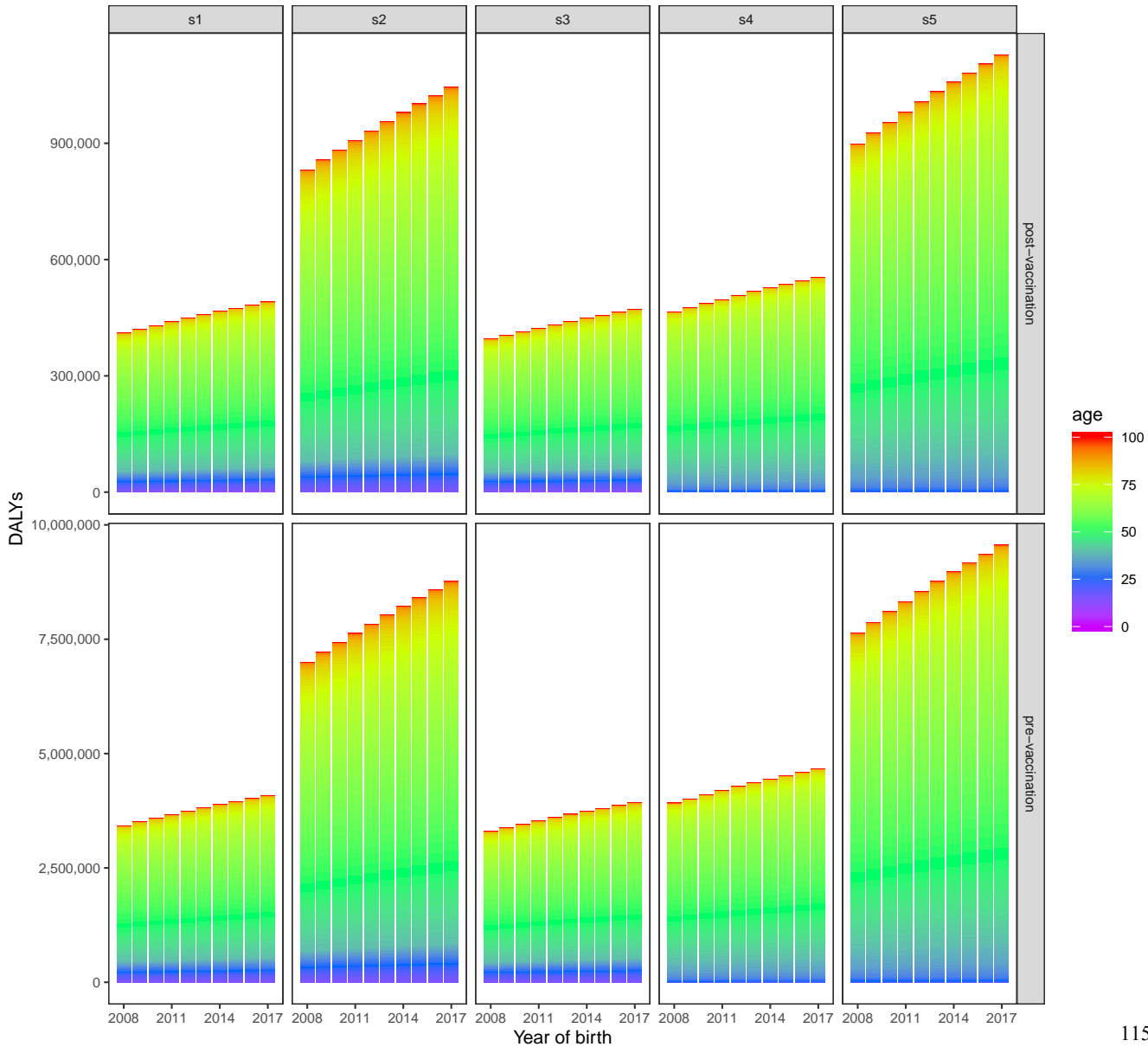




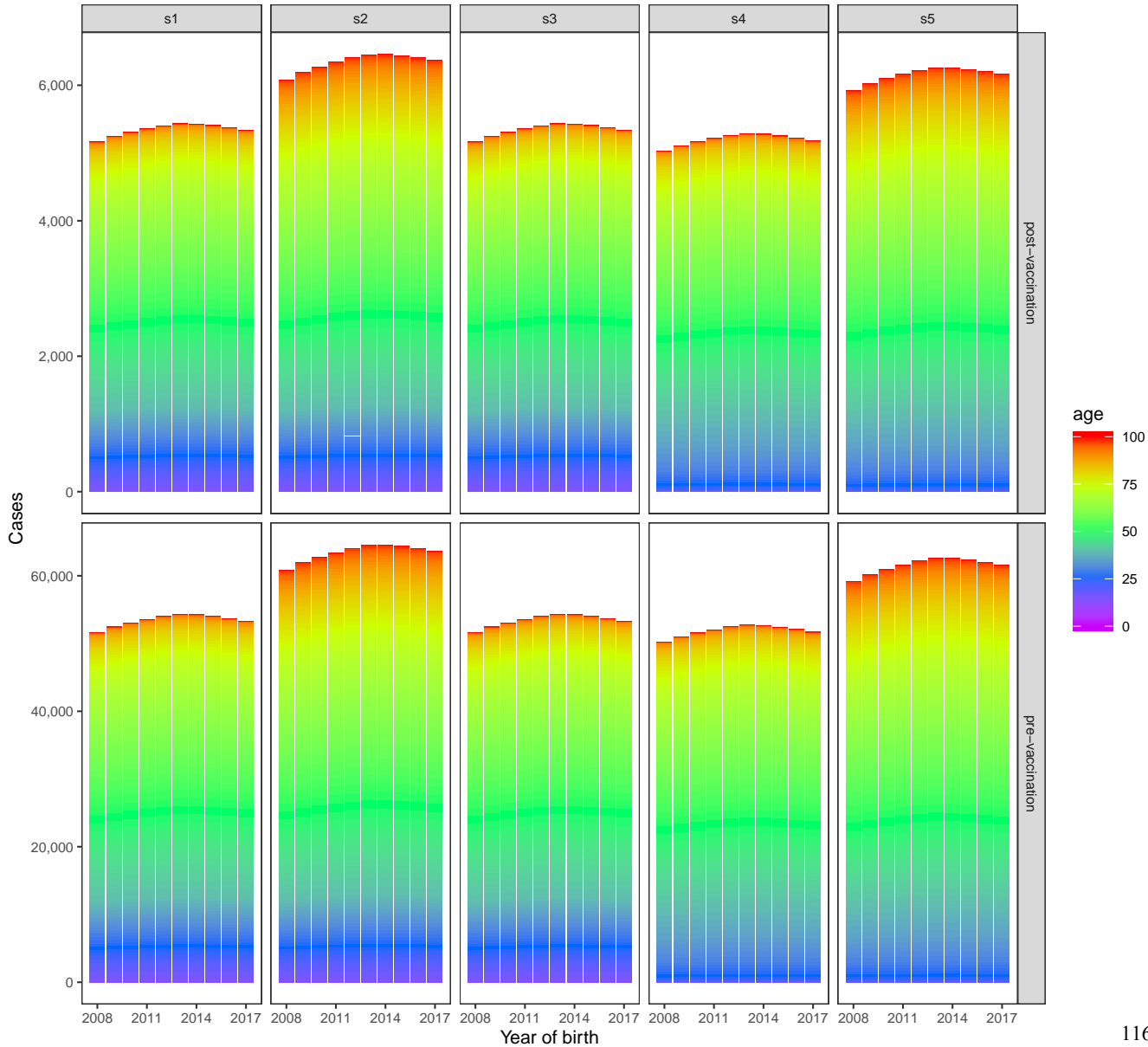
African Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



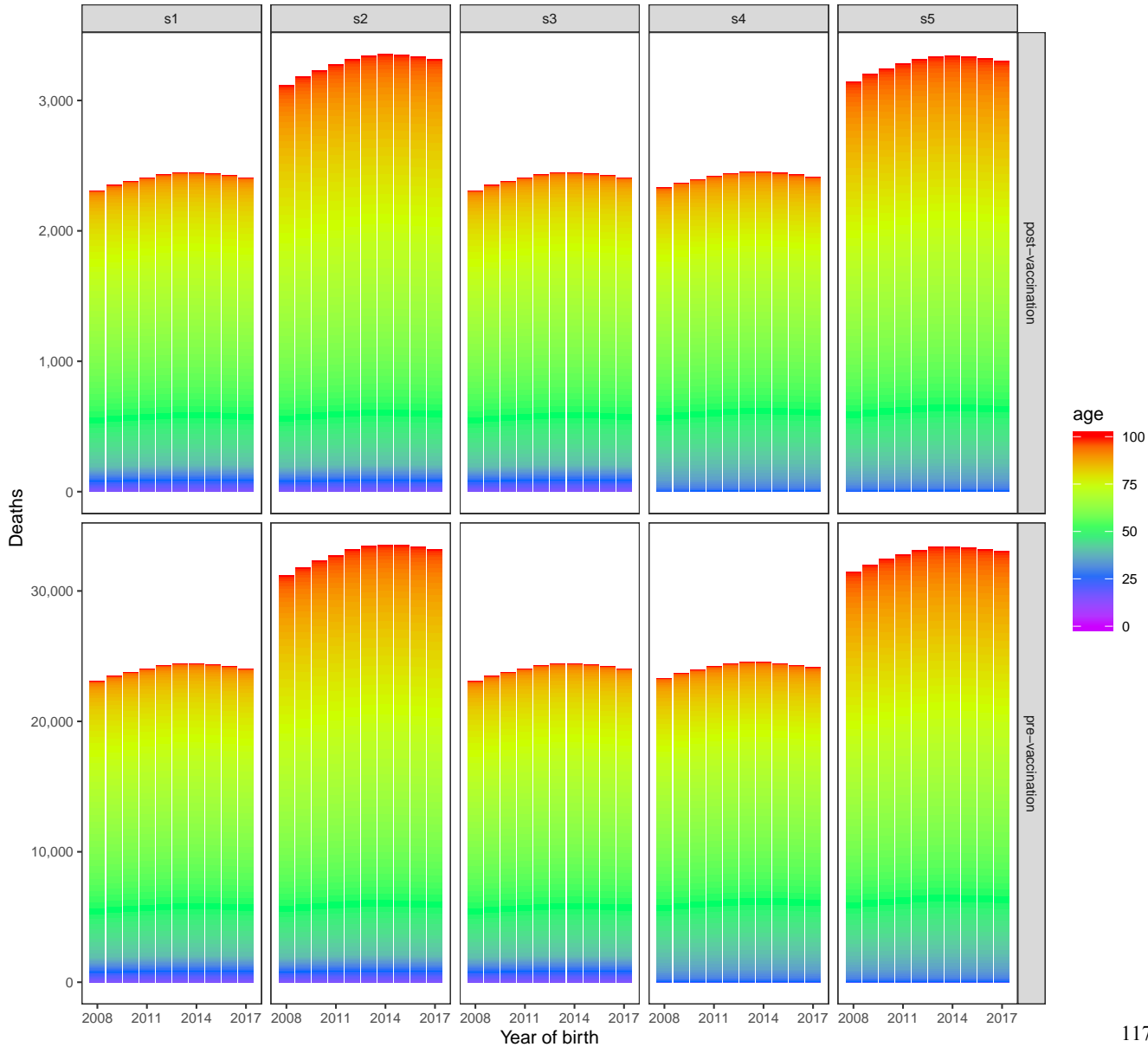
African Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



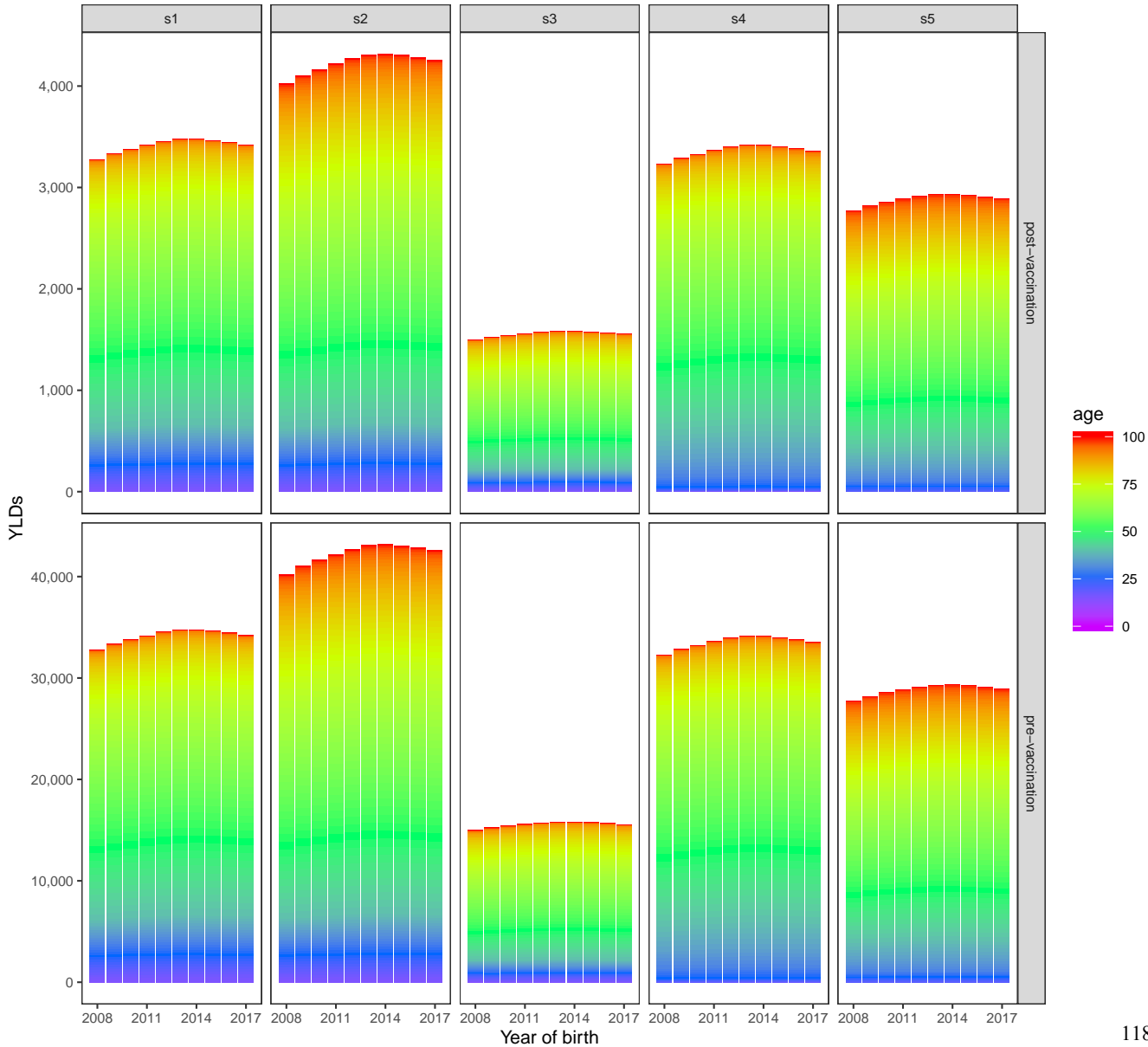
European Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



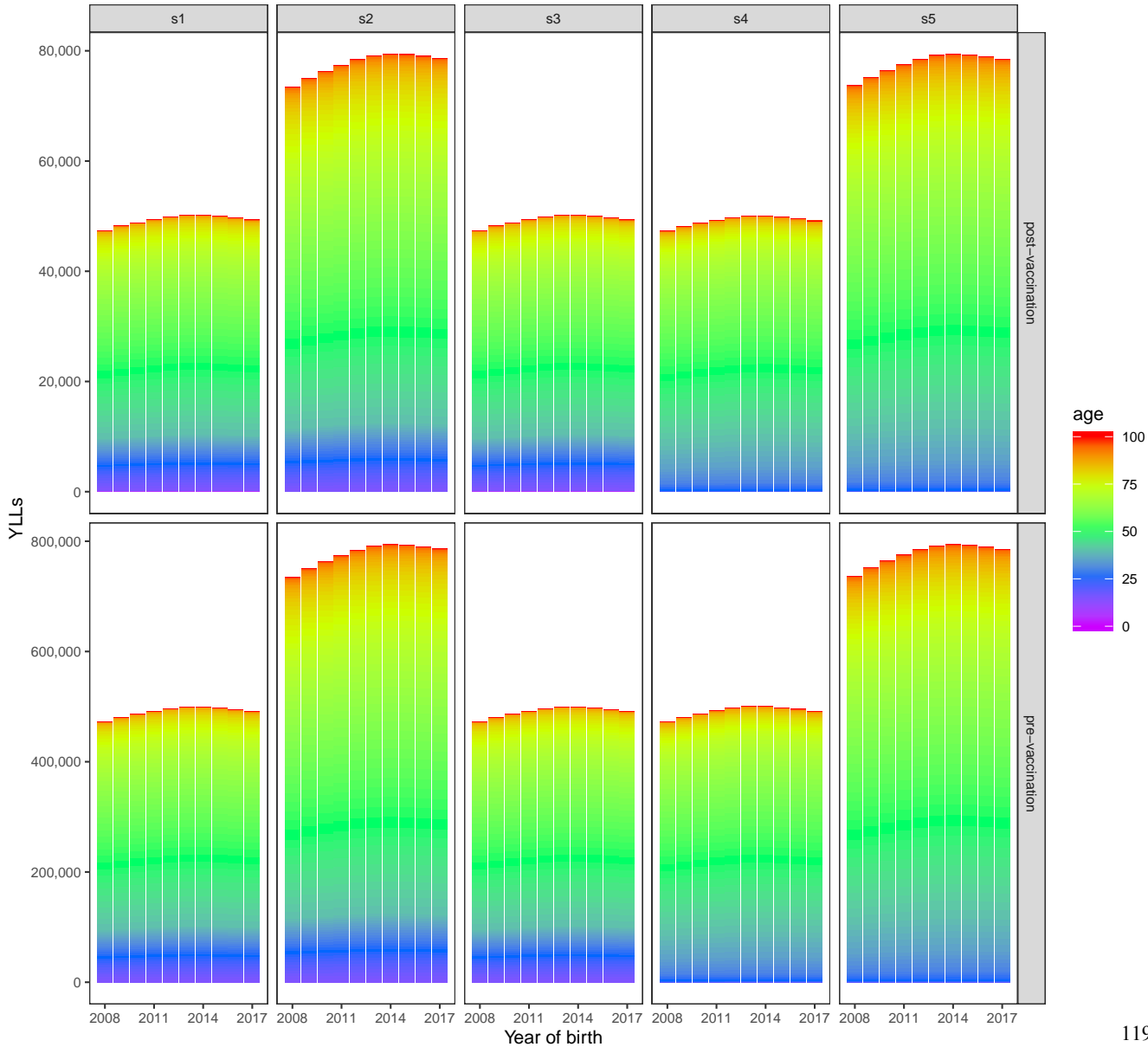
European Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



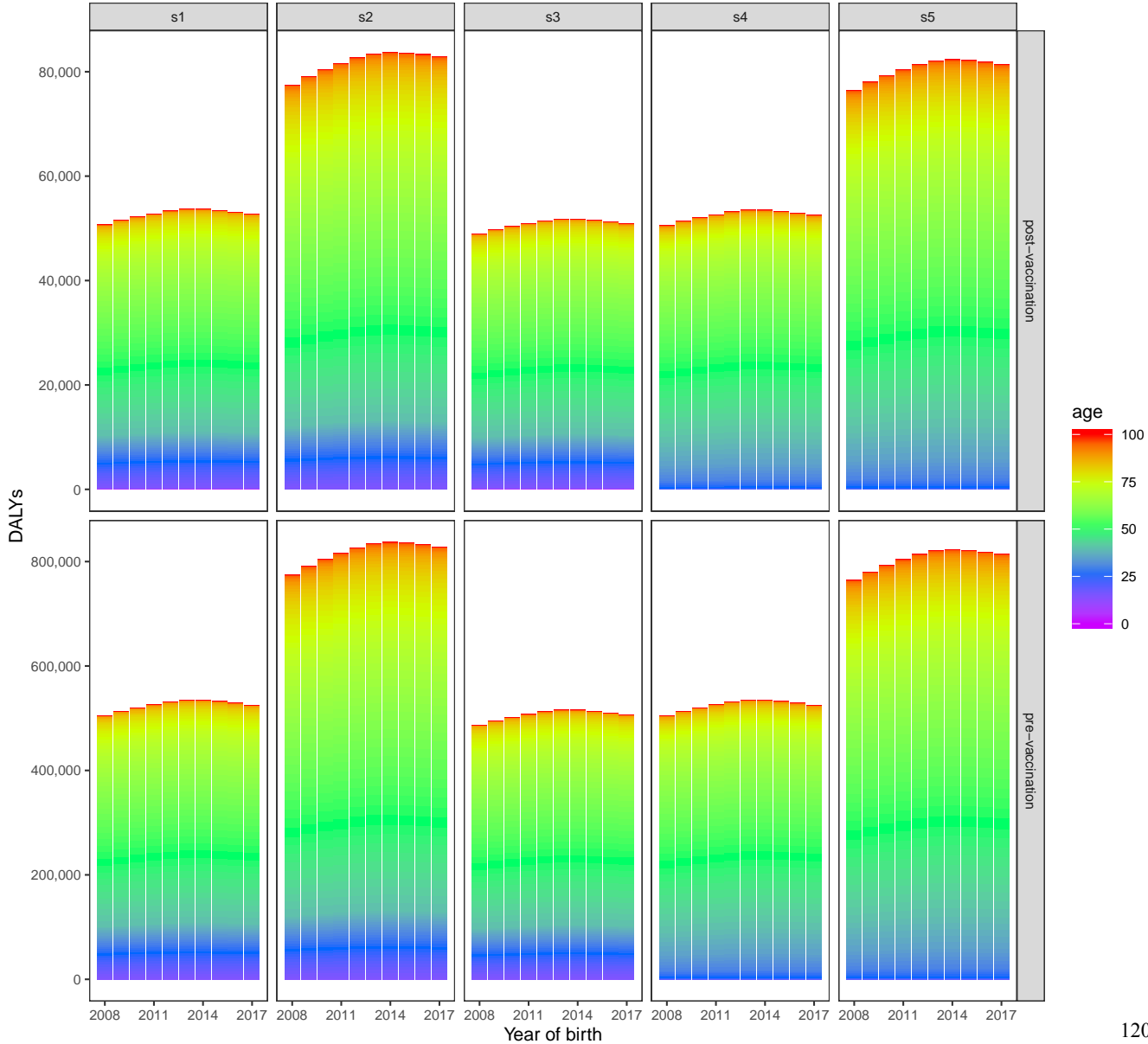
European Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



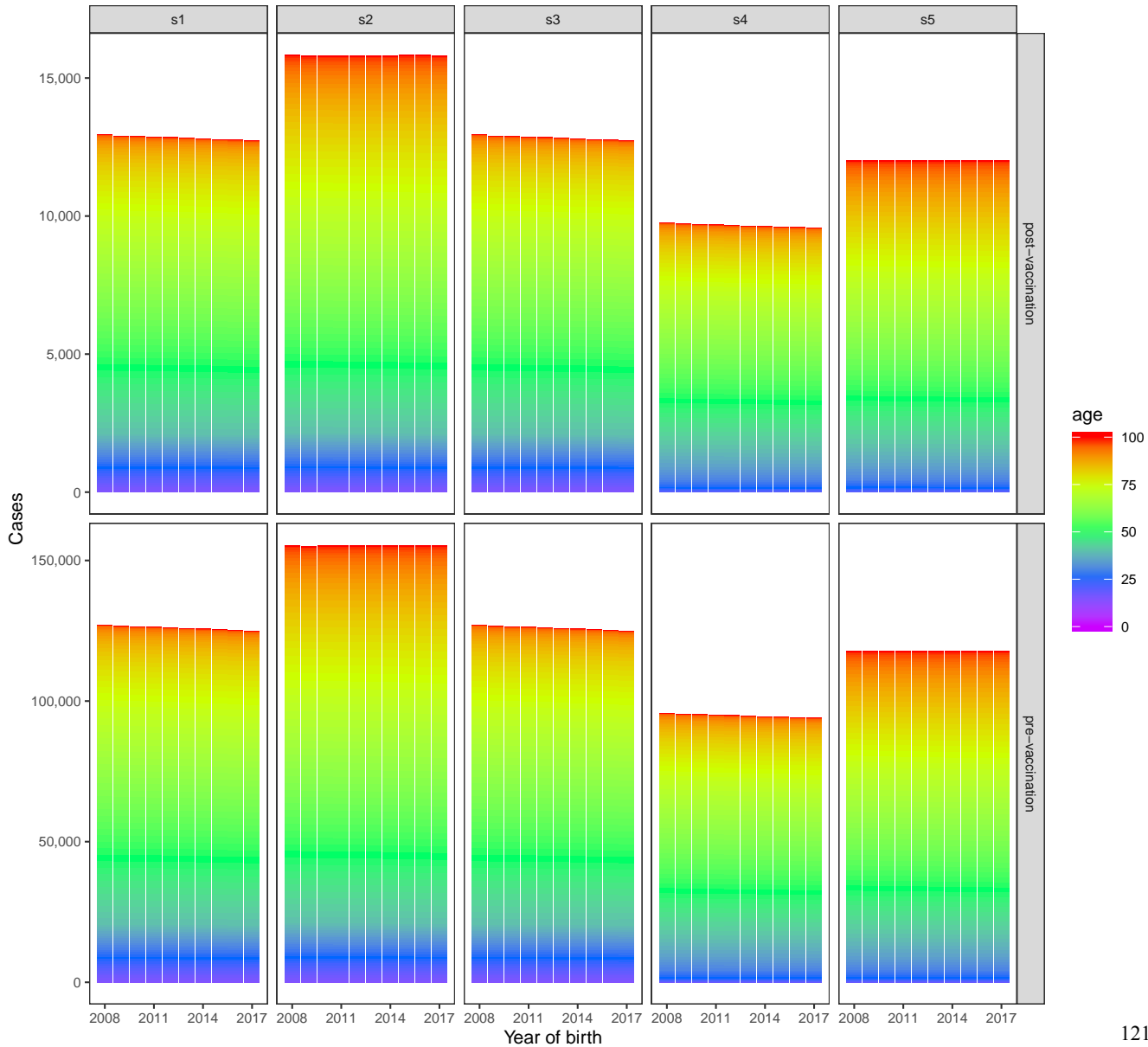
European Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



European Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)

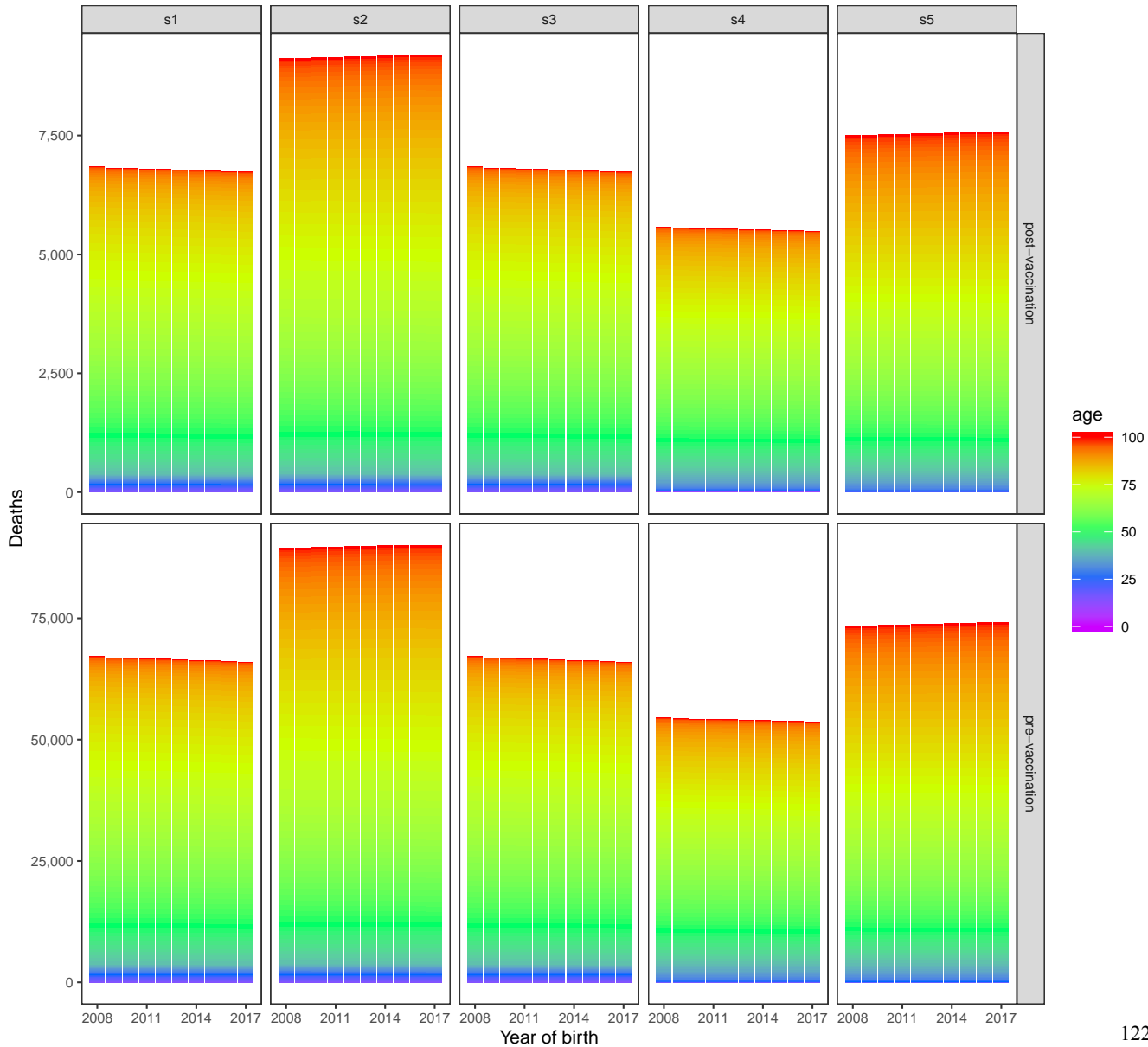


Region of the Americas  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)

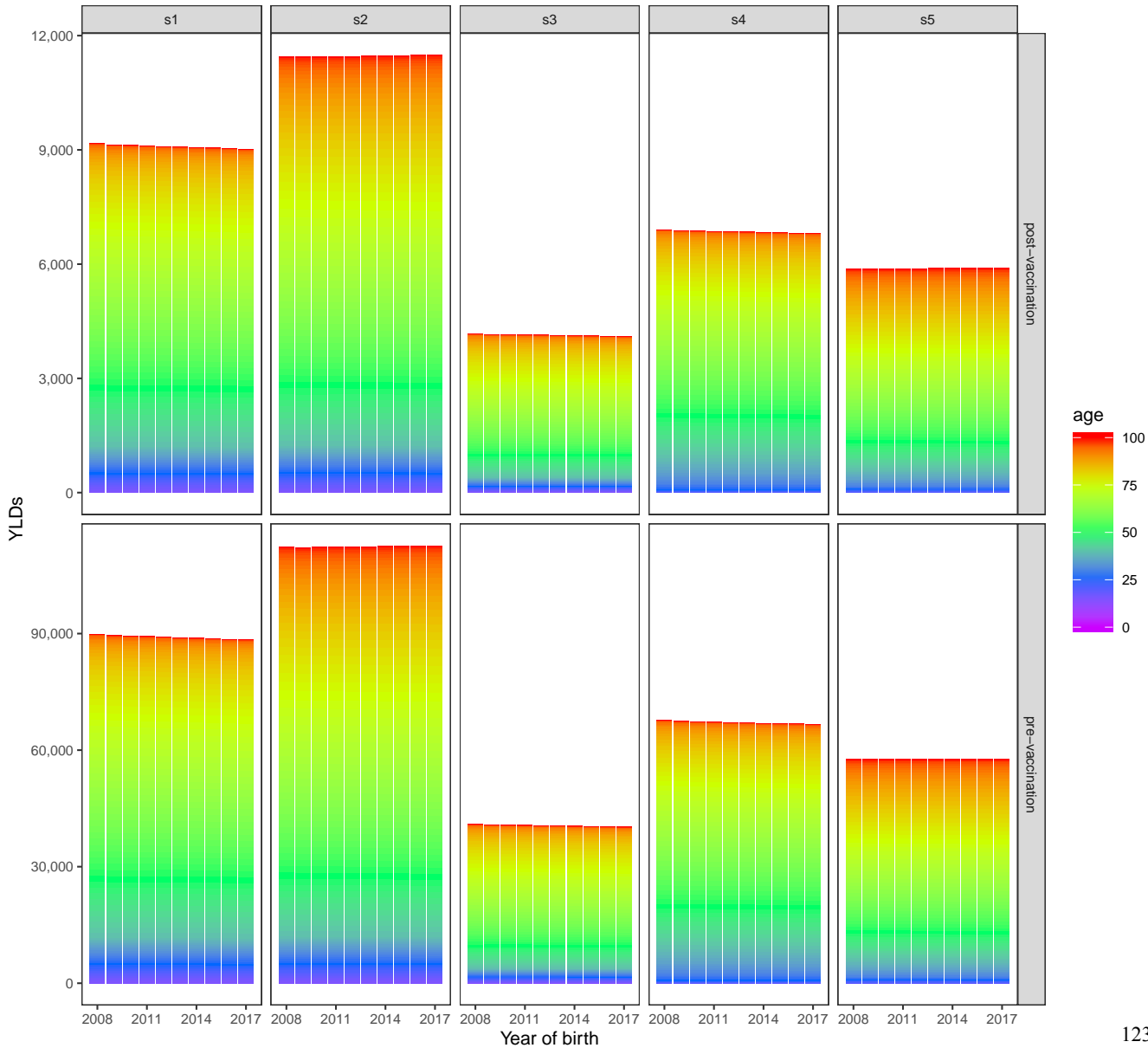




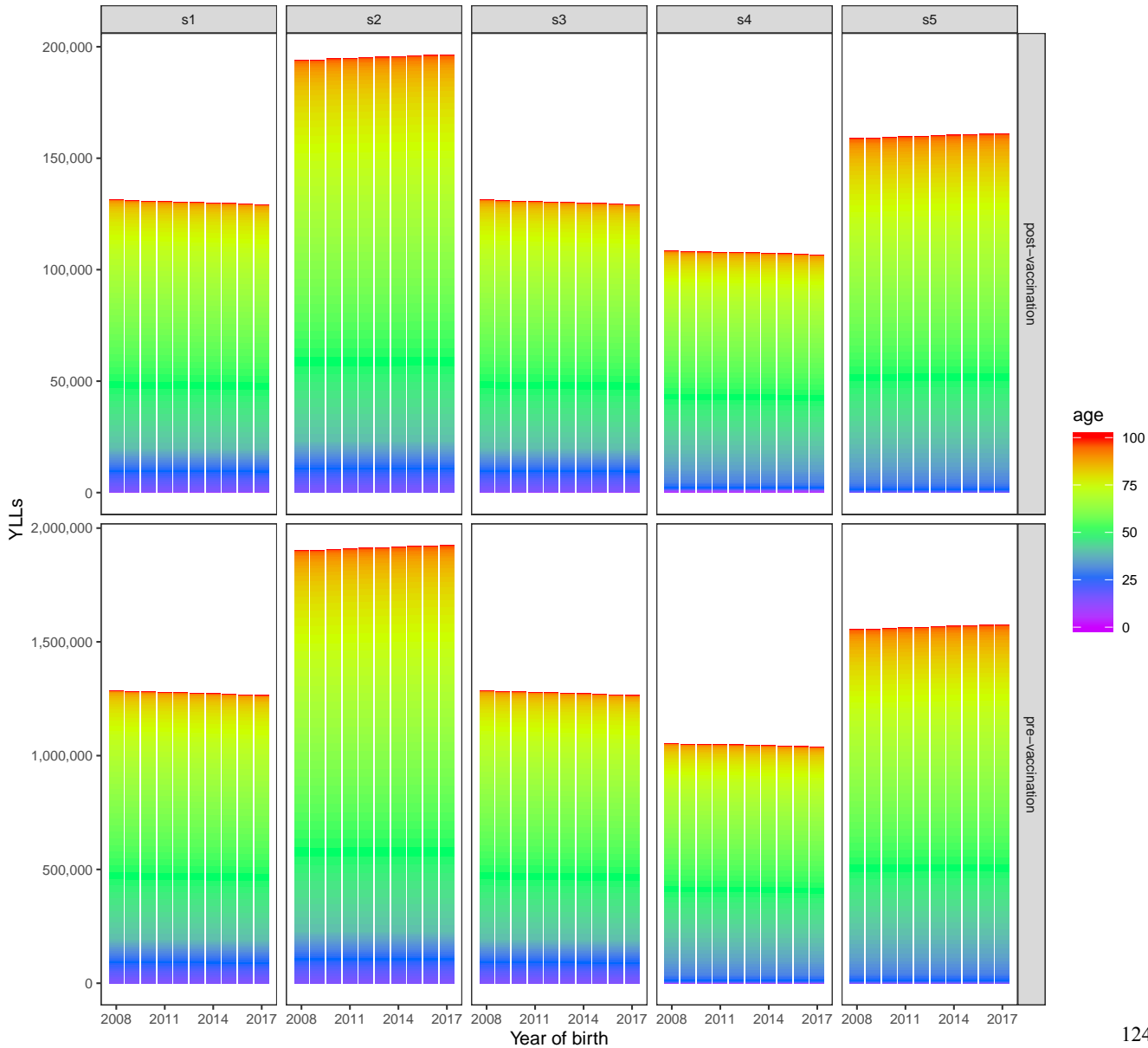
Region of the Americas  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



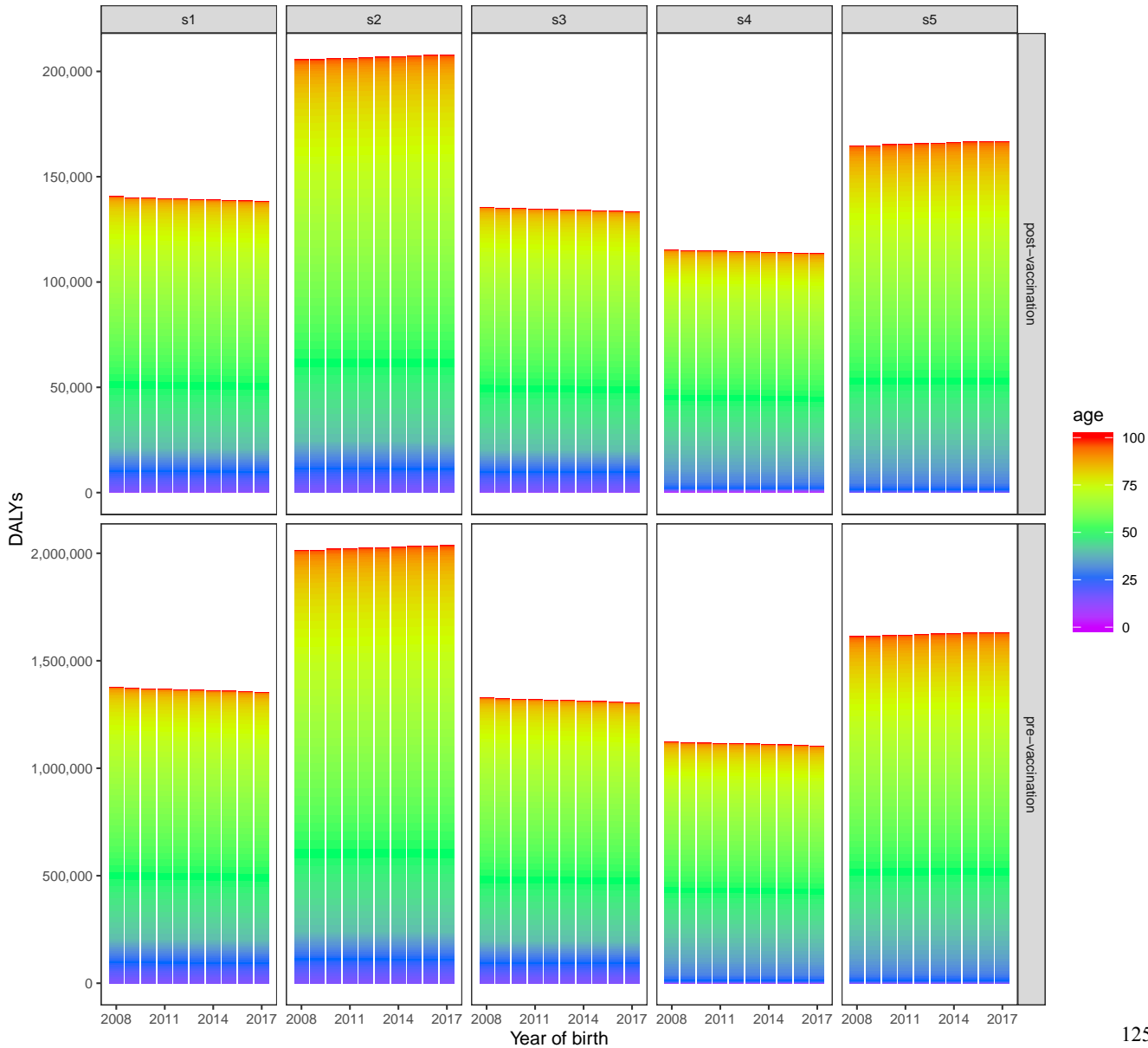
Region of the Americas  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



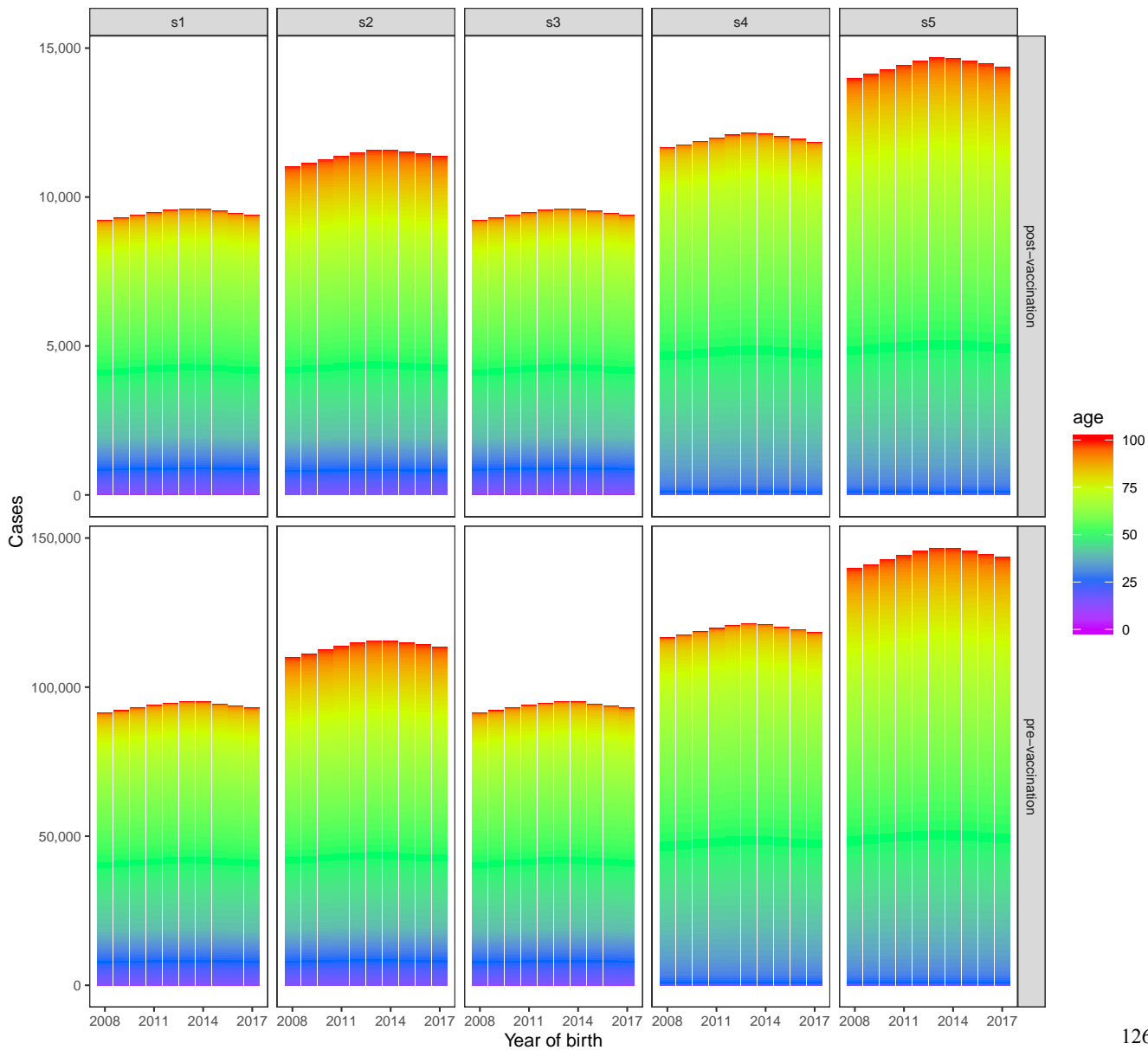
Region of the Americas  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



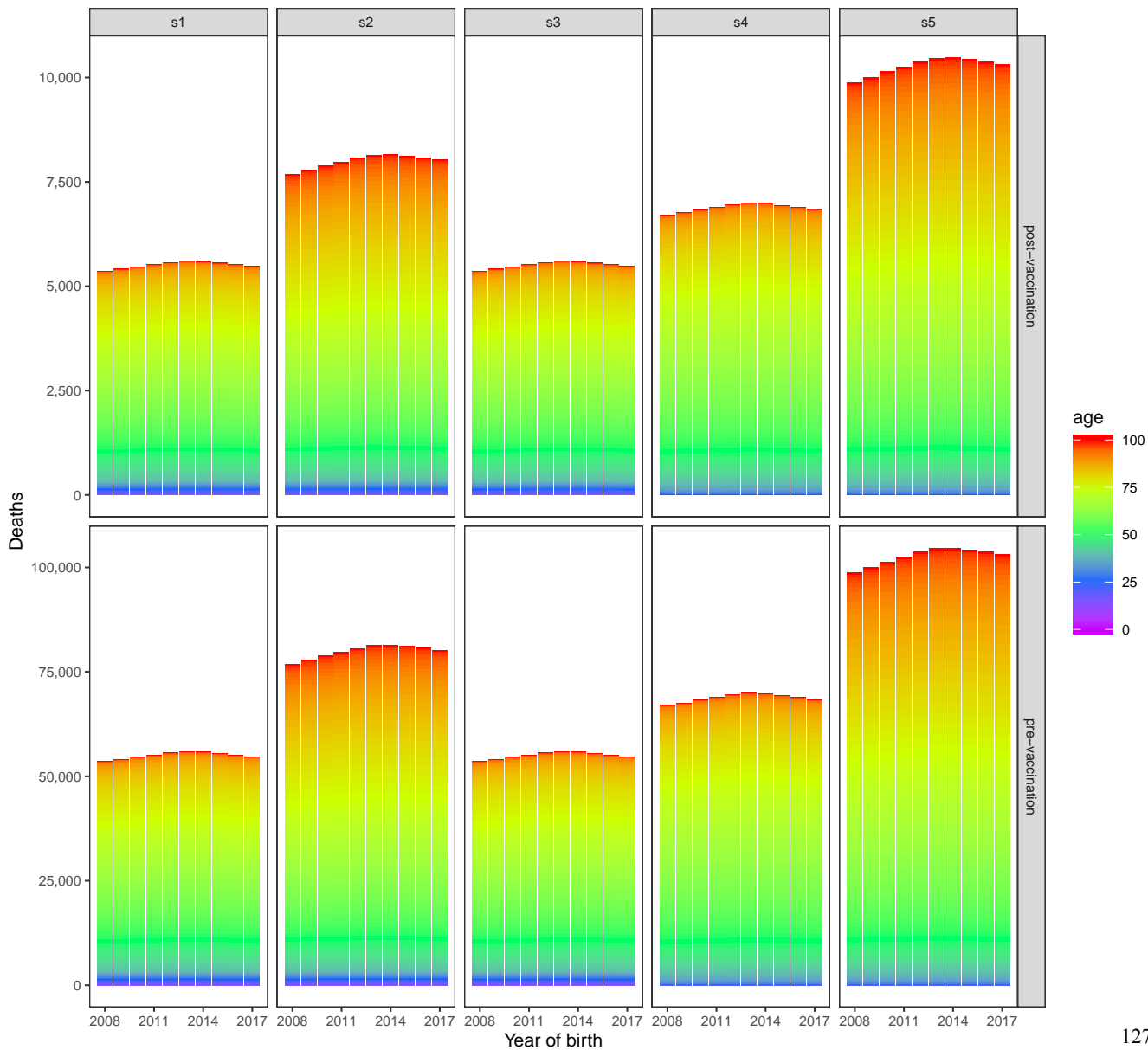
Region of the Americas  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



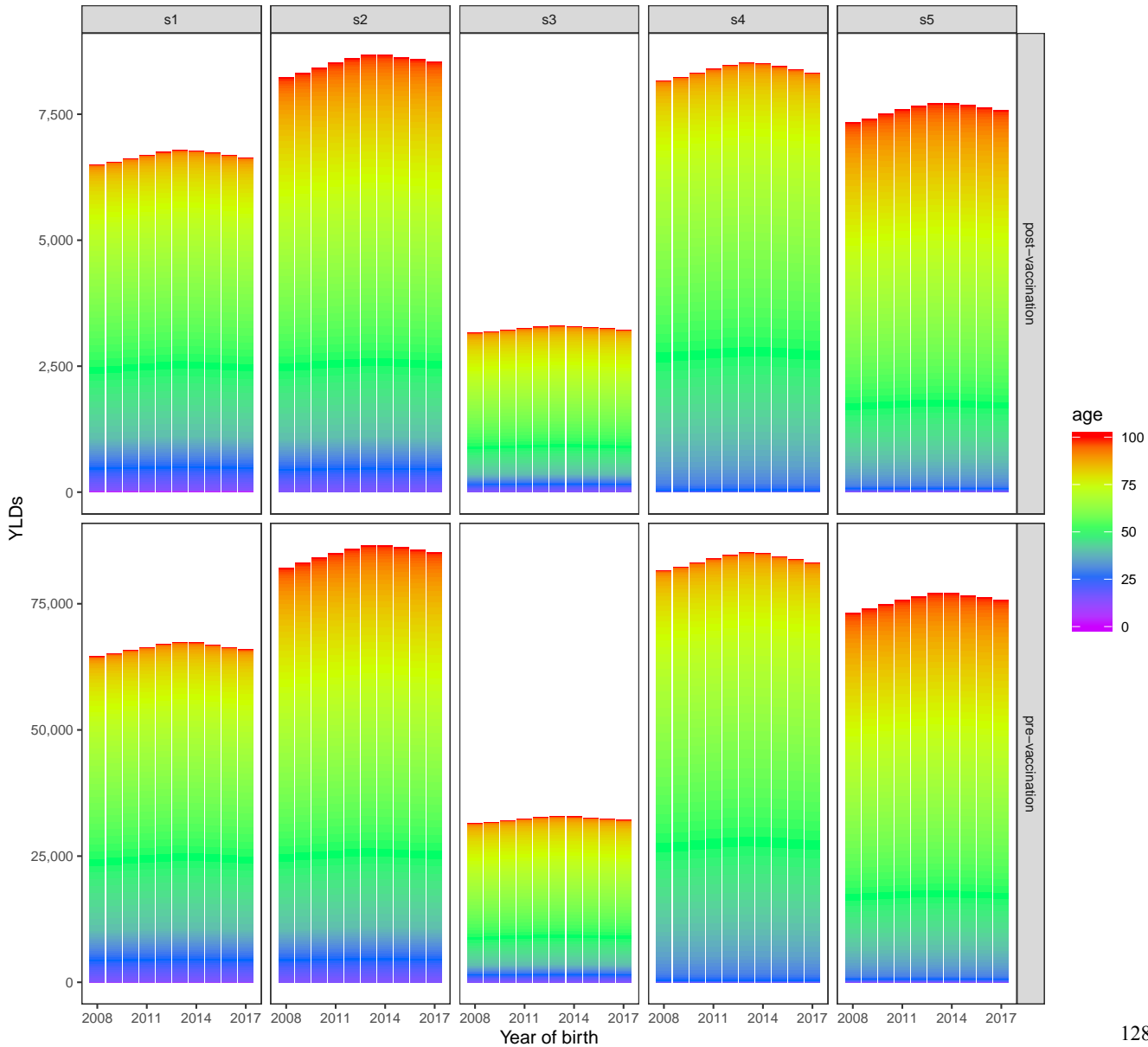
Western Pacific Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



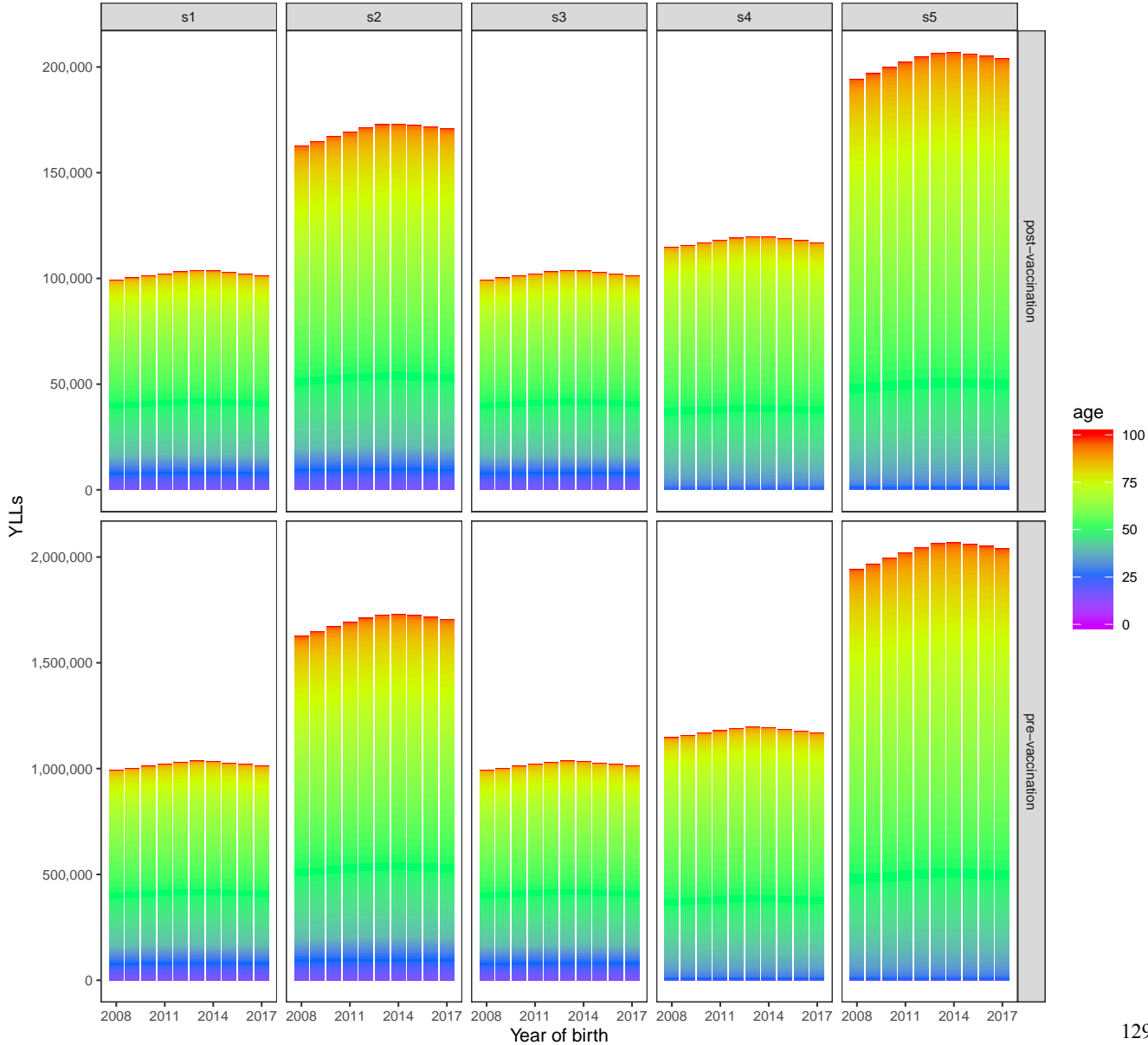
Western Pacific Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



Western Pacific Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)

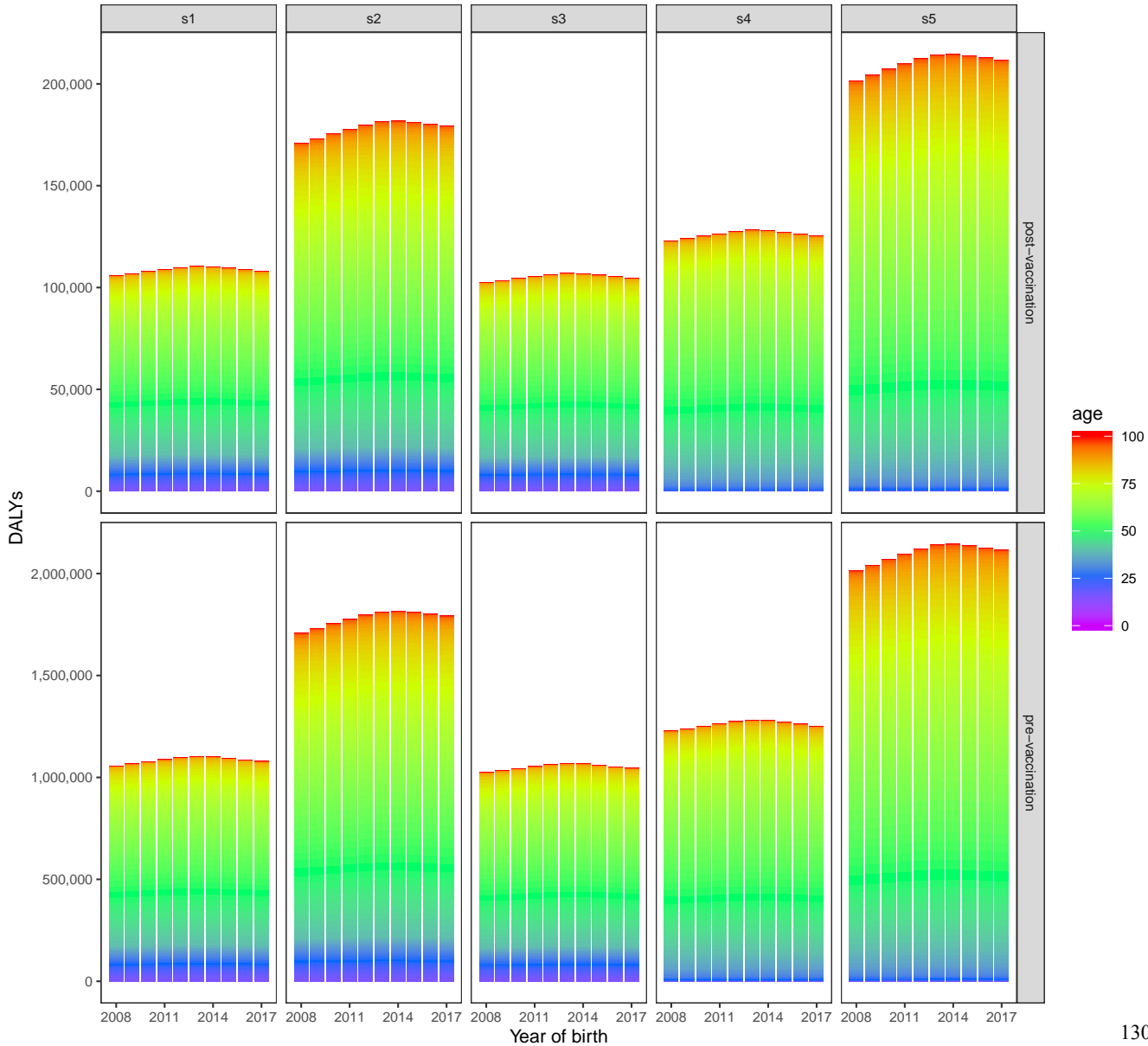


Western Pacific Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)

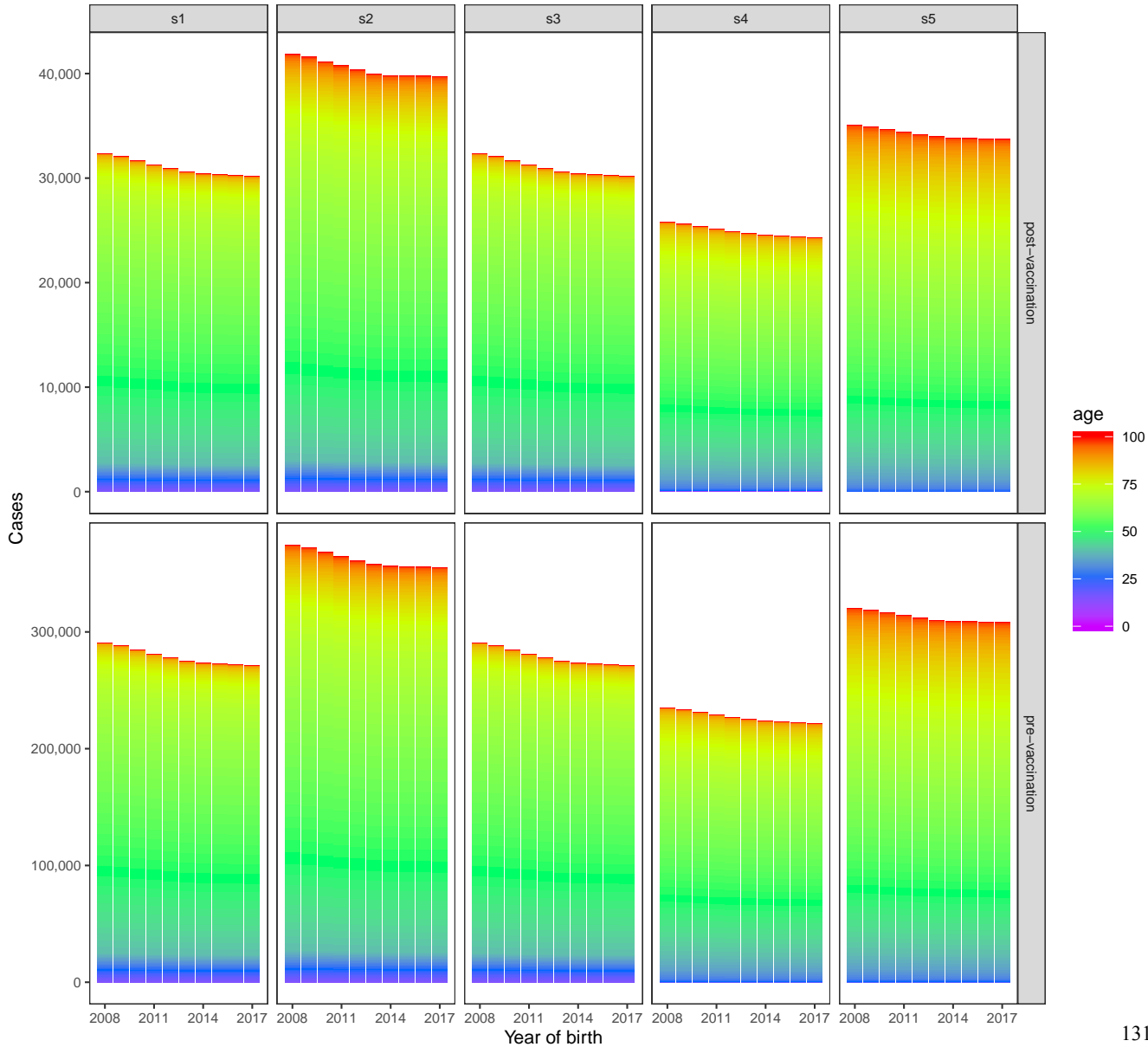




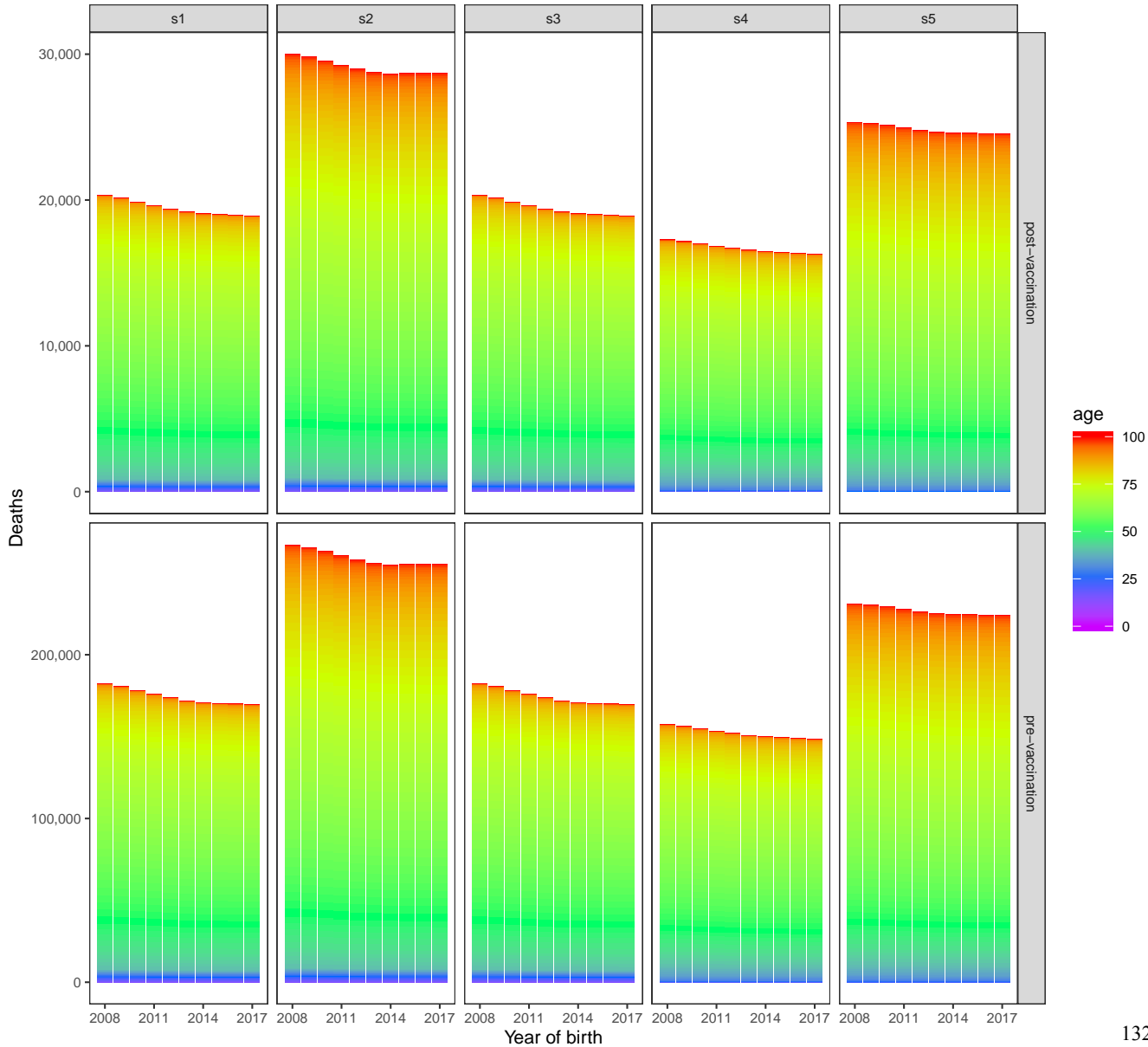
Western Pacific Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



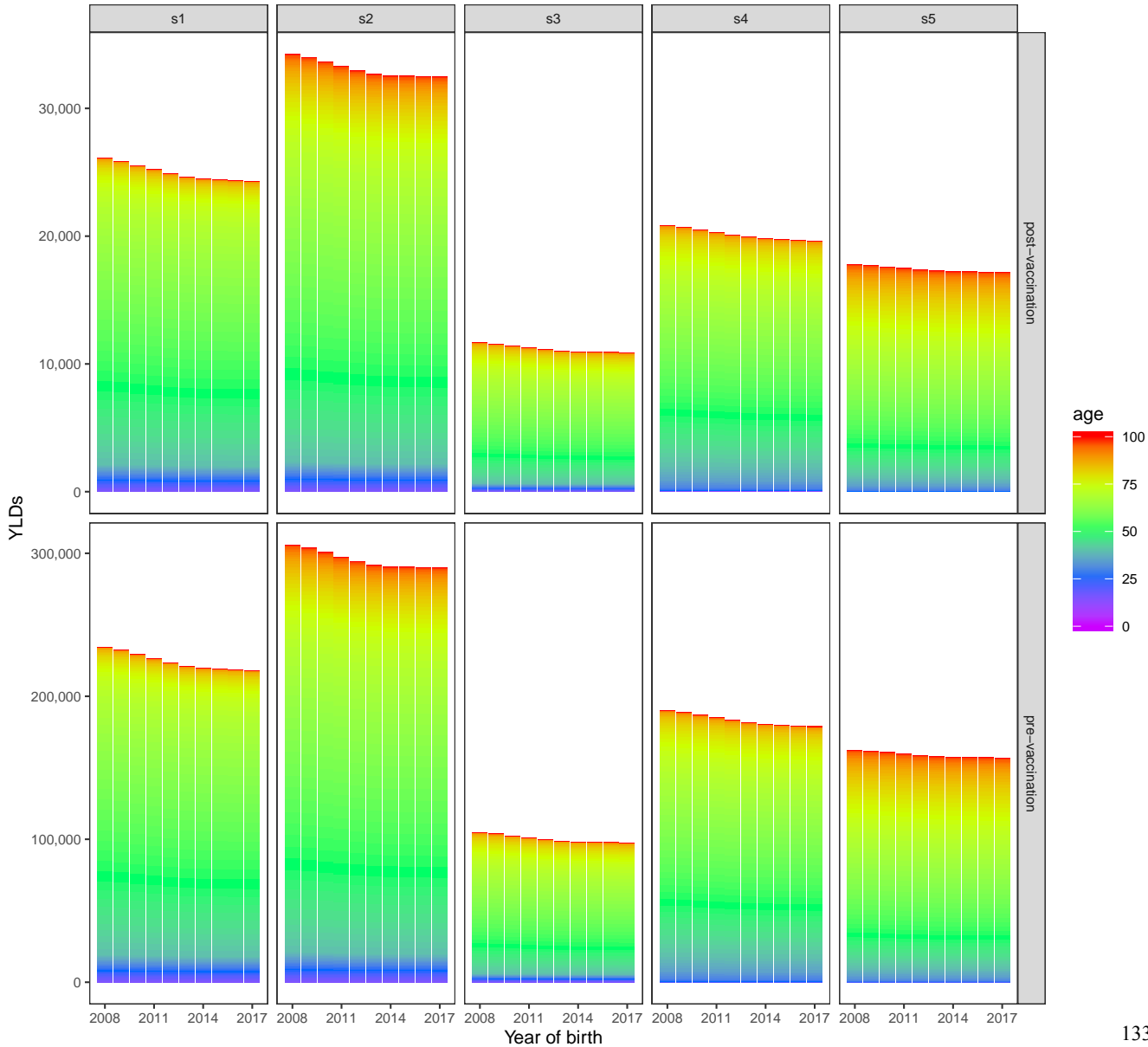
South-East Asia Region  
 Lifetime burden of cervical cancer Cases  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



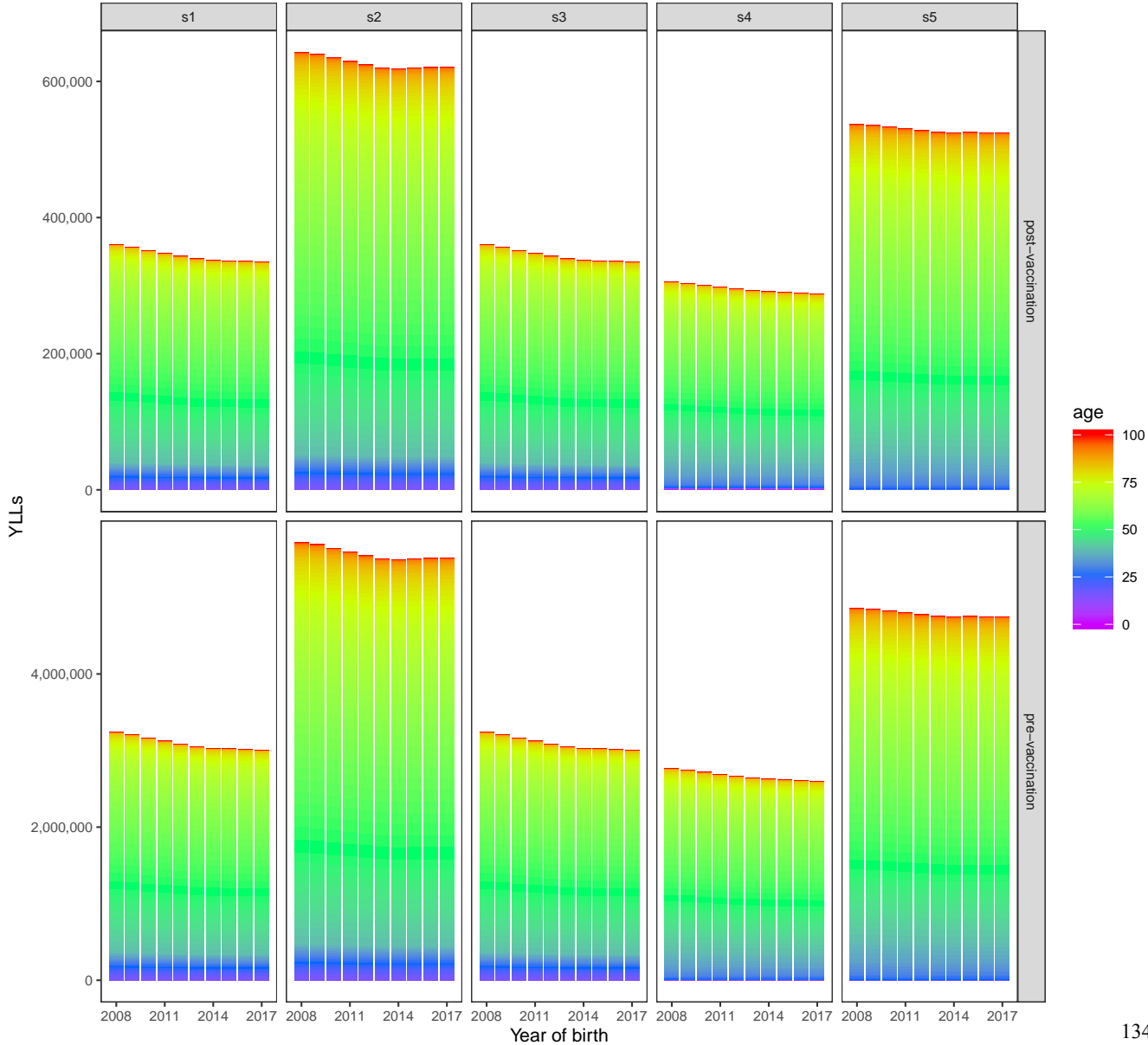
South-East Asia Region  
 Lifetime burden of cervical cancer Deaths  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



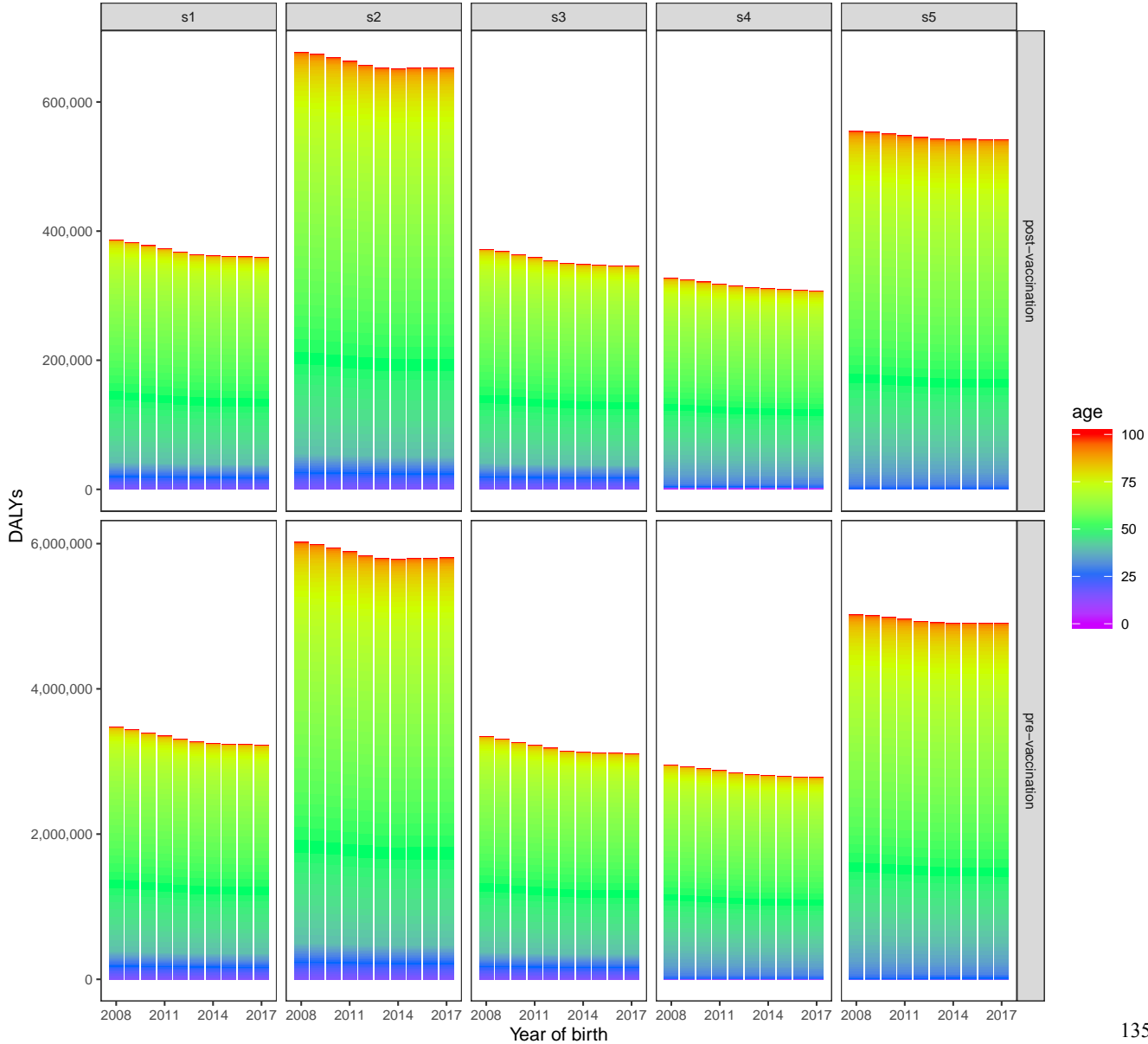
South-East Asia Region  
 Lifetime burden of cervical cancer YLDs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



South-East Asia Region  
 Lifetime burden of cervical cancer YLLs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



South-East Asia Region  
 Lifetime burden of cervical cancer DALYs  
 caused by HPV 16/18/31/33/45/52/58 pre- and post-vaccination  
 (vaccination age = 12 years / nonavalent vaccine)



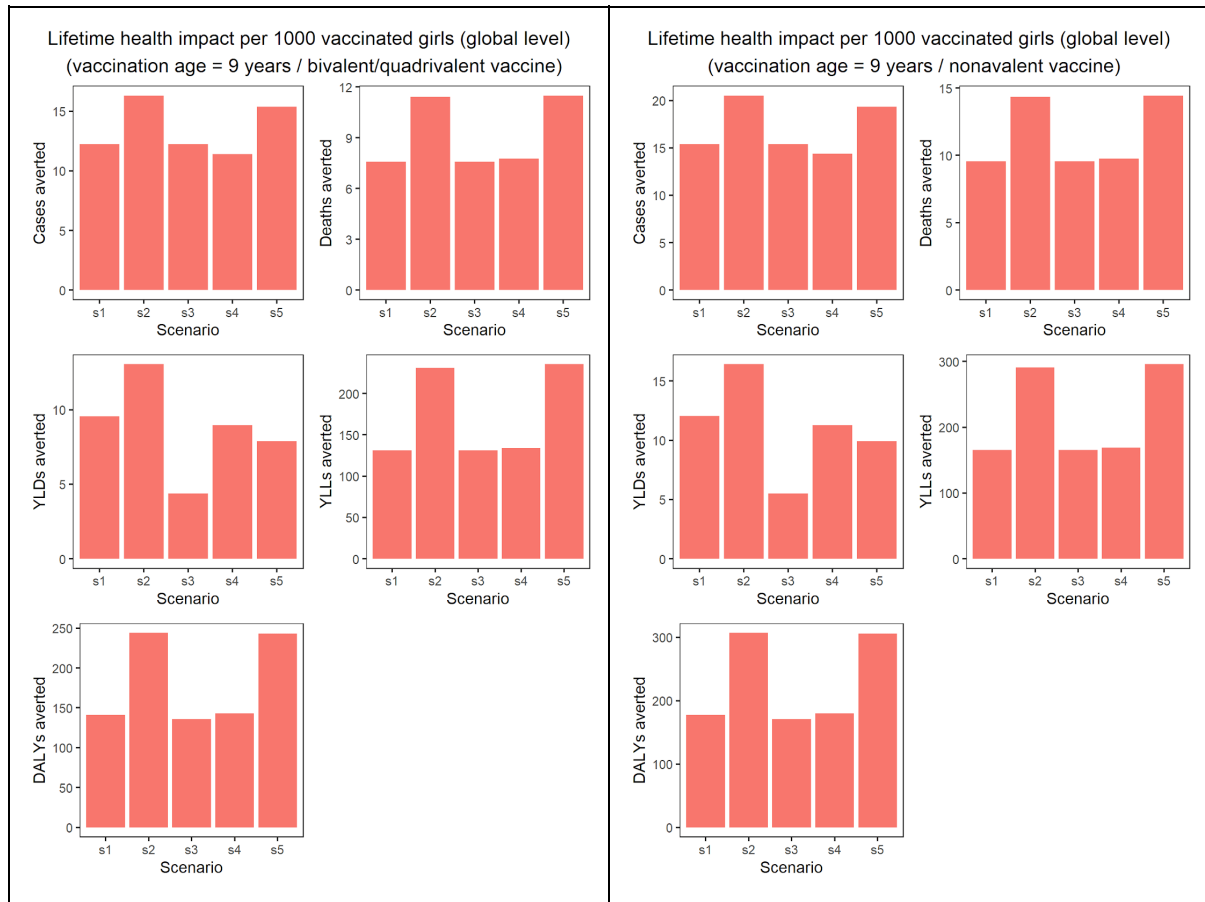
#### **A7. Cervical cancer burden pre- and post-vaccination at the national level**

The lifetime burden of cervical cancer in terms of cases, deaths, YLDs, YLLs and DALYs pre- and post-vaccination at 90% coverage during 2020-2029 in 177 countries for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls. Cervical cancer burden pre- and post-vaccination refers to cervical cancer caused by HPV 16/18 and HPV 16/18/31/33/45/52/58 for bivalent/quadrivalent and nonavalent vaccination respectively.

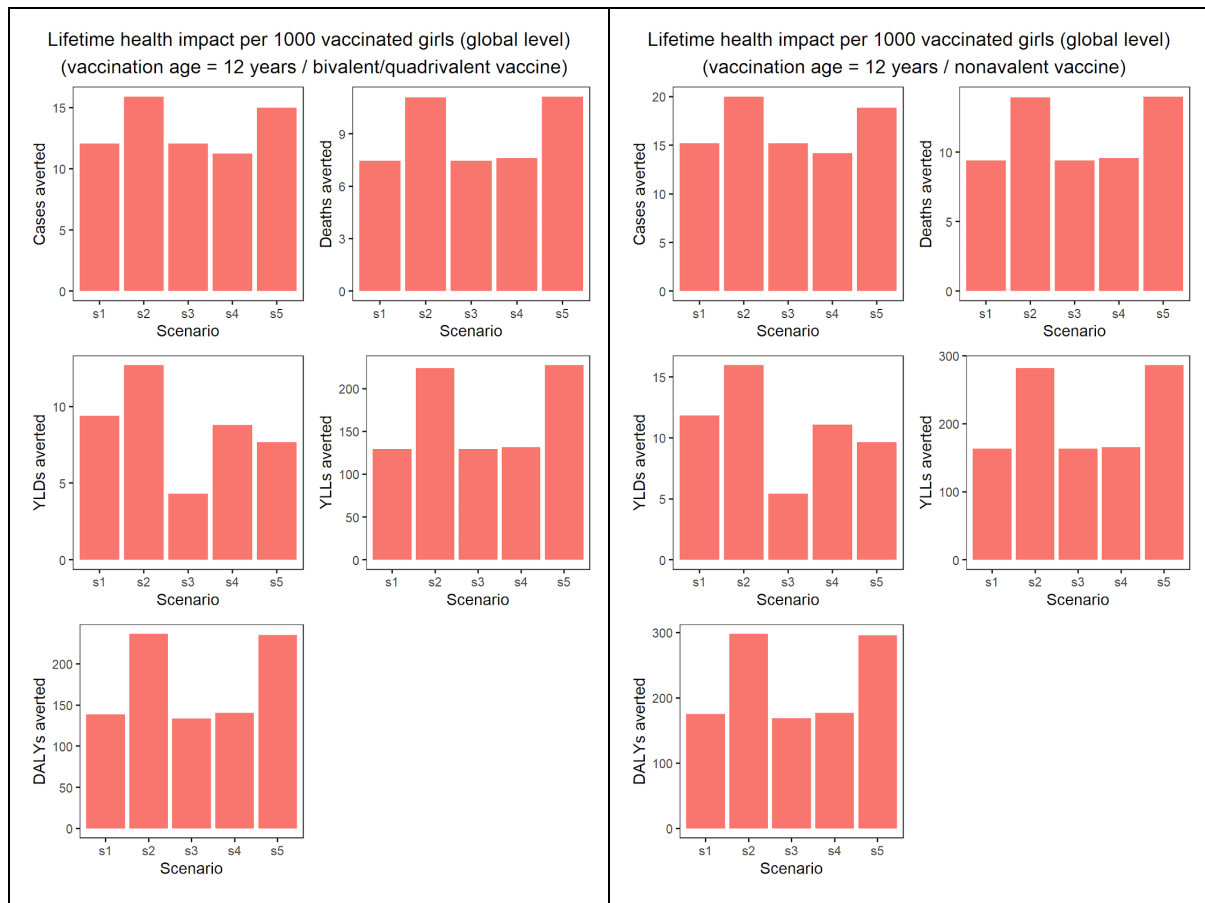
See appendix 2 for data on the lifetime burden of cervical cancer.

## A8. Vaccination impact per 1000 vaccinated girls at the global level

The lifetime impact of vaccination on cases, deaths, YLLs, YLDs and DALYs averted per 1000 vaccinated girls at the global level (in 177 countries) for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls.







s1 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden  
s2 - UNWPP 2019 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden  
s3 - WHO 2009 demography, GBD 2017 disability weights, GLOBOCAN 2012 cervical cancer burden  
s4 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2018 cervical cancer burden  
s5 - UNWPP 2019 demography, GBD 2017 disability weights, GLOBOCAN 2018 cervical cancer burden

## A9. Global estimates of HPV vaccination impact of 12-year-old girls

Health impact of bivalent/quadrivalent and nonavalent HPV vaccination of 12-year-old girls at 90% coverage during 2020-2029 on the averted lifetime burden of cervical cancer in 177 countries for the 5 comparative scenarios.

<b>Bivalent/quadrivalent HPV vaccination impact on cervical cancer caused by HPV 16/18</b>					
<b>Scenario</b>	<b>Cases</b>	<b>Deaths</b>	<b>YLDs</b>	<b>YLLs</b>	<b>DALYs</b>
	<b>averted per 1000 vaccinated girls</b>				
s1	12.1	7.5	9.4	130	139
s2	15.9	11.1	12.7	224	237
s3	12.1	7.5	4.3	130	134
s4	11.2	7.6	8.8	132	140
s5	15	11.1	7.7	227	235
<b>Nonavalent HPV vaccination impact on cervical cancer caused by HPV 16/18/31/33/45/52/58</b>					
<b>Scenario</b>	<b>Cases</b>	<b>Deaths</b>	<b>YLDs</b>	<b>YLLs</b>	<b>DALYs</b>
	<b>averted per 1000 vaccinated girls</b>				
s1	15.2	9.4	11.9	163	175
s2	20	13.9	16	282	298
s3	15.2	9.4	5.4	163	169
s4	14.2	9.6	11.1	166	177
s5	18.9	14	9.7	286	296

s1 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden  
s2 - UNWPP 2019 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden  
s3 - WHO 2009 demography, GBD 2017 disability weights, GLOBOCAN 2012 cervical cancer burden  
s4 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2018 cervical cancer burden  
s5 - UNWPP 2019 demography, GBD 2017 disability weights, GLOBOCAN 2018 cervical cancer burden

### A10. Number of 12-year-old girls needed to be vaccinated to prevent cervical cancer

The number of 12-year-old girls to be vaccinated to prevent 1 case, 1 death, 1 year loss due to morbidity (YLD), 1 year loss due to premature mortality (YLL), or 1 year loss of healthy life (DALY) from cervical cancer for the 5 comparative scenarios (bivalent/quadrivalent and nonavalent HPV vaccination).

<b>Bivalent/quadrivalent HPV vaccine</b>					
<b>Scenario</b>	<b>Number of girls needed to be vaccinated to prevent cervical cancer caused by HPV 16/18</b>				
	<b>1 case</b>	<b>1 death</b>	<b>1 YLD</b>	<b>1 YLL</b>	<b>1 DALY</b>
s1	83	134	106	7.7	7.2
s2	63	90	79	4.5	4.2
s3	83	134	232	7.7	7.5
s4	89	132	114	7.6	7.1
s5	67	90	130	4.4	4.3
<b>Nonavalent HPV vaccine</b>					
<b>Scenario</b>	<b>Number of girls needed to be vaccinated to prevent cervical cancer caused by HPV 16/18/31/33/45/52/58</b>				
	<b>1 case</b>	<b>1 death</b>	<b>1 YLD</b>	<b>1 YLL</b>	<b>1 DALY</b>
s1	66	107	84	6.1	5.7
s2	50	72	63	3.5	3.4
s3	66	107	184	6.1	5.9
s4	71	105	90	6	5.7
s5	53	72	104	3.5	3.4

s1 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden  
s2 - UNWPP 2019 demography, GBD 2001 disability weights, GLOBOCAN 2012 cervical cancer burden  
s3 - WHO 2009 demography, GBD 2017 disability weights, GLOBOCAN 2012 cervical cancer burden  
s4 - WHO 2009 demography, GBD 2001 disability weights, GLOBOCAN 2018 cervical cancer burden  
s5 - UNWPP 2019 demography, GBD 2017 disability weights, GLOBOCAN 2018 cervical cancer burden

### A11. Vaccination impact per 1000 vaccinated 12-year-old girls at the regional level

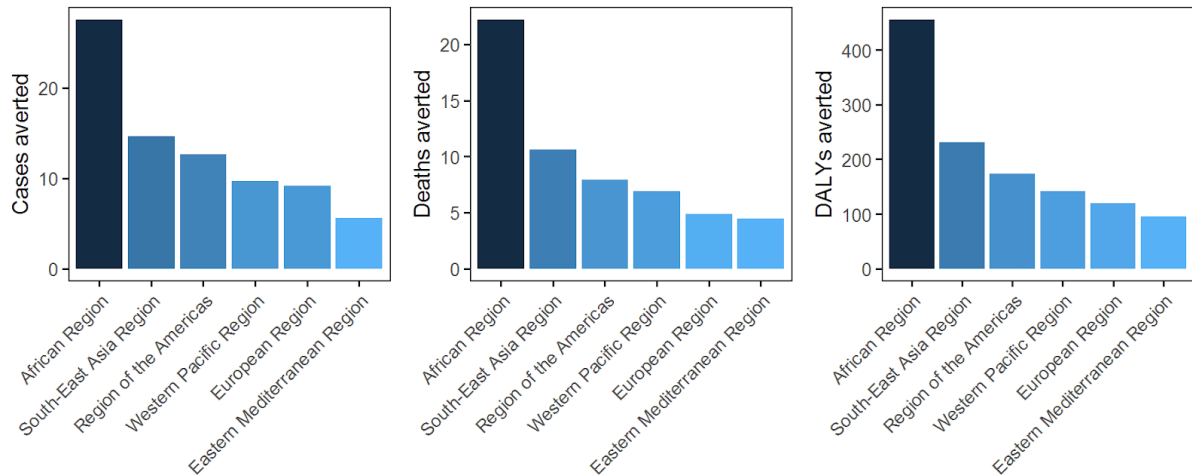
Lifetime health impact of bivalent/quadrivalent and nonavalent HPV vaccination of 12-year-old girls during 2020-2029 on cases, deaths, YLDs, YLLs and DALYs averted per 1000 vaccinated girls in the 6 WHO regions (estimates after the combined PRIME updates for demography, disability weights and cervical cancer burden).

<b>Bivalent/quadrivalent HPV vaccine</b>					
<b>WHO region</b>	<b>Cases</b>	<b>Deaths</b>	<b>YLDs</b>	<b>YLLs</b>	<b>DALYs</b>
	<b>averted per 1000 vaccinated girls</b>				
African Region	28	22	14	441	456
South-East Asia Region	15	11	7	223	231
Region of the Americas	13	8	6	168	174
Western Pacific Region	10	7	5	136	141
European Region	9	5	4	115	120
Eastern Mediterranean Region	6	4	3	92	95
<b>Nonavalent HPV vaccine</b>					
<b>WHO region</b>	<b>Cases</b>	<b>Deaths</b>	<b>YLDs</b>	<b>YLLs</b>	<b>DALYs</b>
	<b>averted per 1000 vaccinated girls</b>				
African Region	34	27	18	546	563
South-East Asia Region	19	14	9	285	295
Region of the Americas	16	10	8	215	223
Western Pacific Region	13	9	7	178	184
European Region	11	6	5	140	145
Eastern Mediterranean Region	7	6	4	115	119

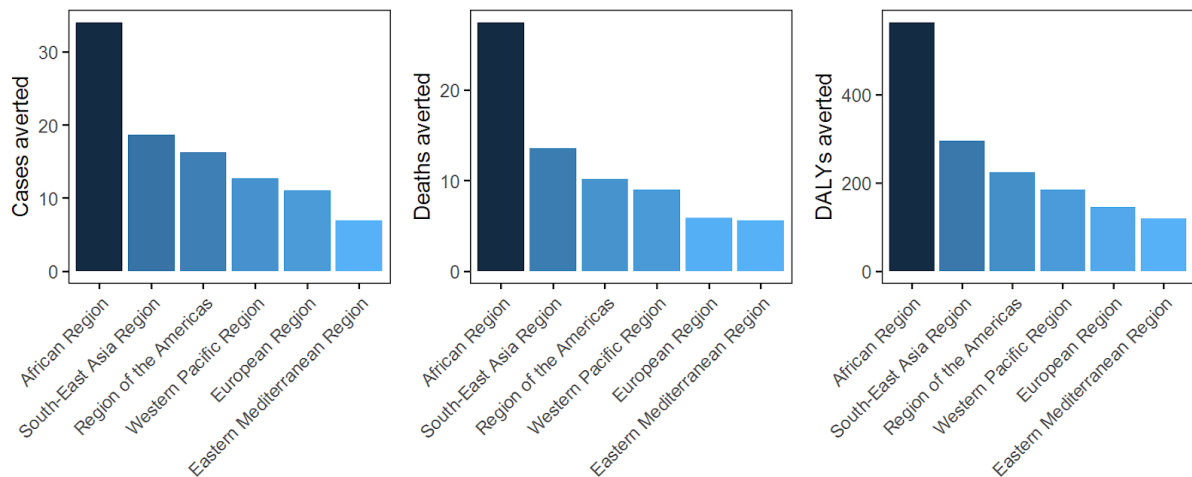
## A12. Vaccination impact per 1000 vaccinated 12-year-old girls at the regional level

Lifetime health impact of bivalent/quadrivalent and nonavalent HPV vaccination of 12-year-old girls during 2020-2029 on cases, deaths and DALYs averted per 1000 vaccinated girls in the 6 WHO regions (estimates after the combined PRIME updates for demography, disability weights and cervical cancer burden).

Lifetime health impact per 1000 vaccinated girls (regional level)  
(bivalent/quadrivalent HPV vaccination of 12-year-old girls)



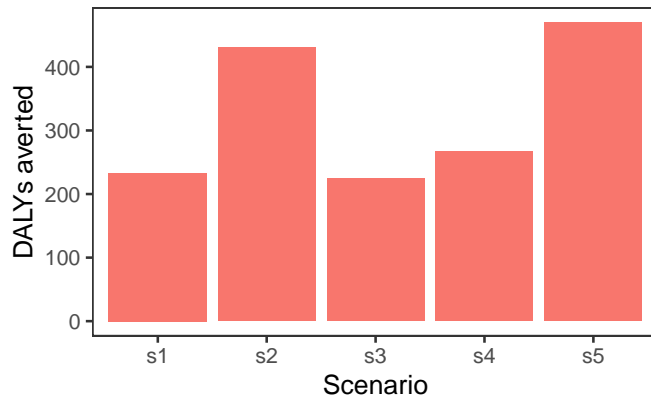
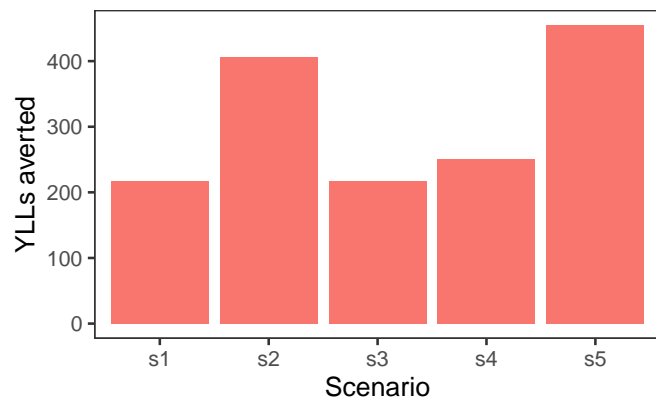
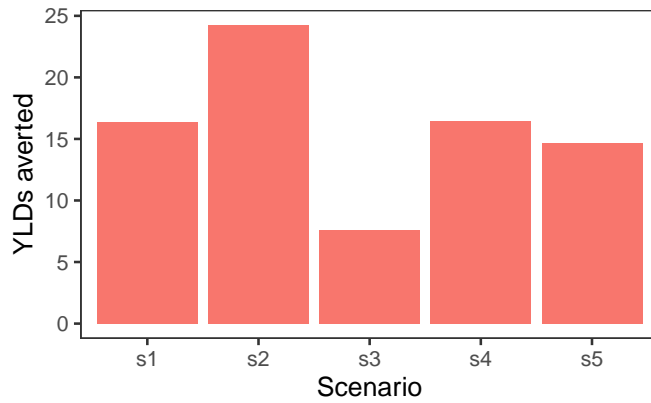
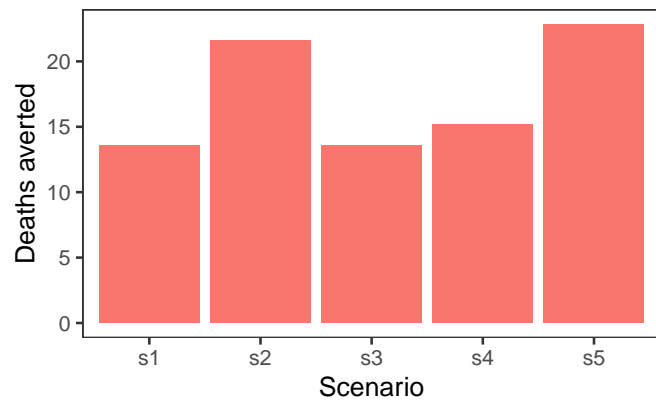
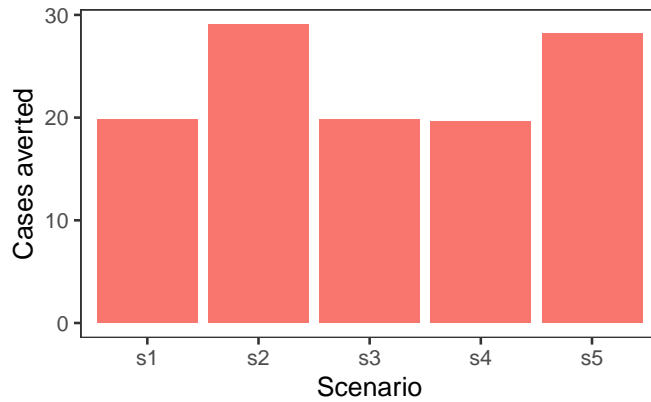
Lifetime health impact per 1000 vaccinated girls (regional level)  
(nonavalent HPV vaccination of 12-year-old girls)



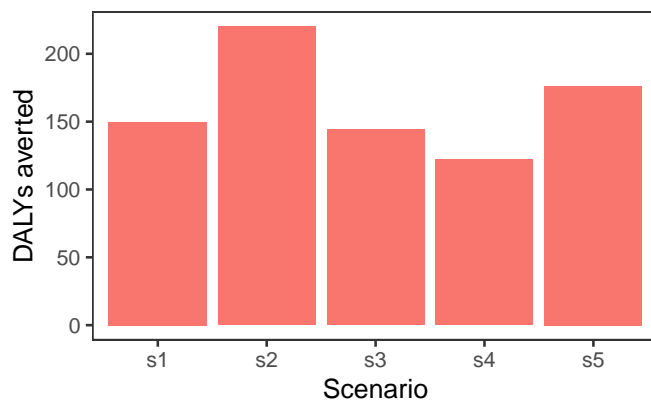
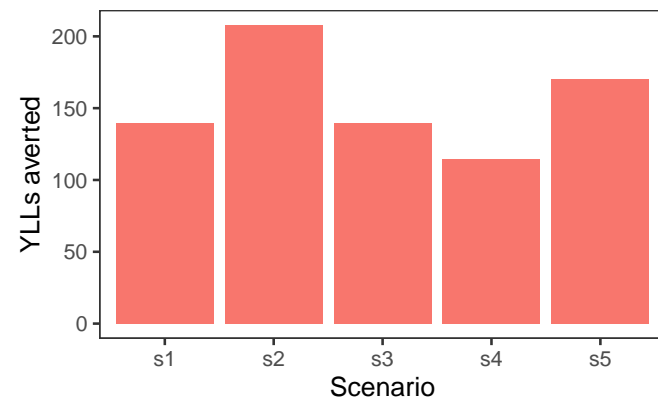
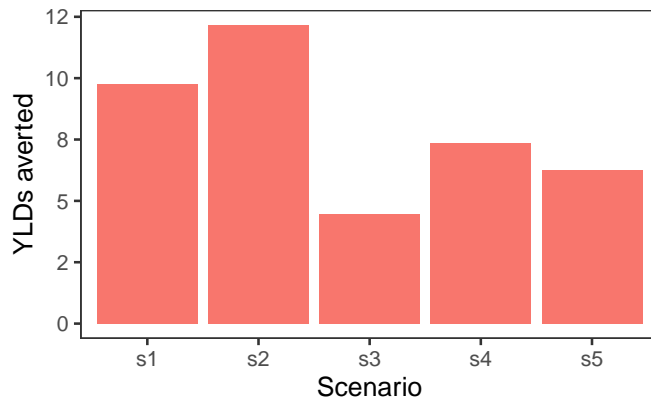
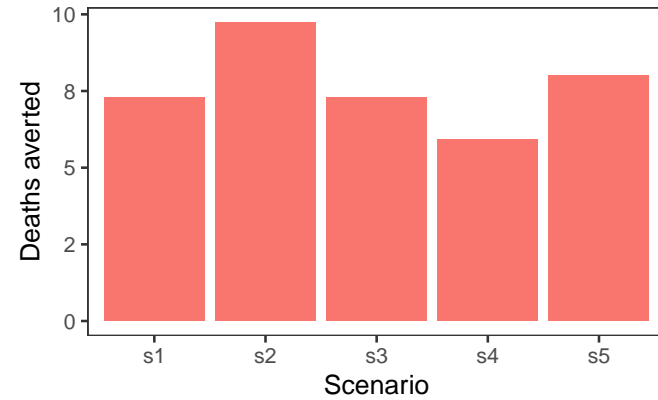
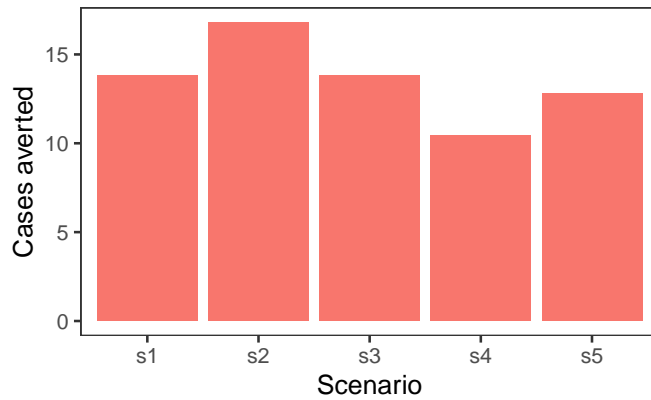
### **A13. Vaccination impact per 1000 vaccinated girls at the regional level**

Lifetime health impact of HPV vaccination during 2020-2029 on cases, deaths, YLLs, YLDs and DALYs averted per 1000 vaccinated girls in the 6 WHO regions for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls.

# Lifetime health impact per 1000 vaccinated girls – African Region (vaccination age = 9 years / bivalent/quadrivalent vaccine)

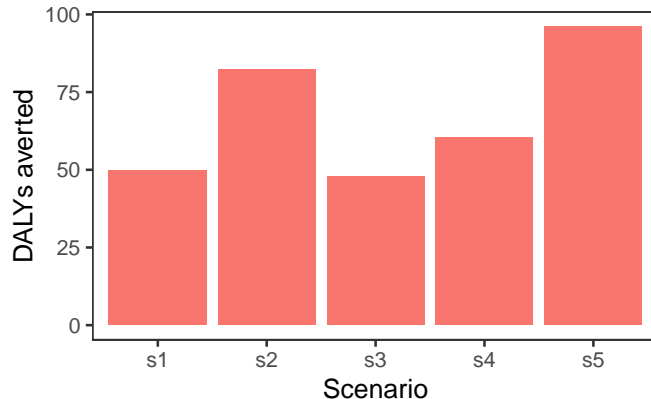
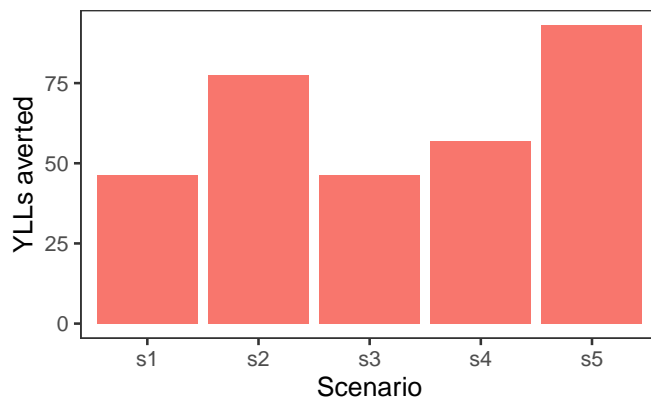
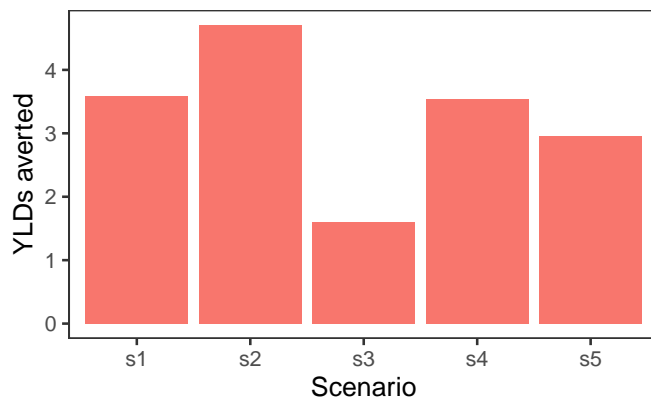
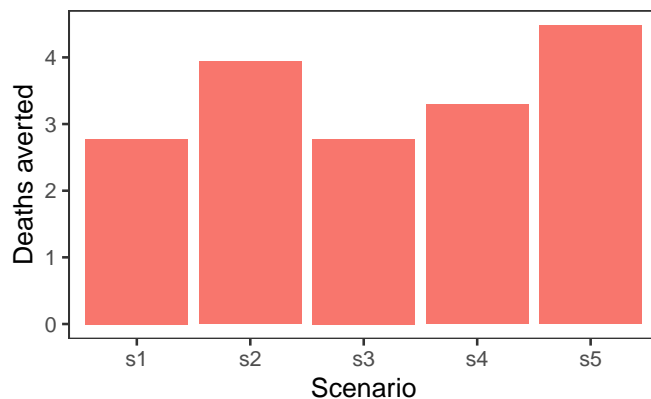
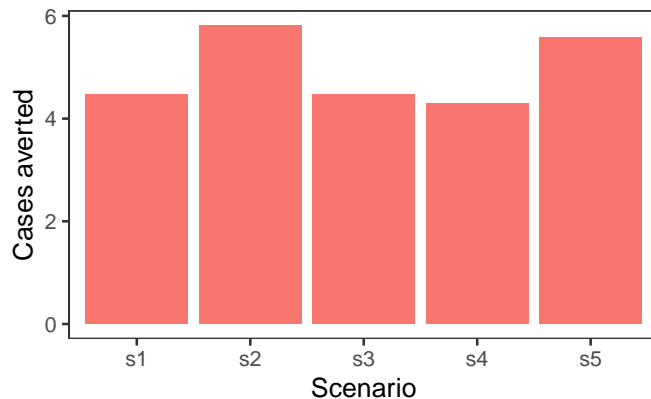


# Lifetime health impact per 1000 vaccinated girls – Region of the Americas (vaccination age = 9 years / bivalent/quadrivalent vaccine)

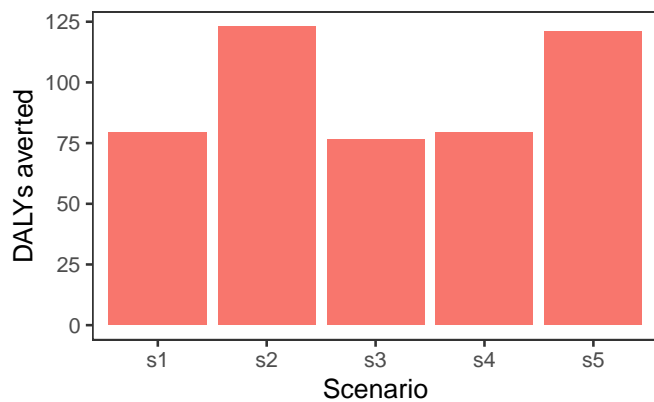
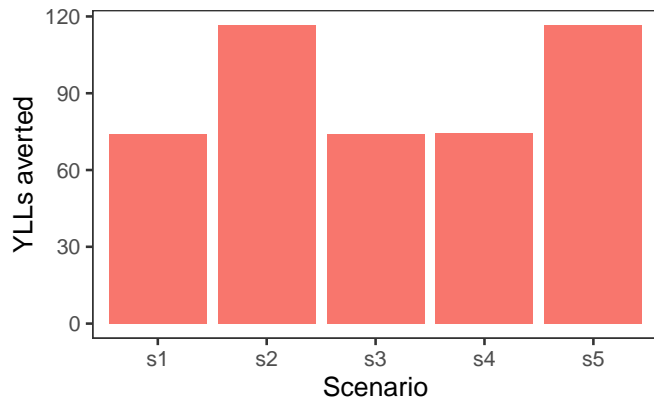
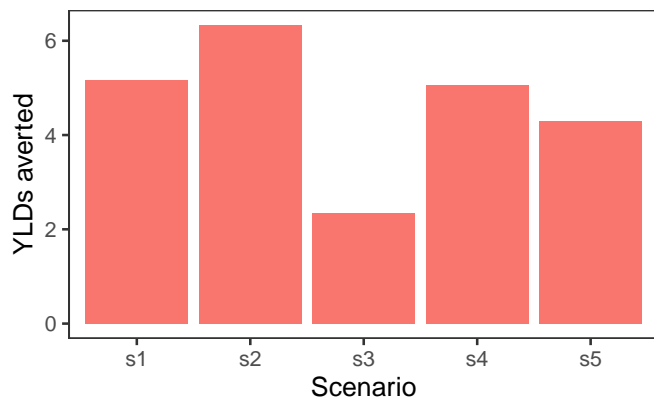
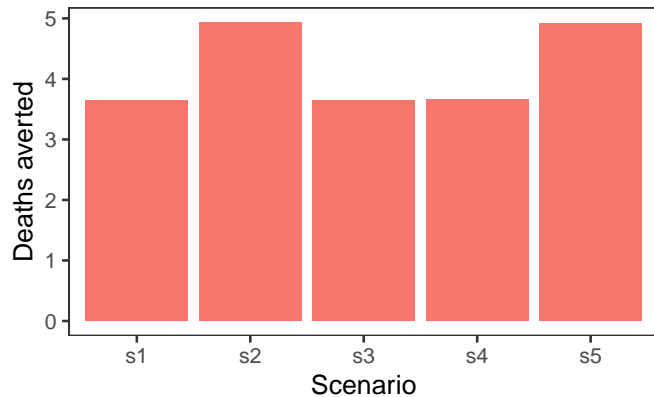
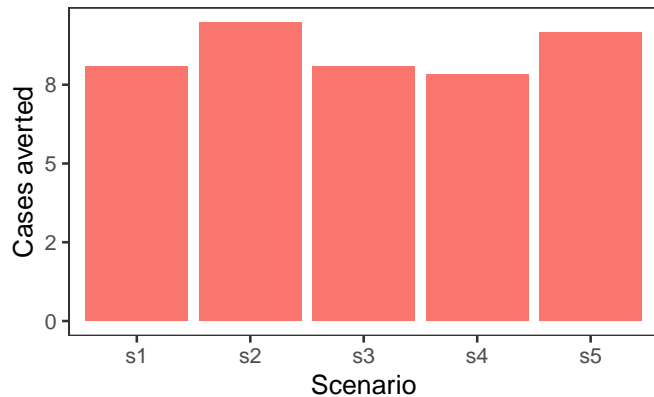




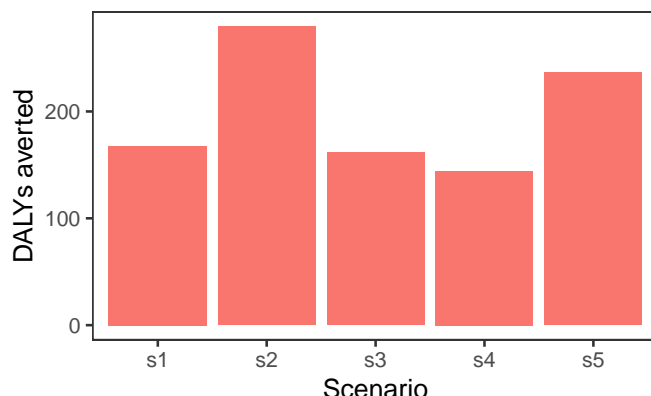
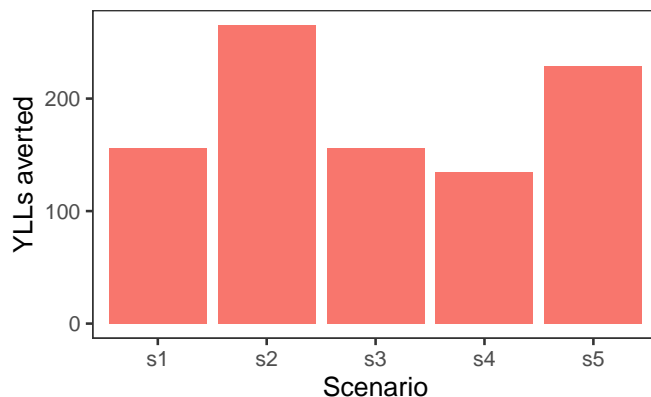
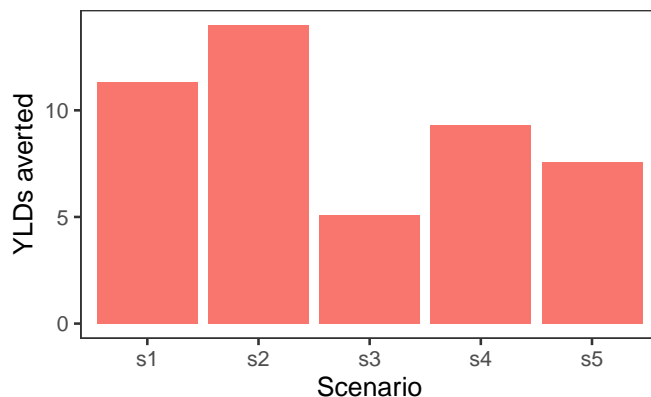
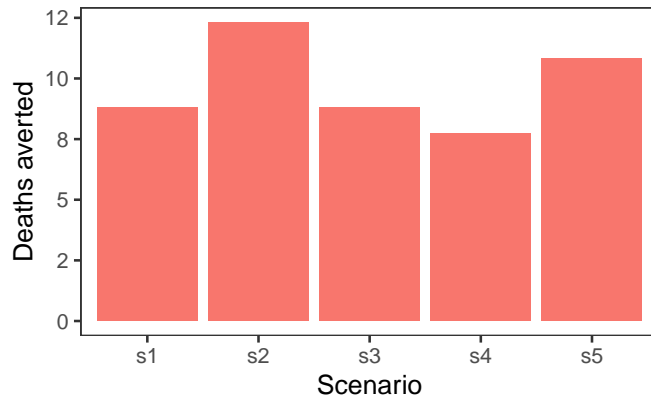
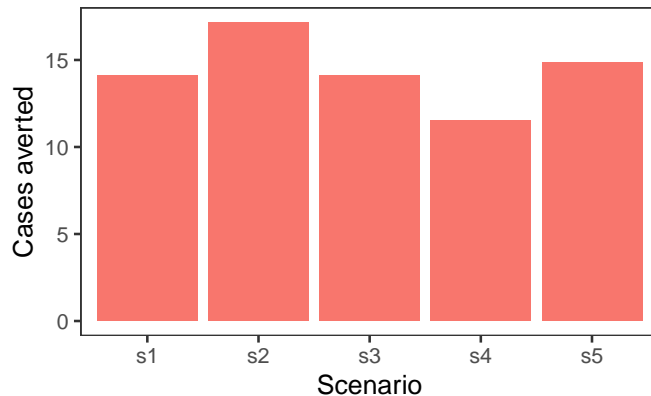
# Lifetime health impact per 1000 vaccinated girls – Eastern Mediterranean Region (vaccination age = 9 years / bivalent/quadrivalent vaccine)



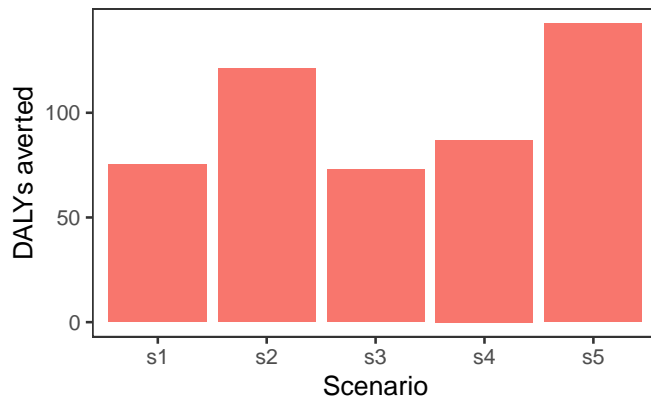
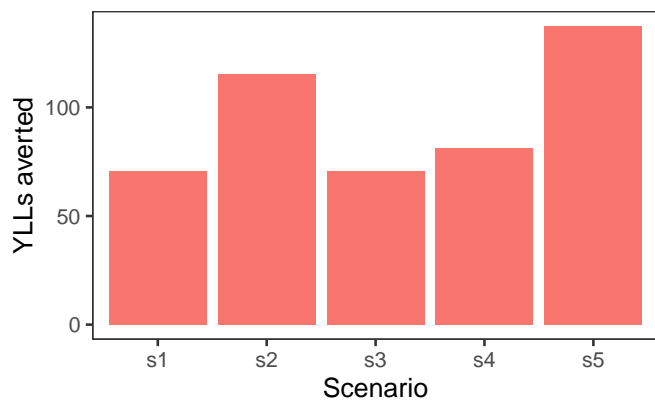
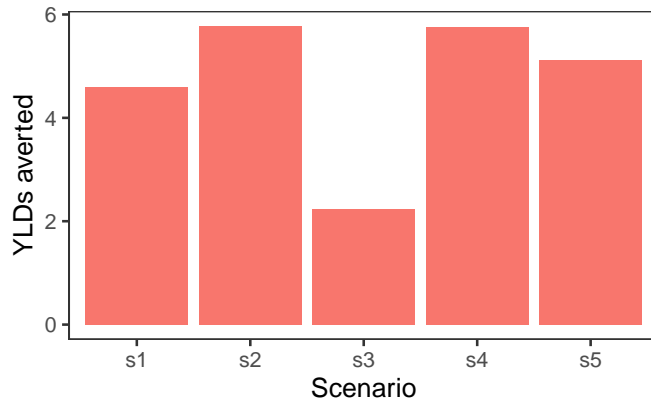
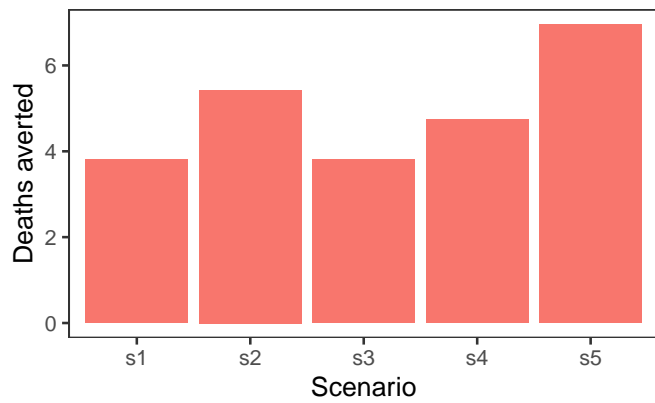
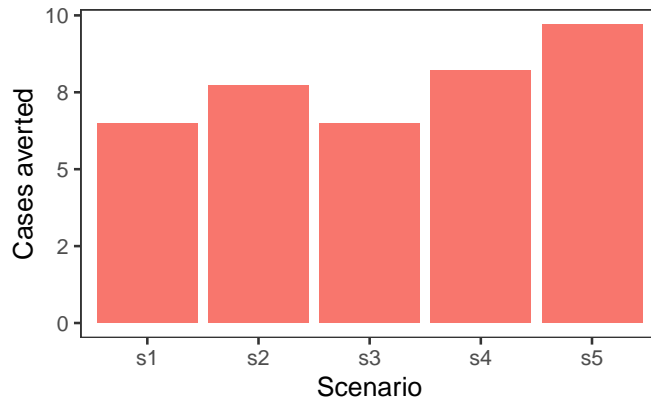
# Lifetime health impact per 1000 vaccinated girls – European Region (vaccination age = 9 years / bivalent/quadrivalent vaccine)



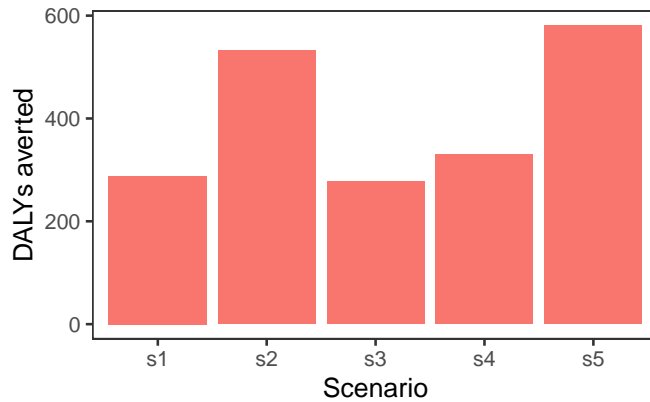
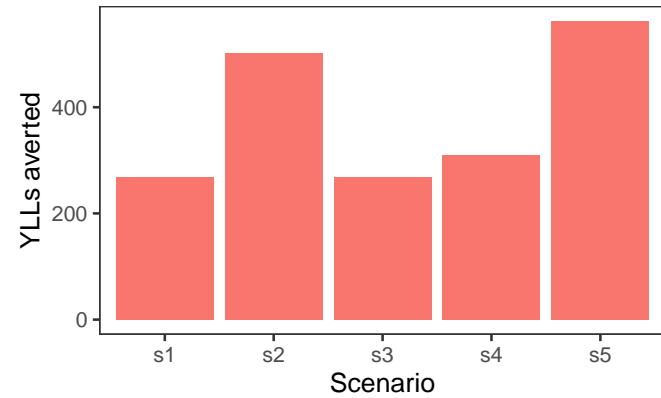
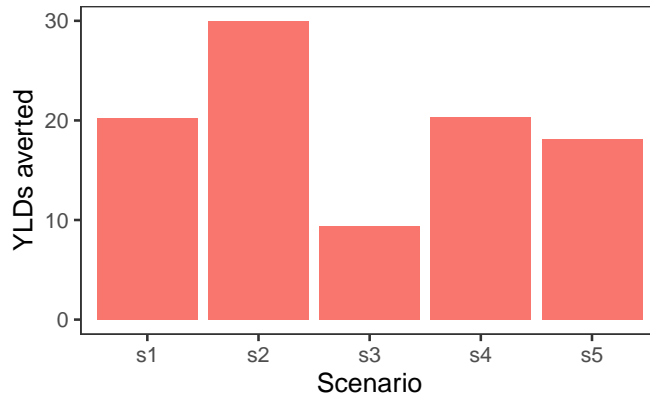
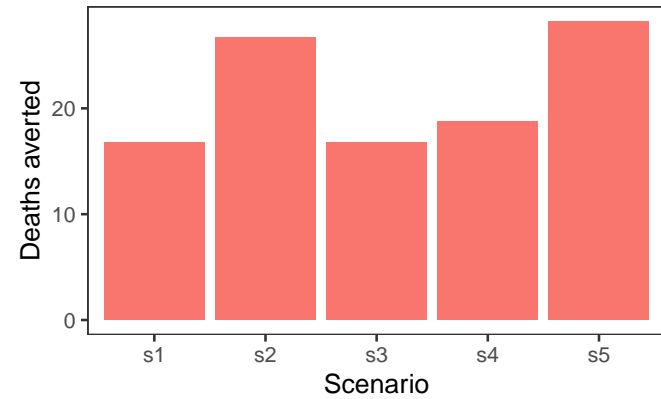
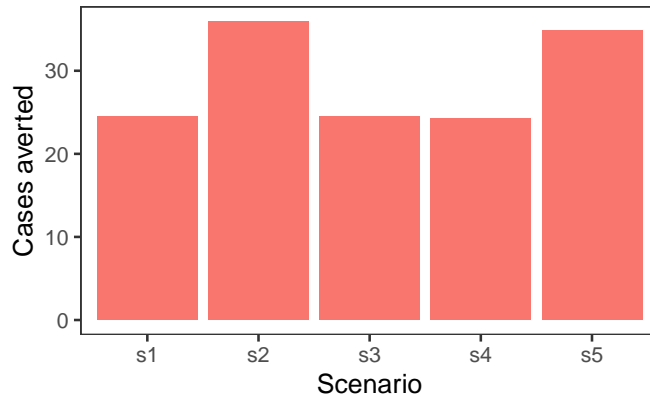
# Lifetime health impact per 1000 vaccinated girls – South–East Asia Region (vaccination age = 9 years / bivalent/quadrivalent vaccine)



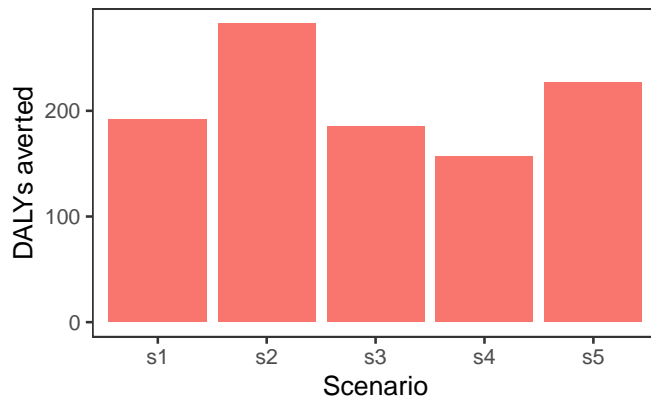
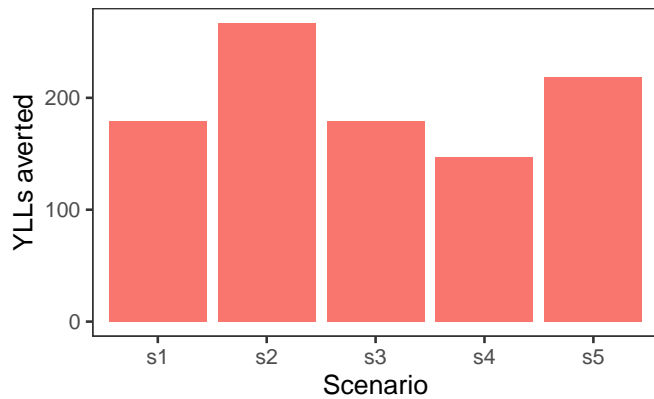
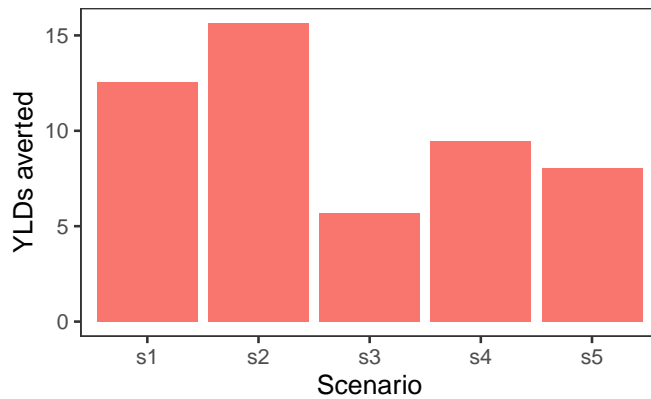
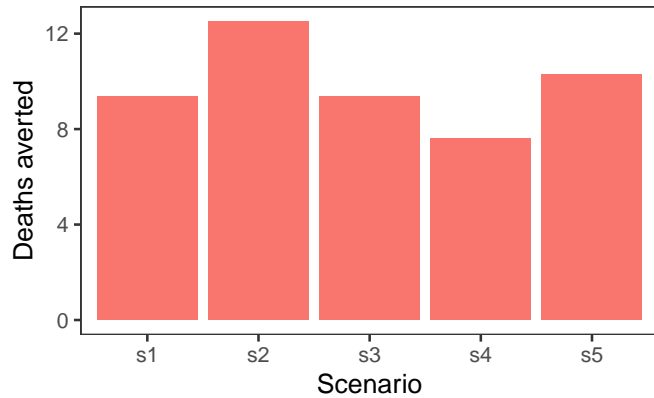
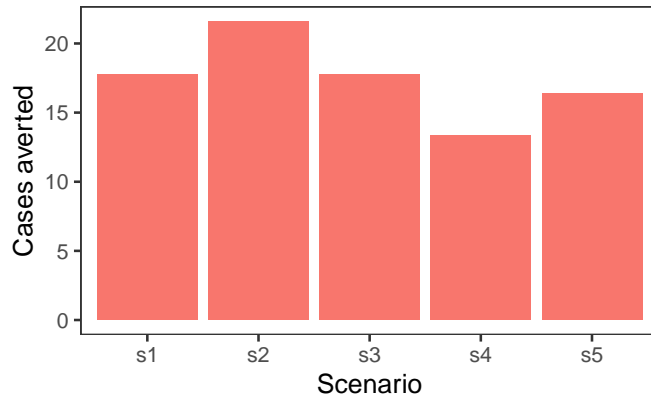
# Lifetime health impact per 1000 vaccinated girls – Western Pacific Region (vaccination age = 9 years / bivalent/quadrivalent vaccine)



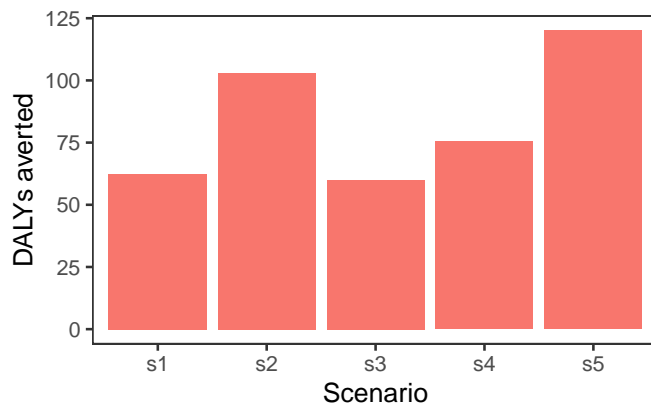
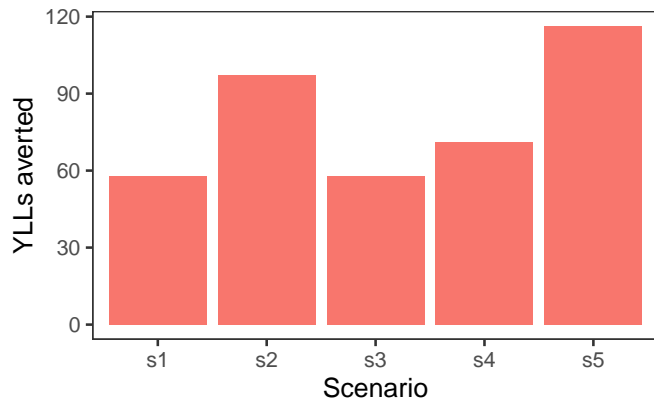
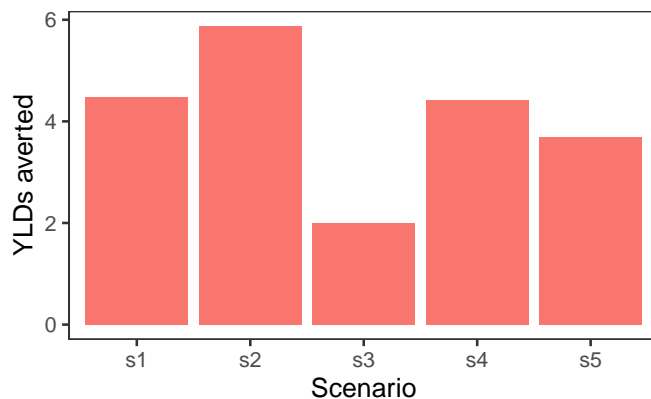
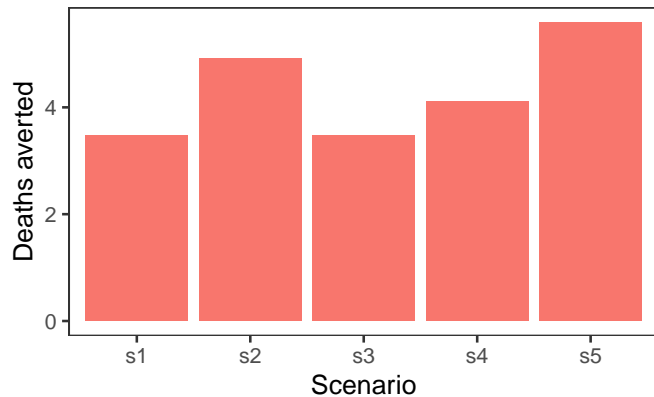
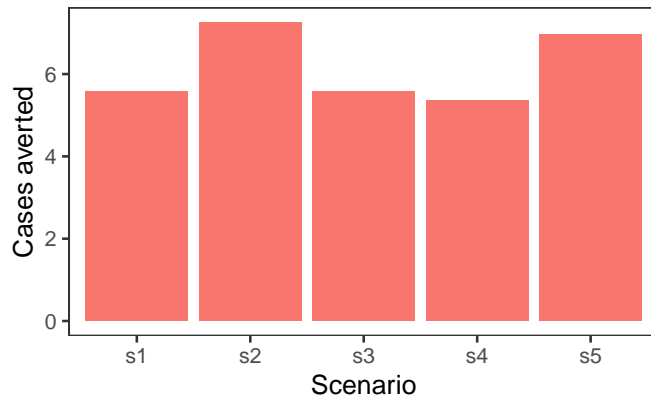
# Lifetime health impact per 1000 vaccinated girls – African Region (vaccination age = 9 years / nonavalent vaccine)



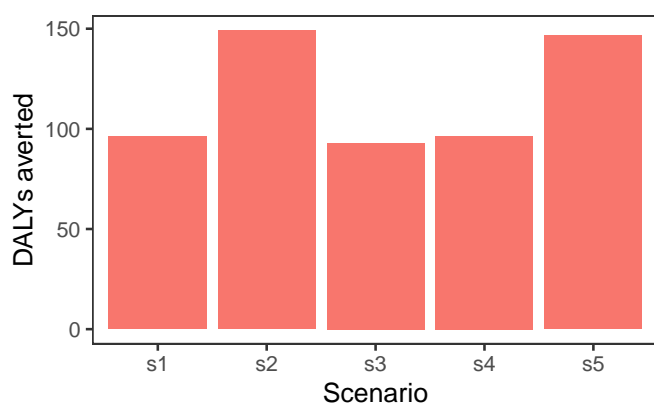
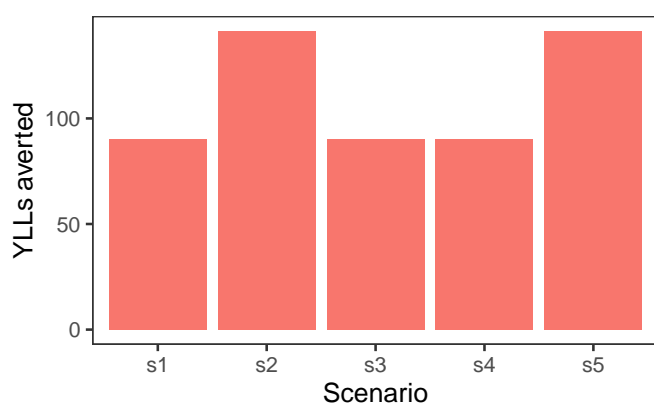
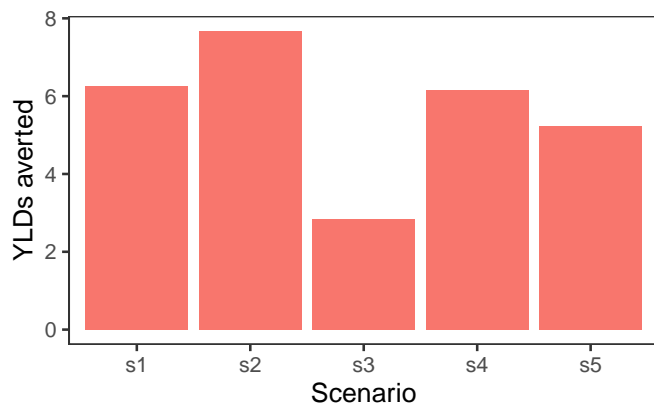
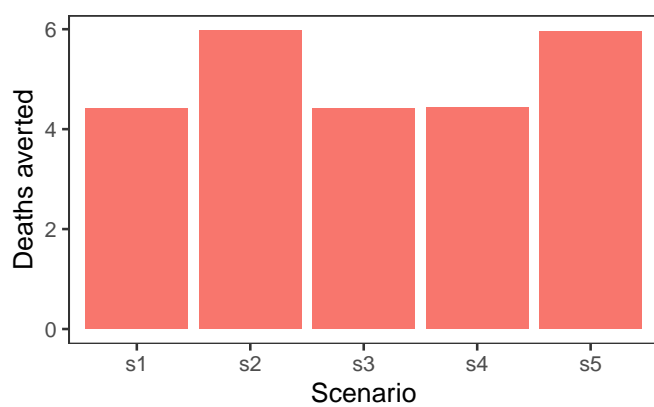
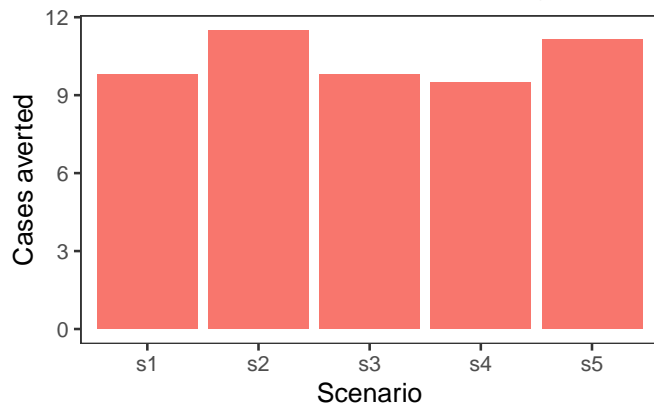
# Lifetime health impact per 1000 vaccinated girls – Region of the Americas (vaccination age = 9 years / nonavalent vaccine)



# Lifetime health impact per 1000 vaccinated girls – Eastern Mediterranean Region (vaccination age = 9 years / nonavalent vaccine)

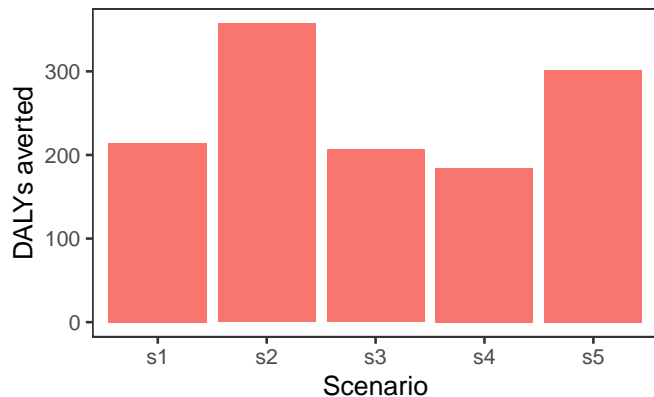
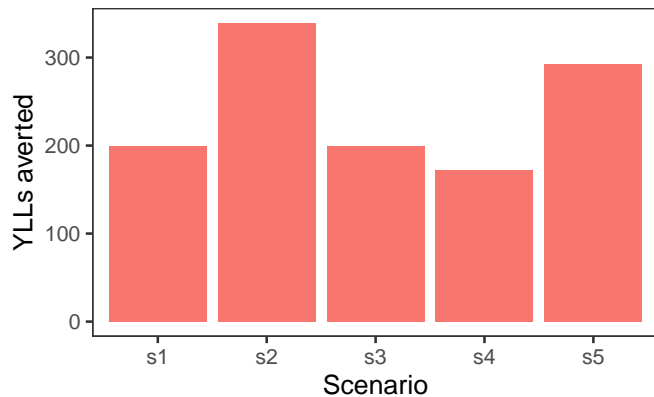
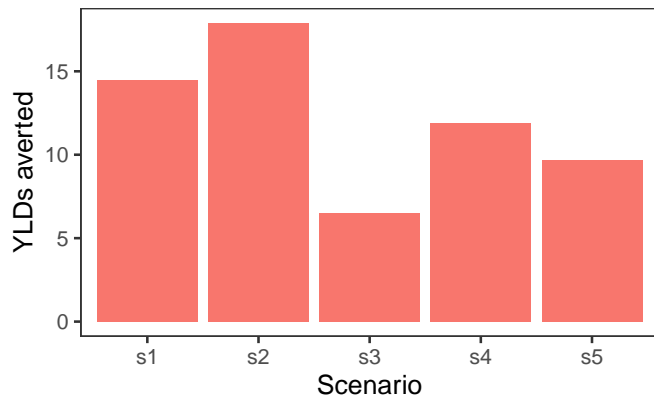
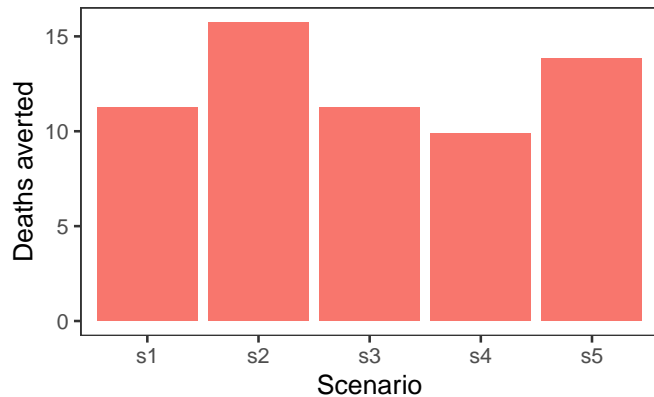
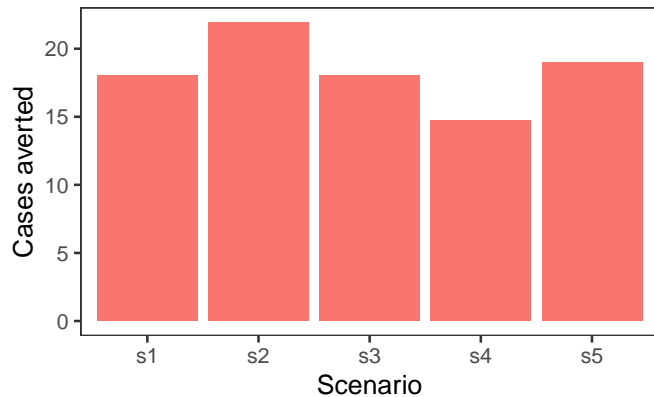


# Lifetime health impact per 1000 vaccinated girls – European Region (vaccination age = 9 years / nonavalent vaccine)

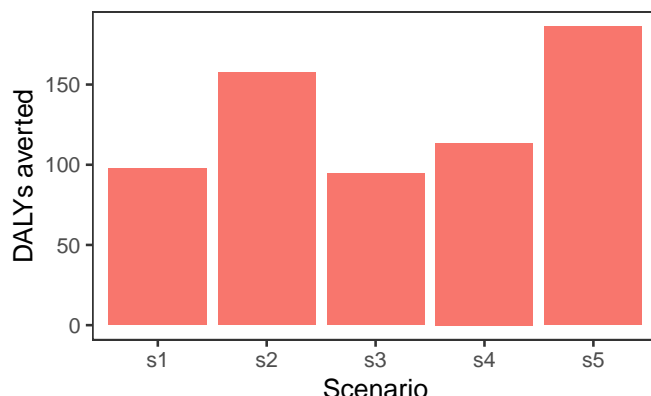
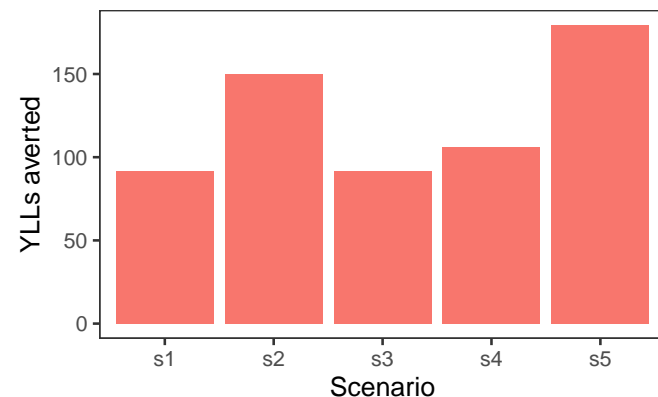
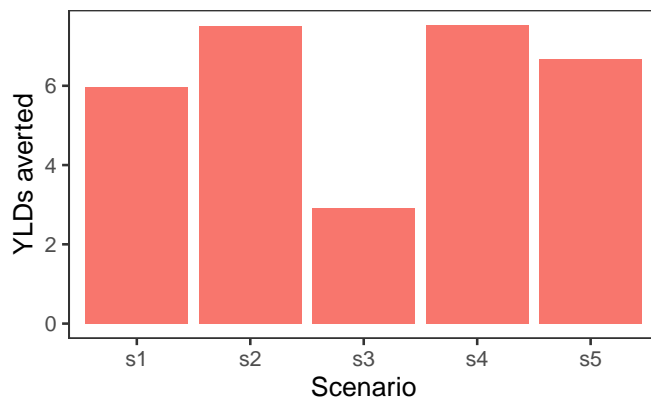
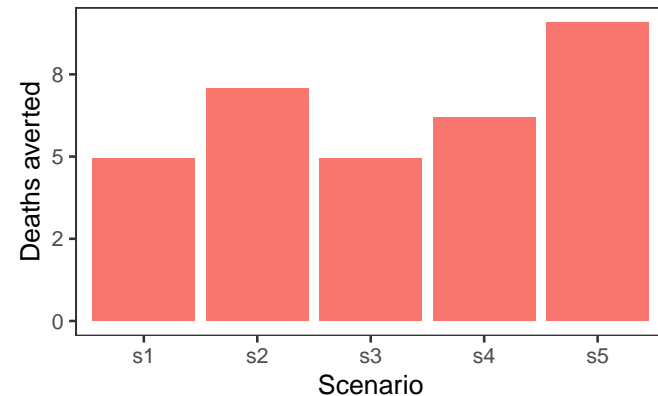
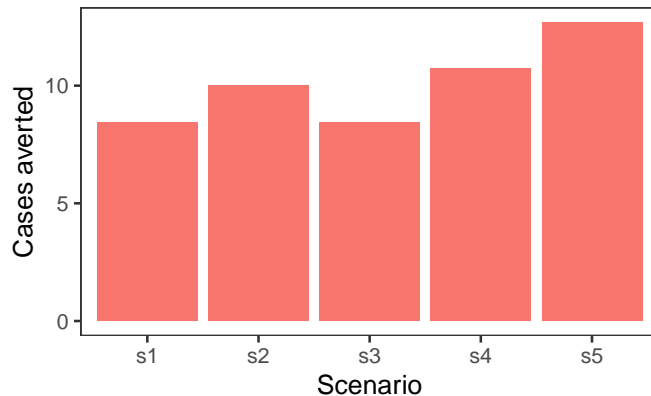




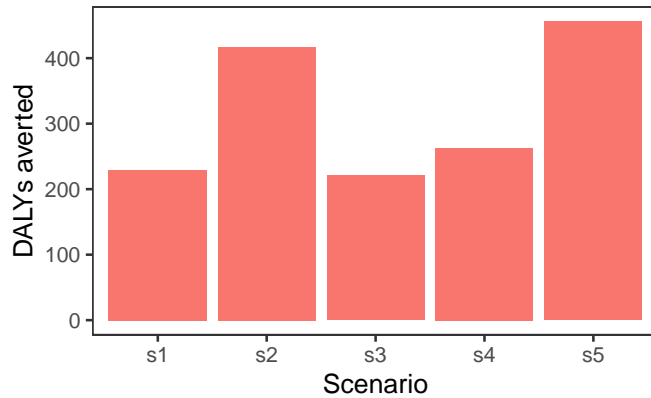
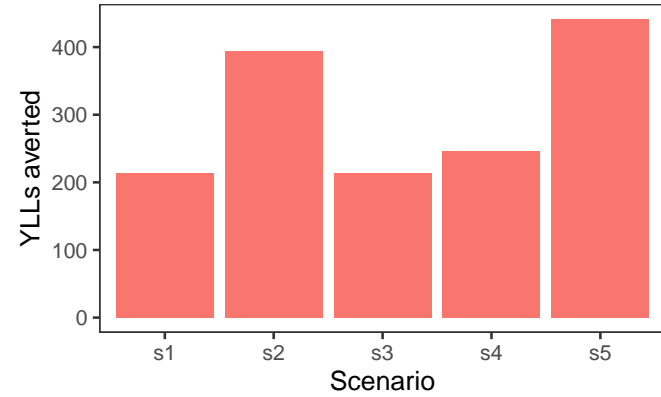
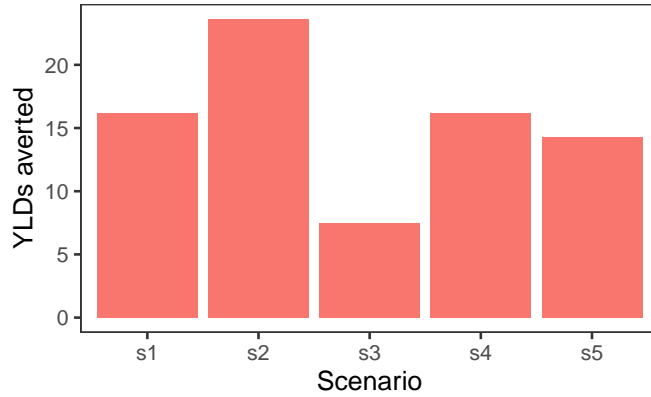
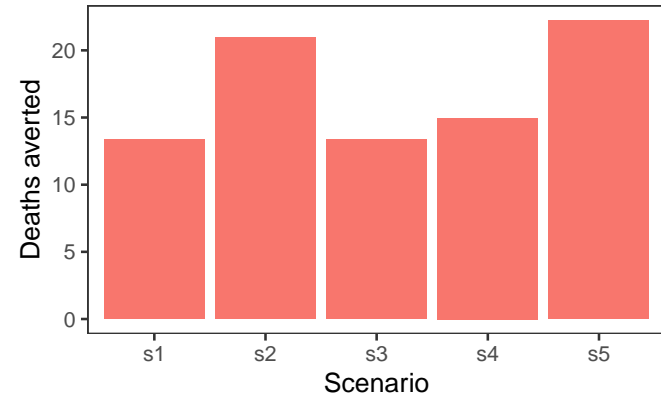
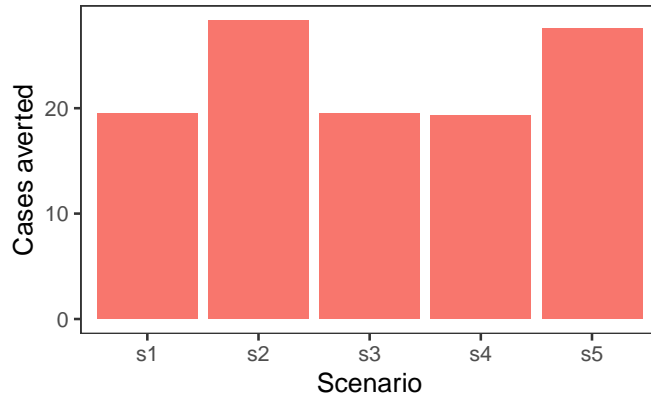
# Lifetime health impact per 1000 vaccinated girls – South–East Asia Region (vaccination age = 9 years / nonavalent vaccine)



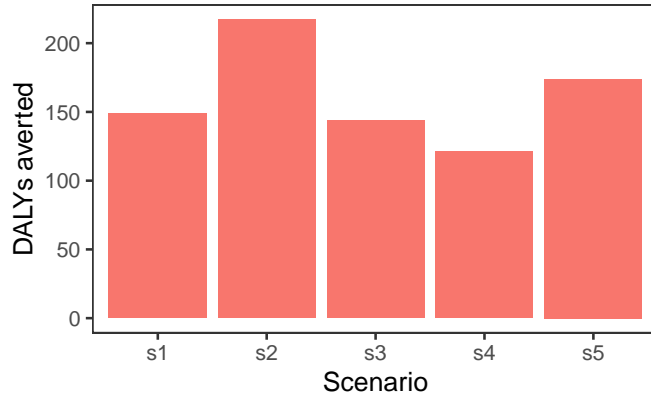
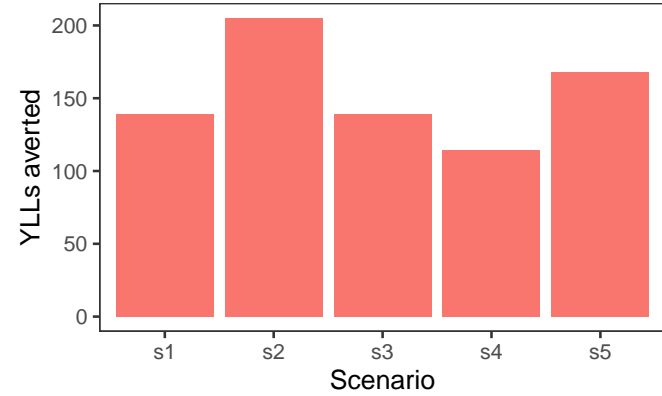
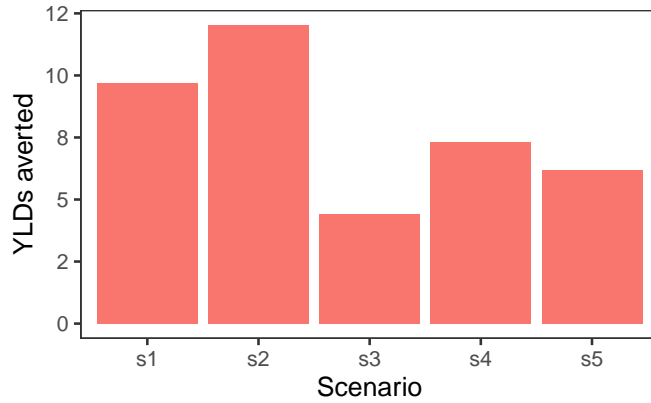
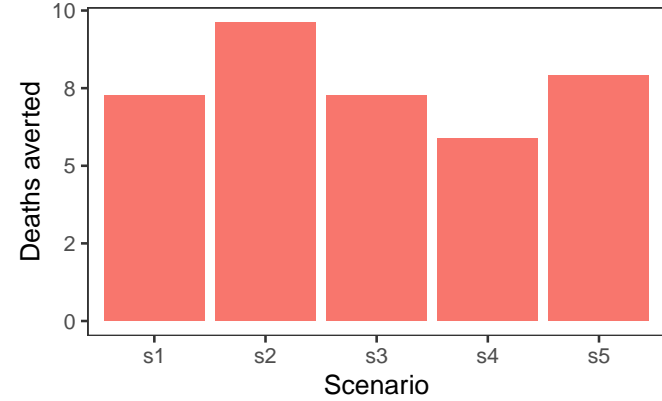
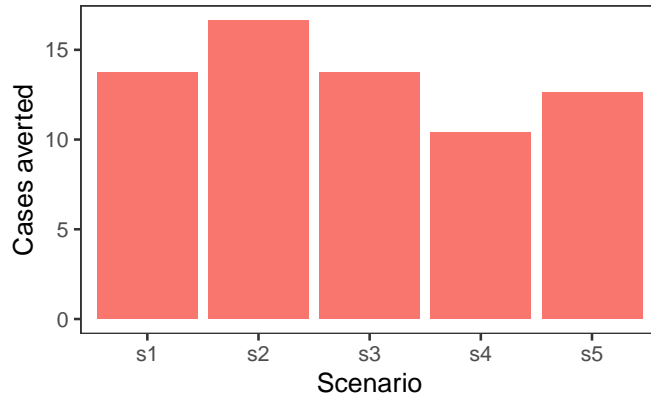
Lifetime health impact per 1000 vaccinated girls – Western Pacific Region  
(vaccination age = 9 years / nonavalent vaccine)



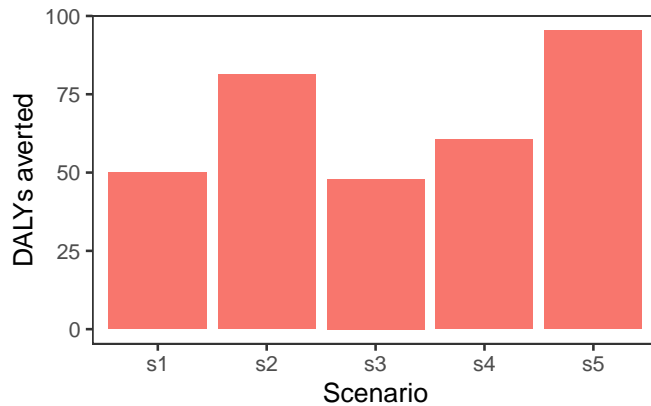
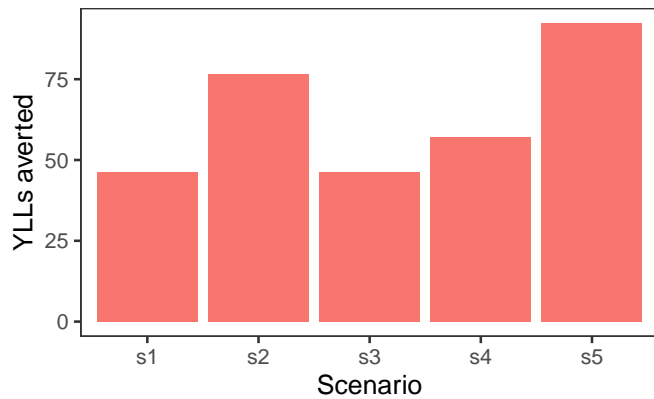
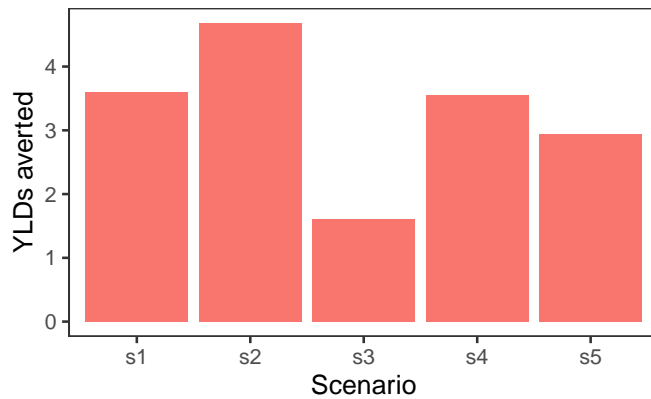
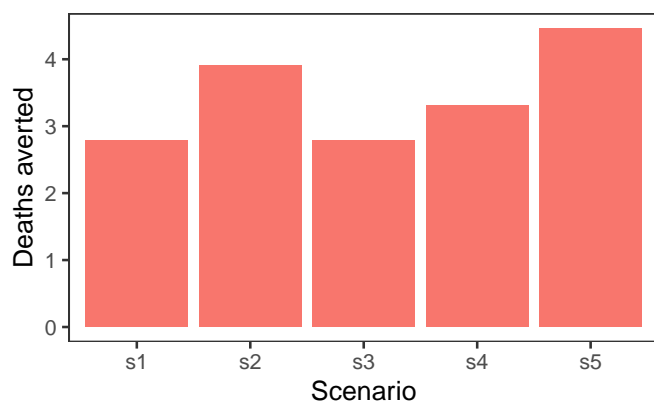
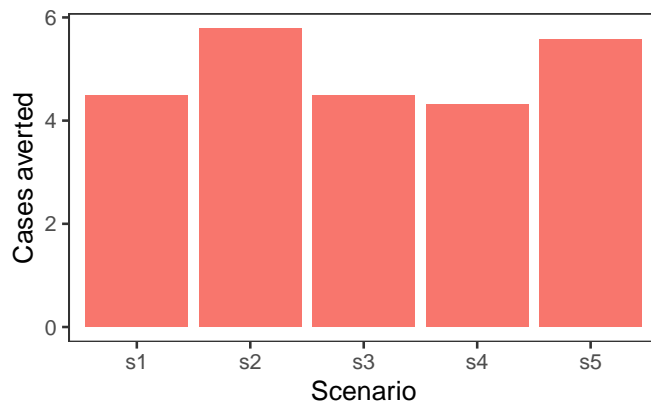
# Lifetime health impact per 1000 vaccinated girls – African Region (vaccination age = 12 years / bivalent/quadrivalent vaccine)



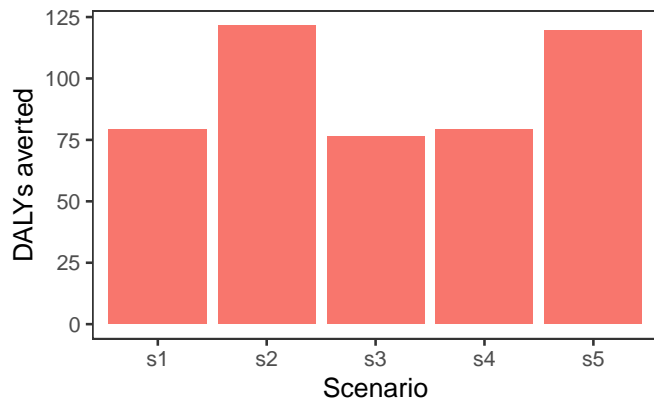
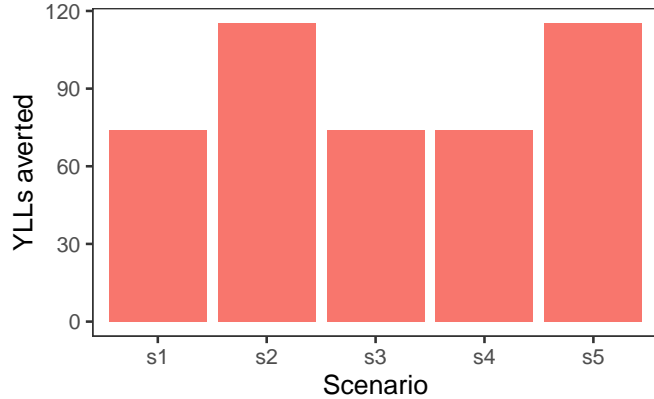
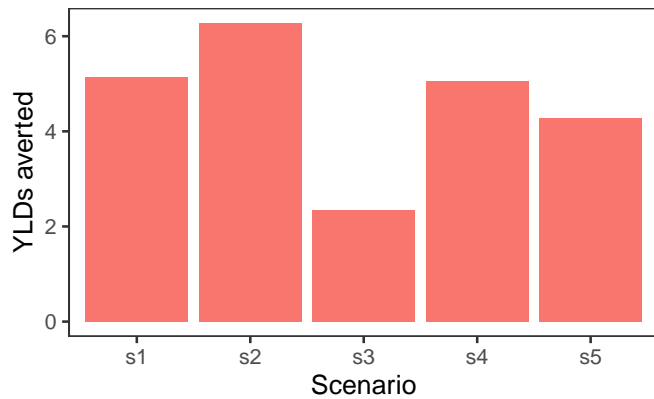
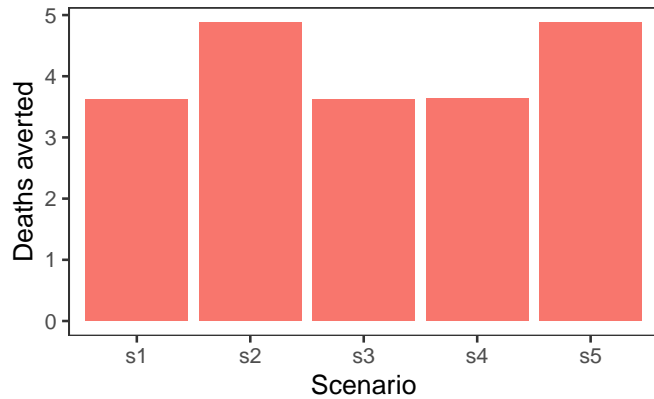
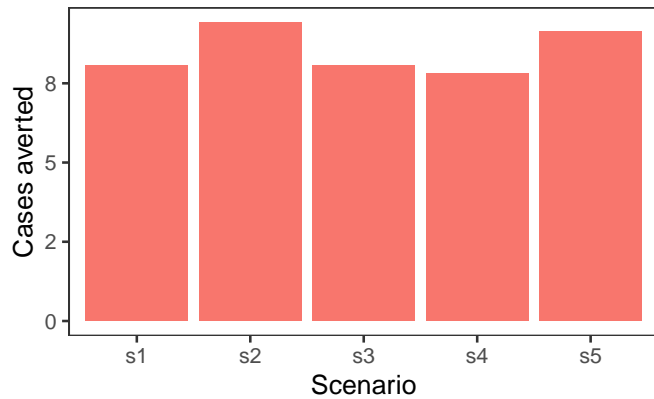
# Lifetime health impact per 1000 vaccinated girls – Region of the Americas (vaccination age = 12 years / bivalent/quadrivalent vaccine)



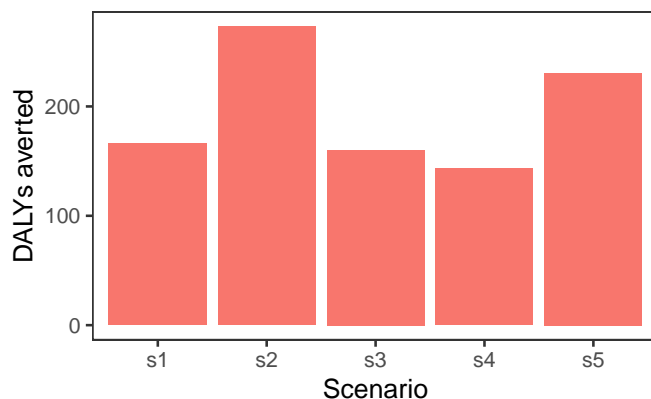
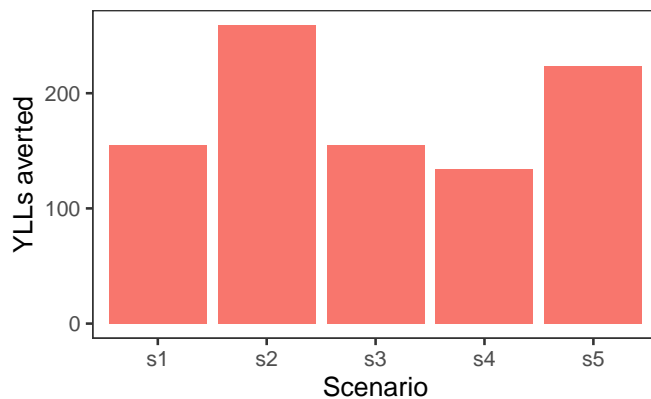
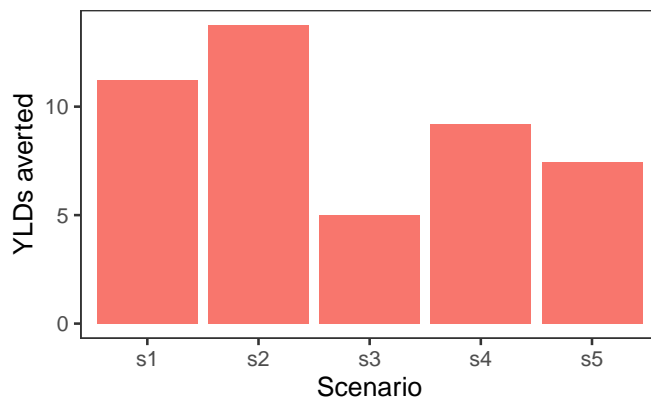
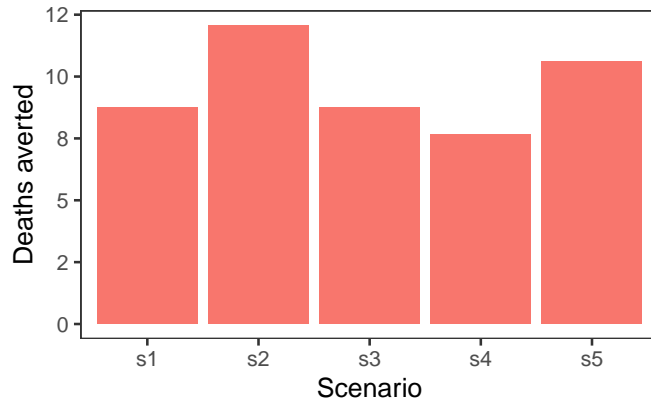
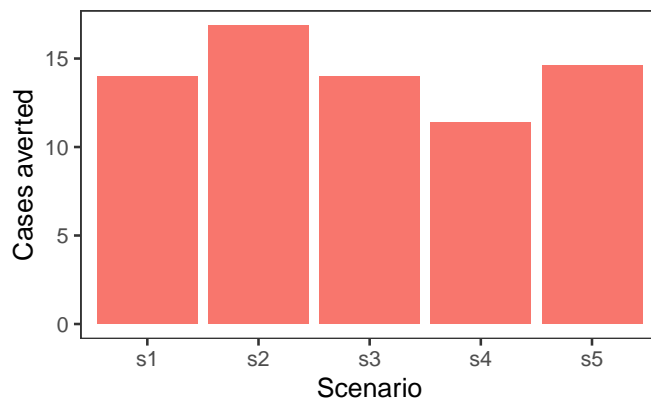
# Lifetime health impact per 1000 vaccinated girls – Eastern Mediterranean Region (vaccination age = 12 years / bivalent/quadrivalent vaccine)



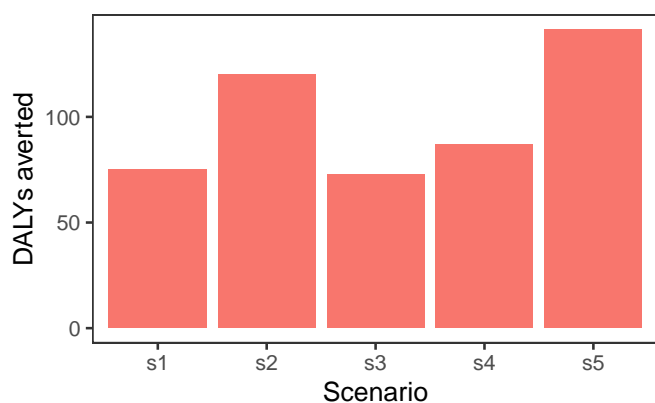
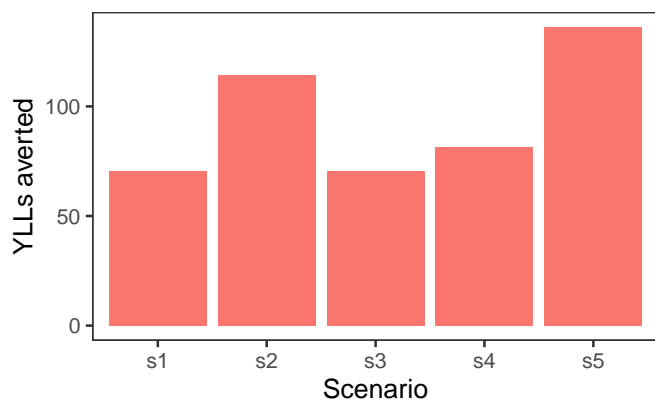
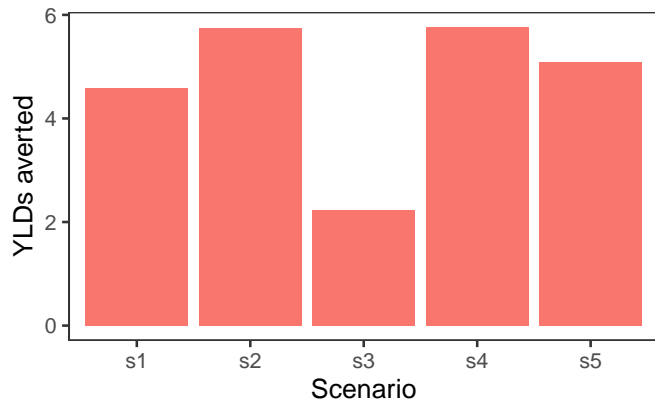
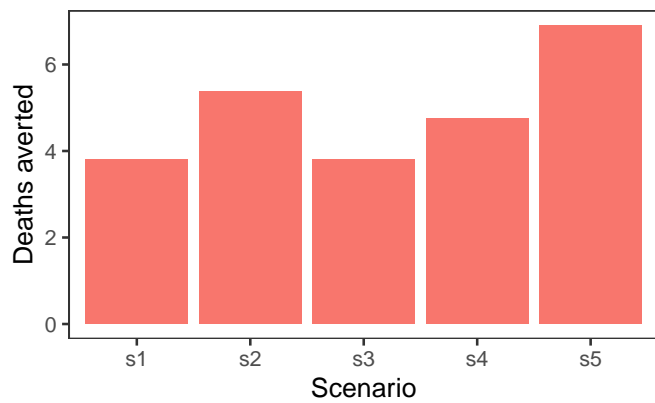
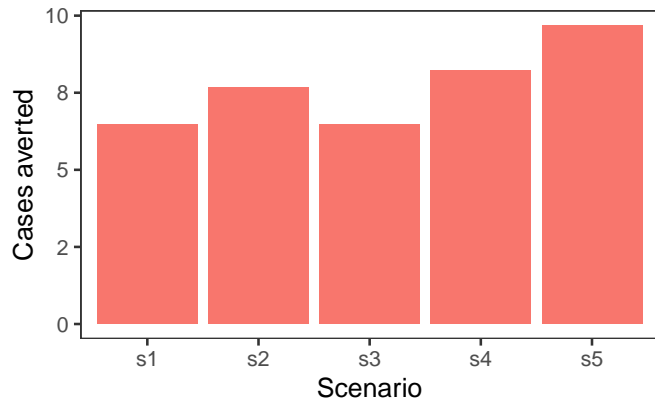
# Lifetime health impact per 1000 vaccinated girls – European Region (vaccination age = 12 years / bivalent/quadrivalent vaccine)



# Lifetime health impact per 1000 vaccinated girls – South-East Asia Region (vaccination age = 12 years / bivalent/quadrivalent vaccine)

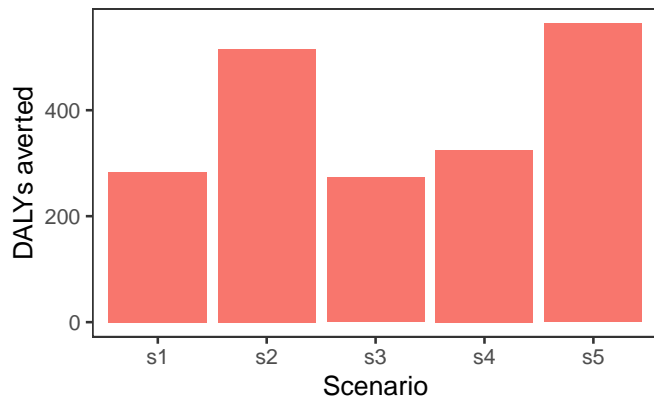
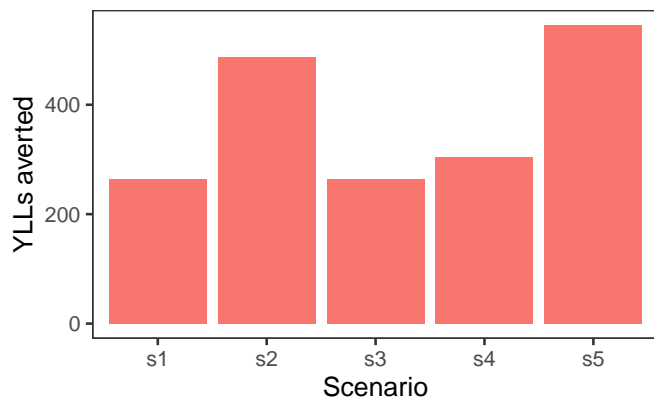
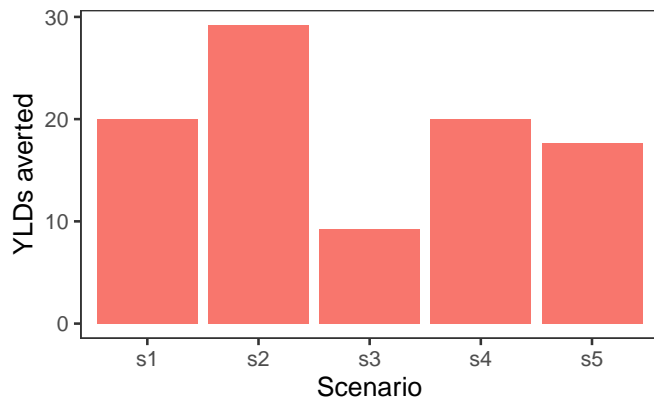
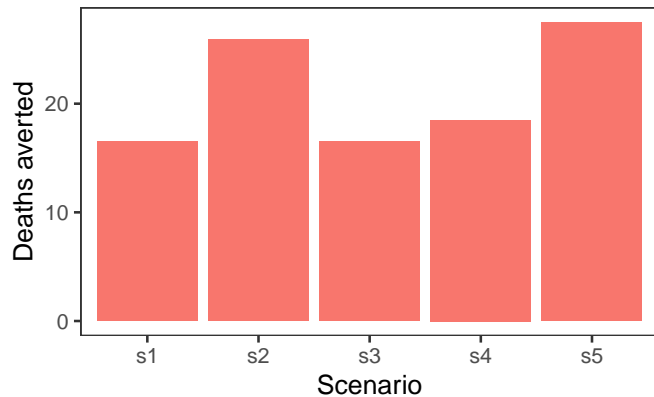
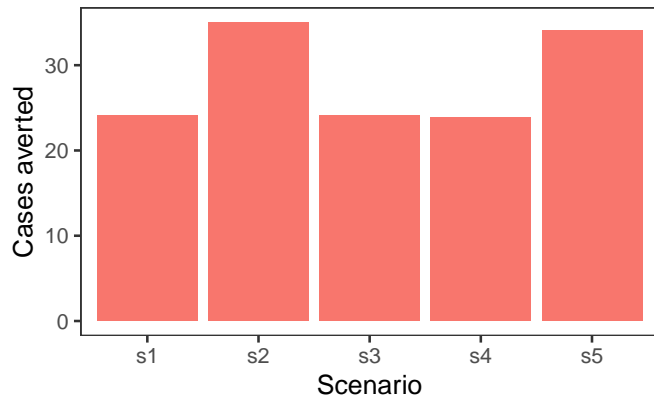


# Lifetime health impact per 1000 vaccinated girls – Western Pacific Region (vaccination age = 12 years / bivalent/quadrivalent vaccine)

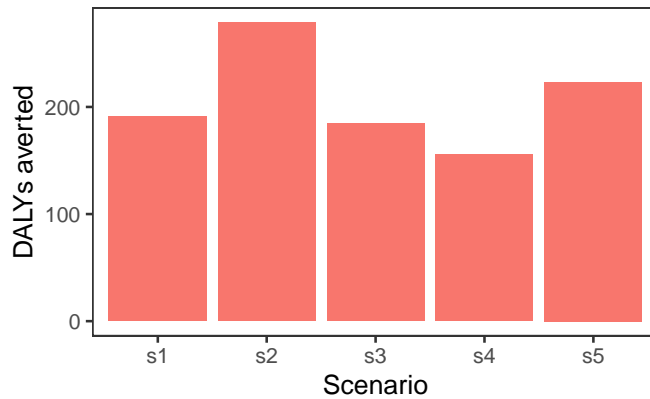
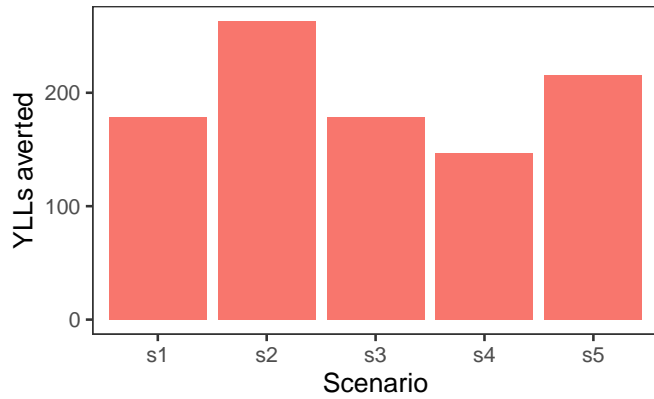
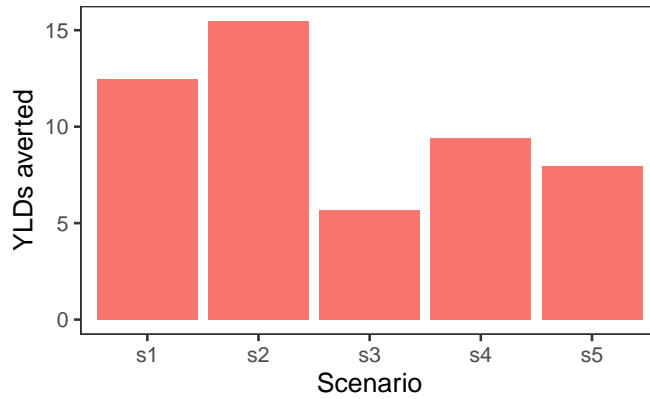
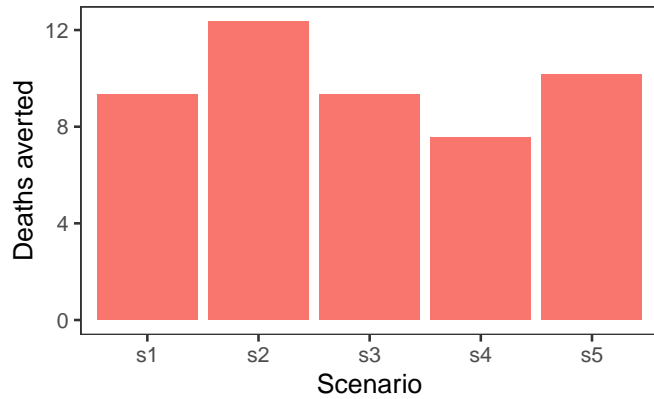
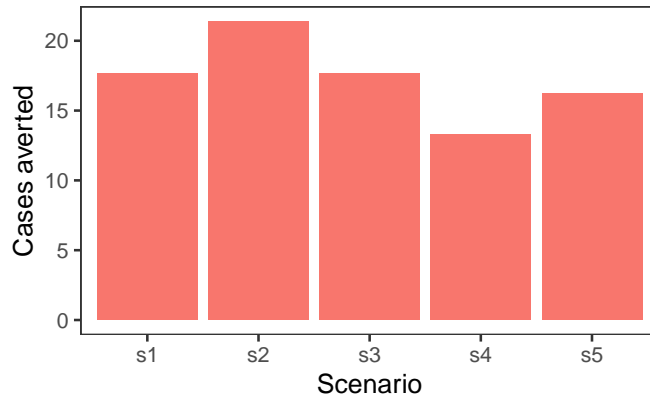




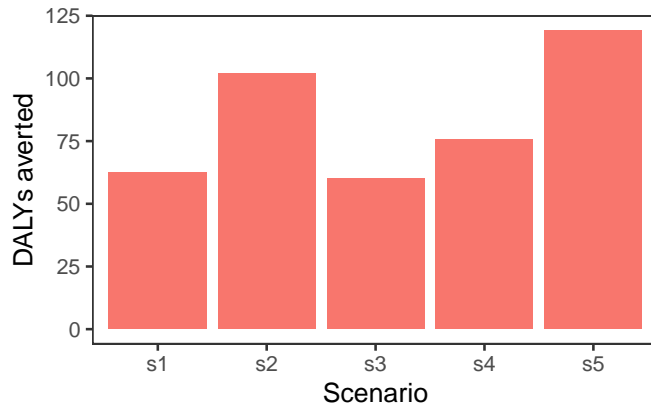
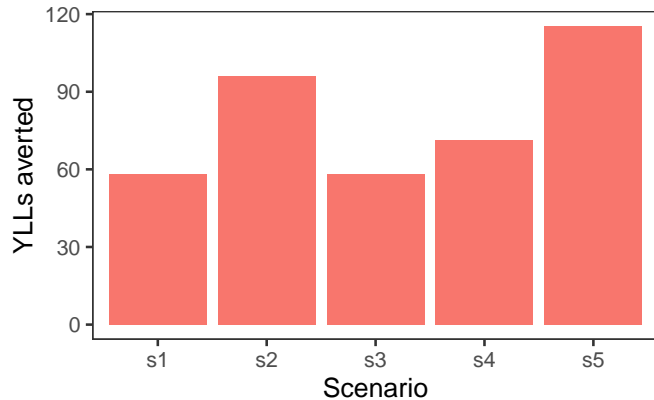
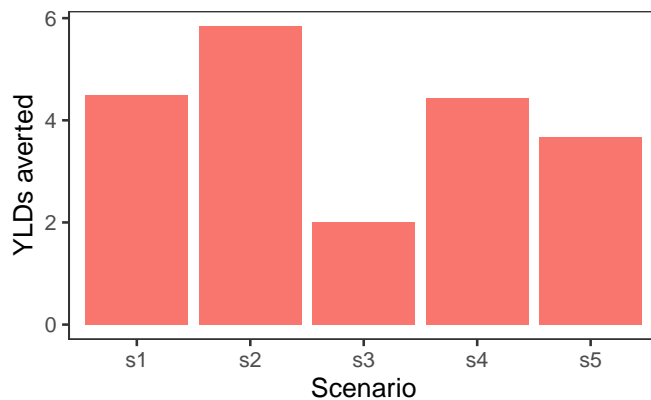
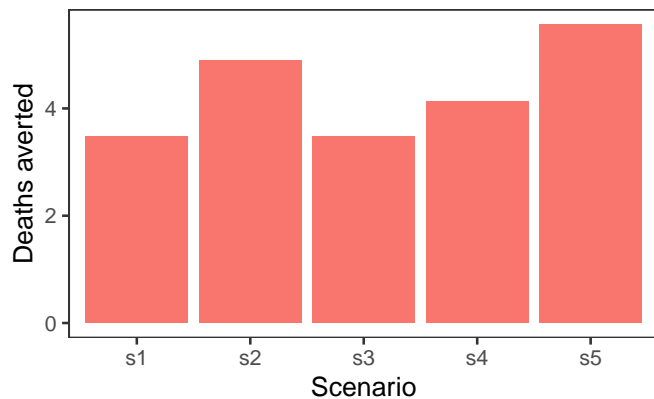
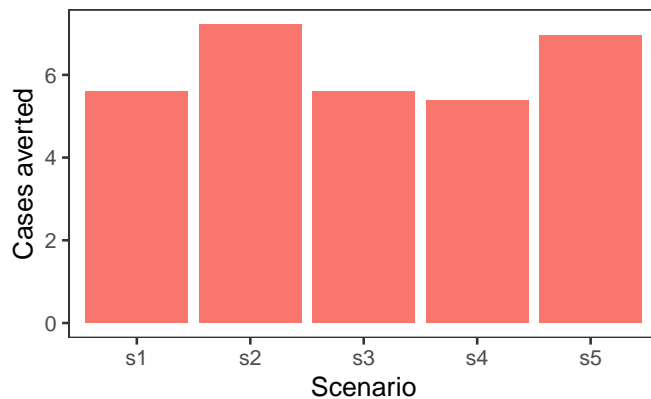
# Lifetime health impact per 1000 vaccinated girls – African Region (vaccination age = 12 years / nonavalent vaccine)



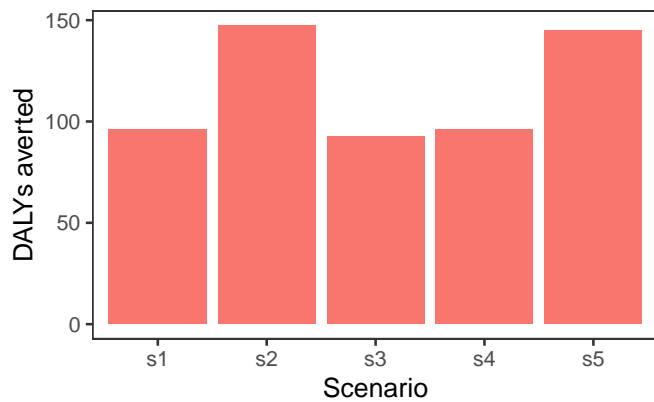
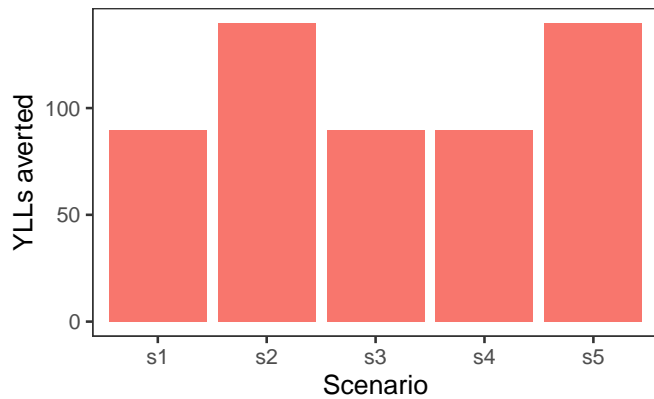
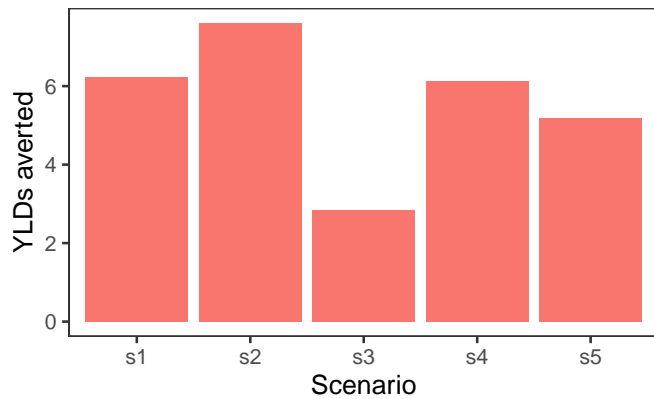
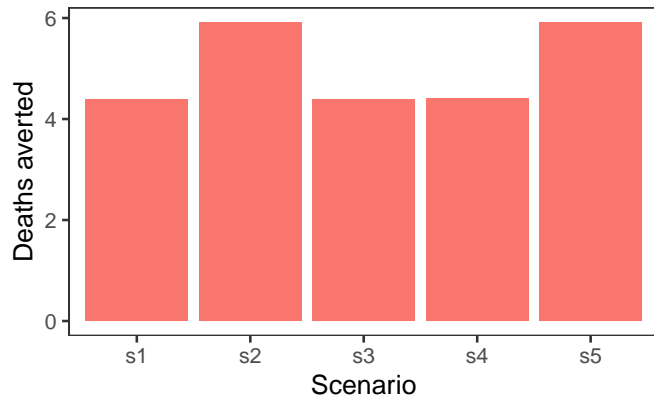
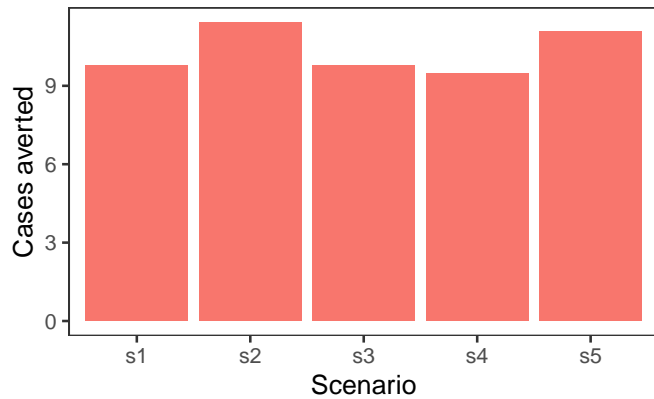
# Lifetime health impact per 1000 vaccinated girls – Region of the Americas (vaccination age = 12 years / nonavalent vaccine)



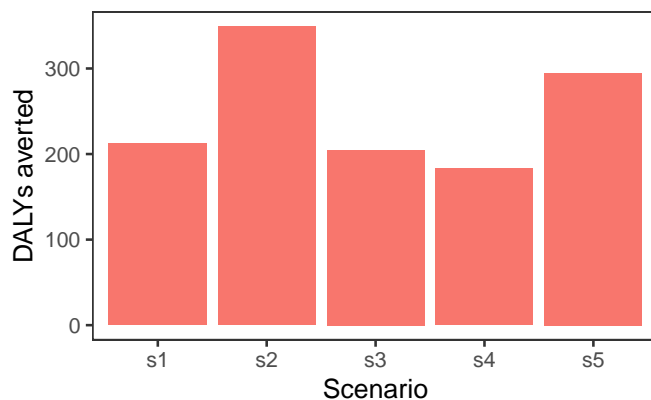
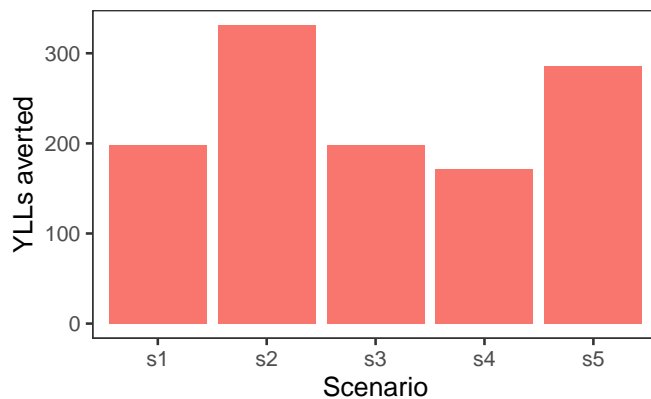
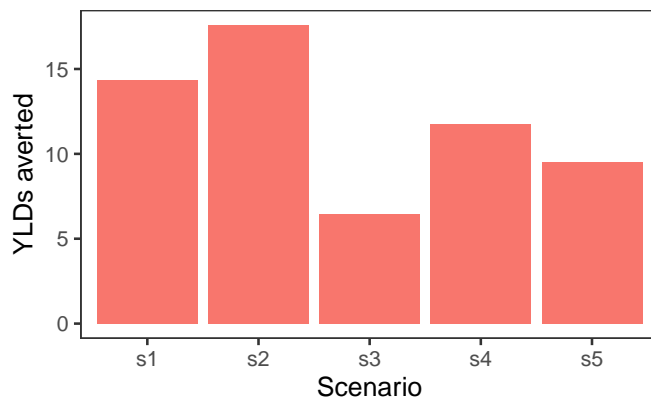
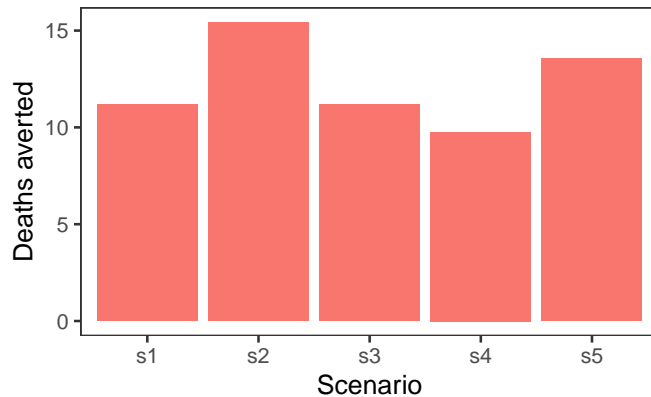
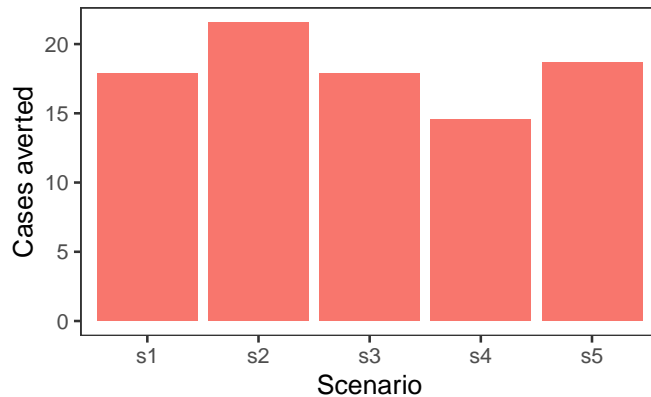
# Lifetime health impact per 1000 vaccinated girls – Eastern Mediterranean Region (vaccination age = 12 years / nonavalent vaccine)



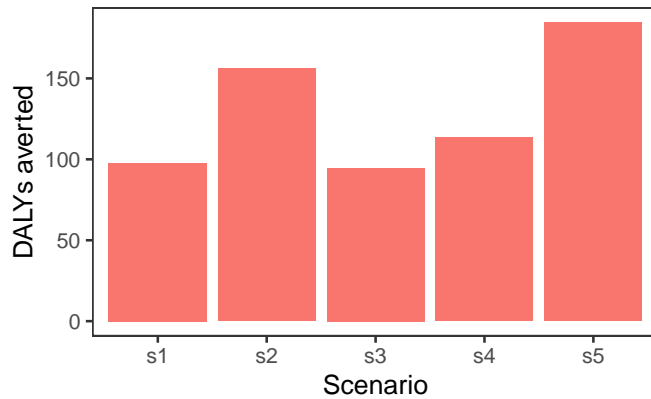
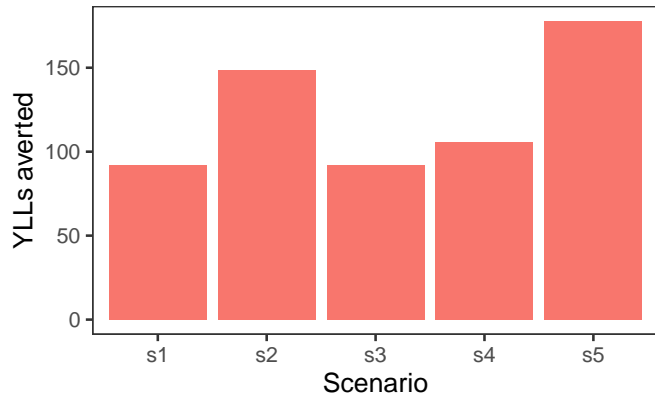
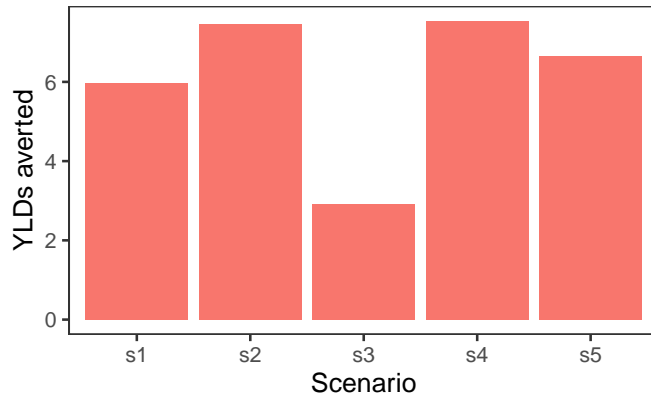
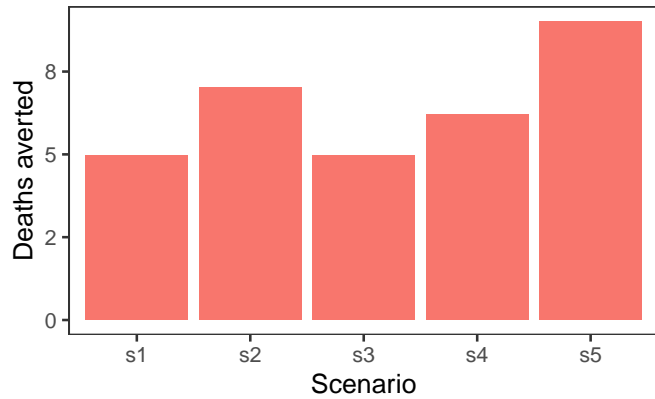
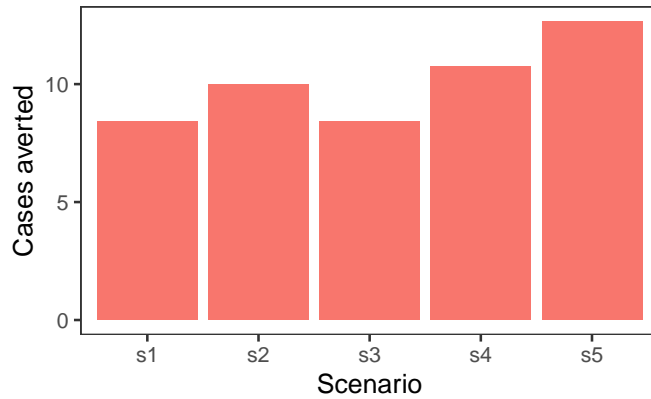
# Lifetime health impact per 1000 vaccinated girls – European Region (vaccination age = 12 years / nonavalent vaccine)



# Lifetime health impact per 1000 vaccinated girls – South–East Asia Region (vaccination age = 12 years / nonavalent vaccine)



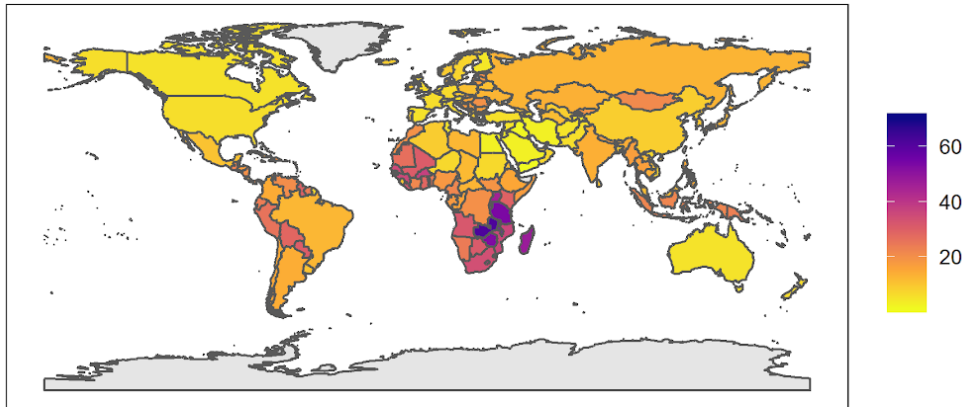
# Lifetime health impact per 1000 vaccinated girls – Western Pacific Region (vaccination age = 12 years / nonavalent vaccine)



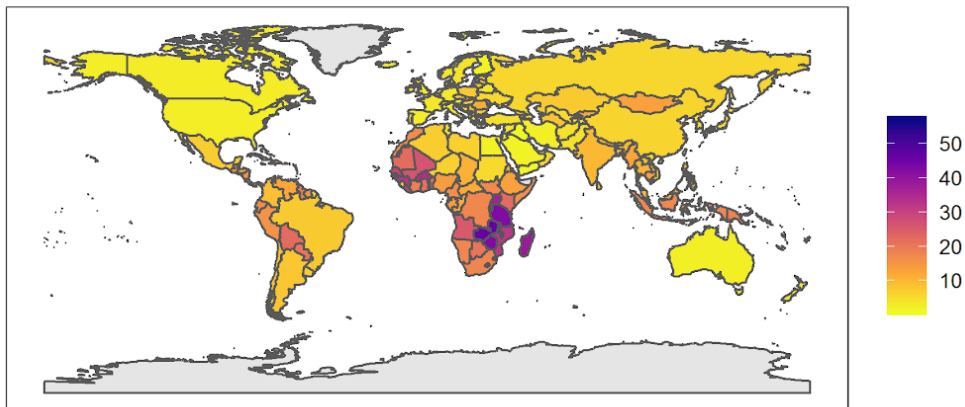
#### A14. HPV vaccination impact of 12-year-old girls at the national level

Lifetime health impact of bivalent/quadrivalent and nonavalent HPV vaccination of 12-year-old girls during 2020-2029 on cases, deaths and DALYs averted per 1000 vaccinated girls in 177 countries (estimates after the combined PRIME updates for demography, disability weights and cervical cancer burden).

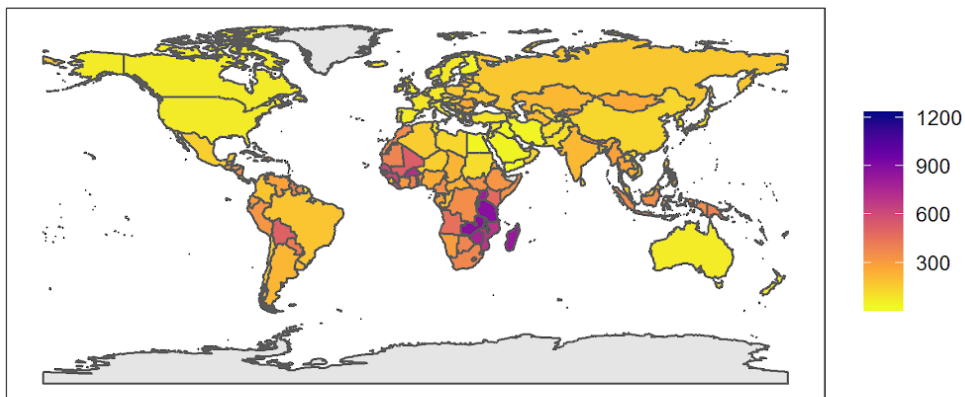
Lifetime health impact of bivalent/quadrivalent HPV vaccination of 12-year-old girls  
Cases averted per 1000 vaccinated girls



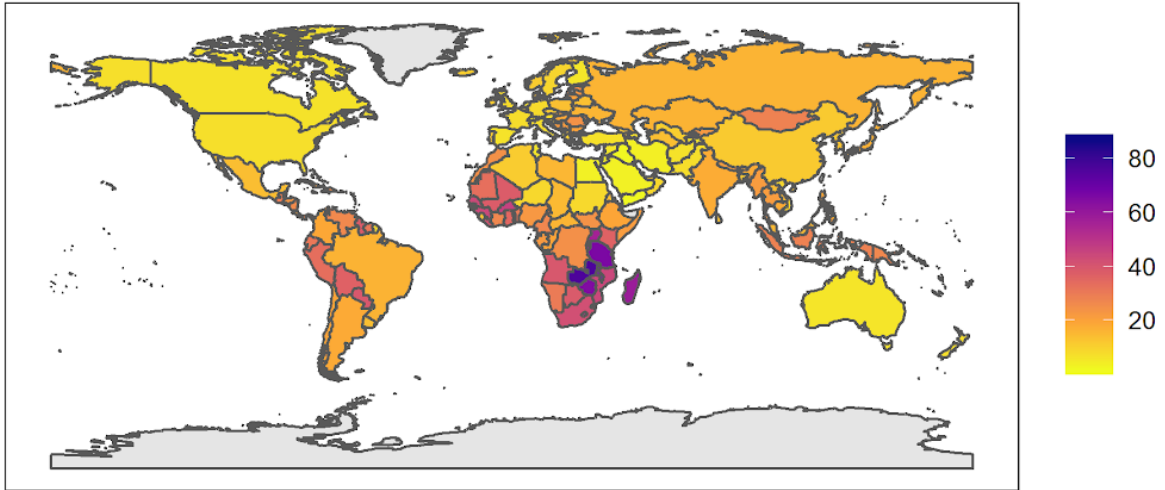
Deaths averted per 1000 vaccinated girls



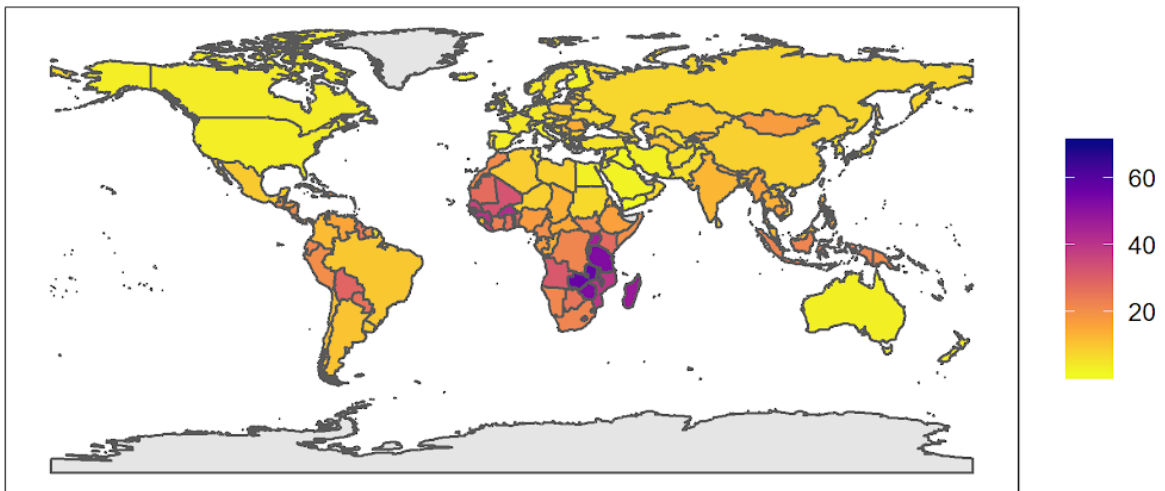
DALYs averted per 1000 vaccinated girls



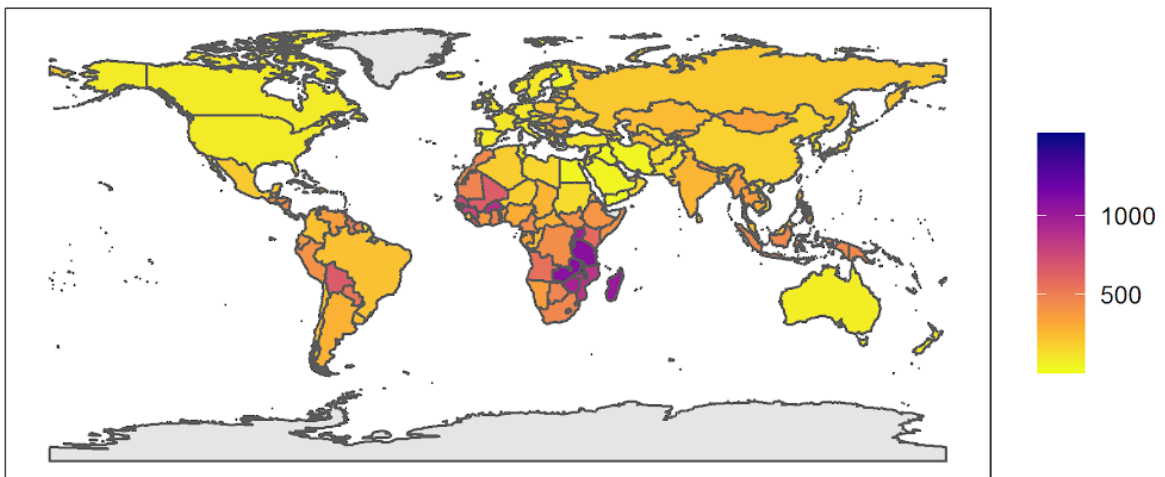
Lifetime health impact of nonavalent HPV vaccination of 12-year-old girls  
Cases averted per 1000 vaccinated girls



Deaths averted per 1000 vaccinated girls



DALYs averted per 1000 vaccinated girls

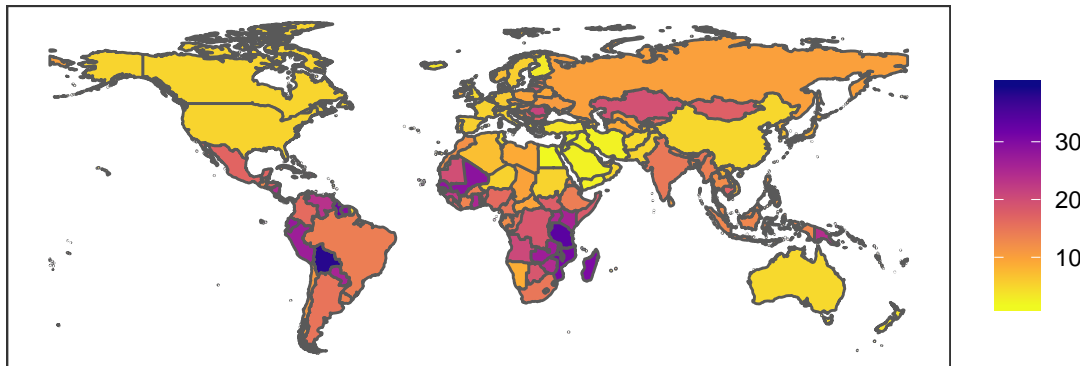




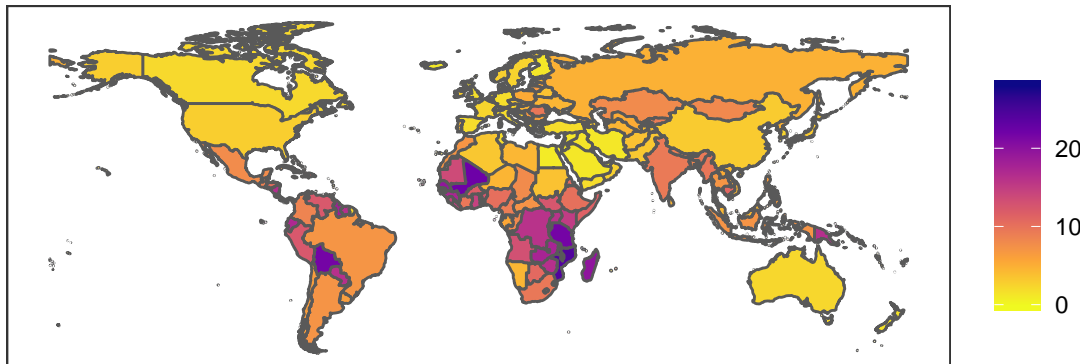
### **A15. National estimates of HPV vaccination impact for comparative scenarios**

Lifetime health impact of HPV vaccination on cases, deaths, YLDs, YLLs and DALYs averted per 1000 vaccinated girls in 177 countries for the 5 comparative scenarios for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls.

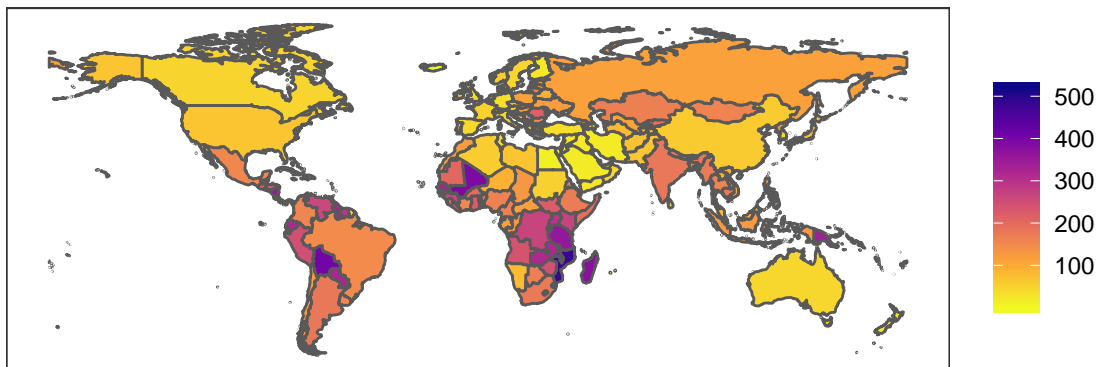
### Cases averted per 1000 vaccinated girls



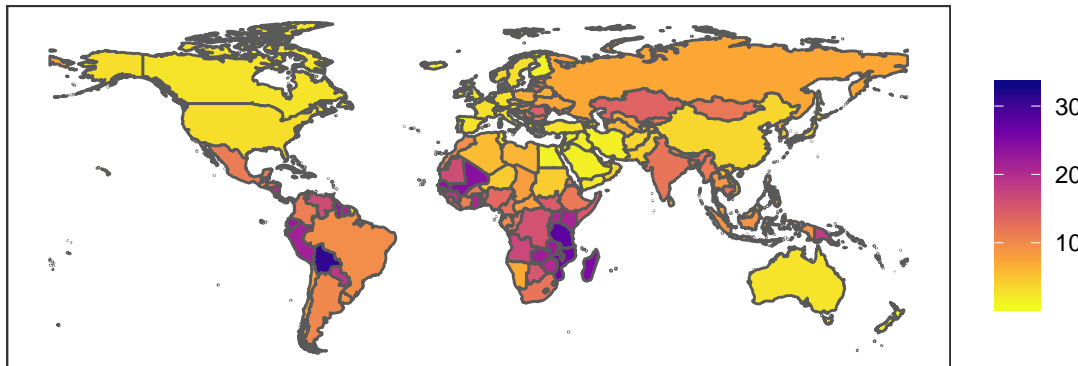
### Deaths averted per 1000 vaccinated girls



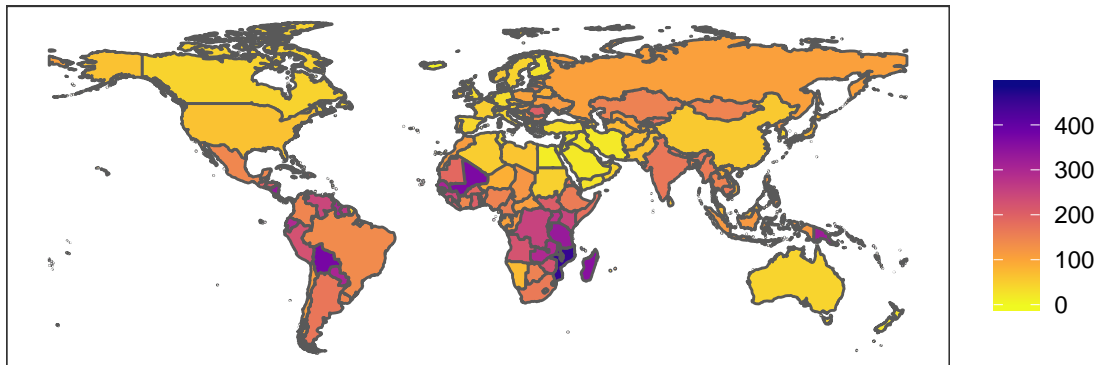
### DALYs averted per 1000 vaccinated girls



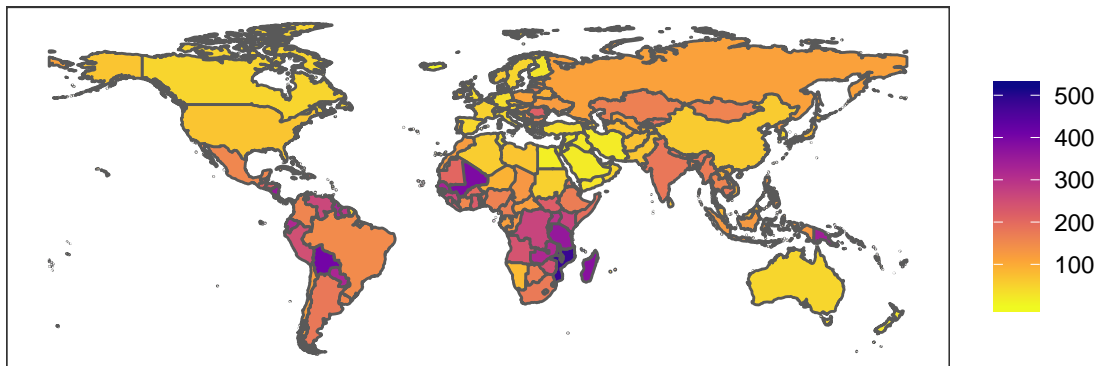
### YLDs averted per 1000 vaccinated girls



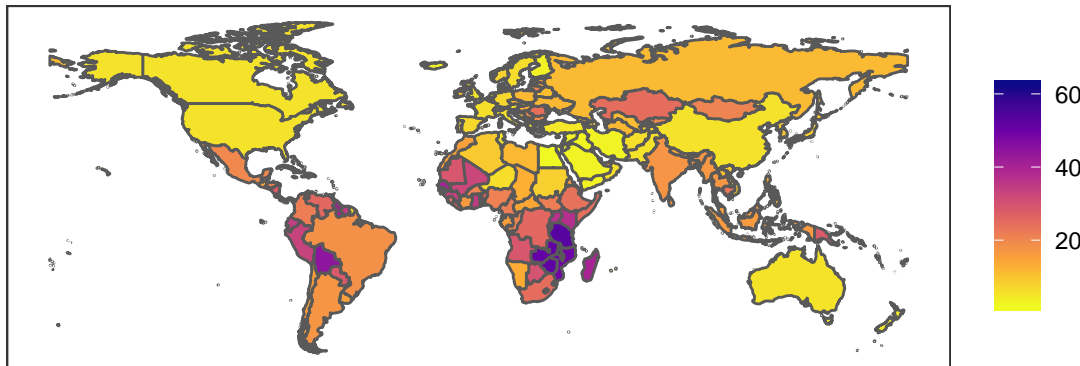
### YLLs averted per 1000 vaccinated girls



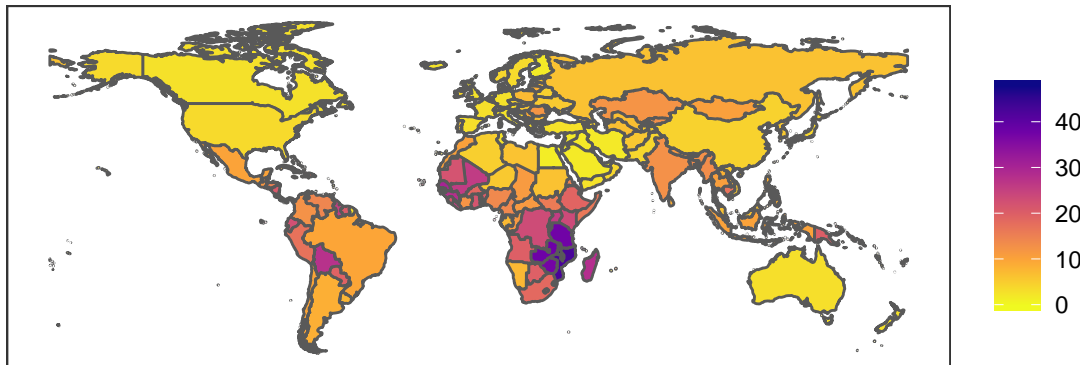
### DALYs averted per 1000 vaccinated girls



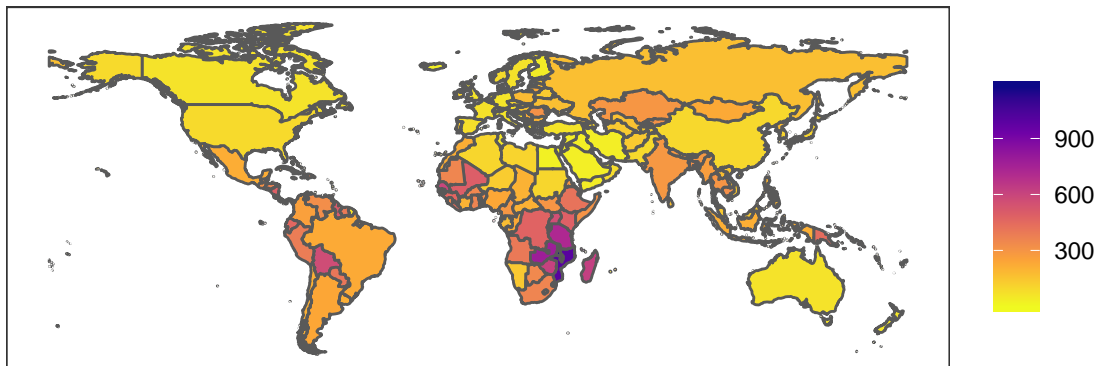
### Cases averted per 1000 vaccinated girls



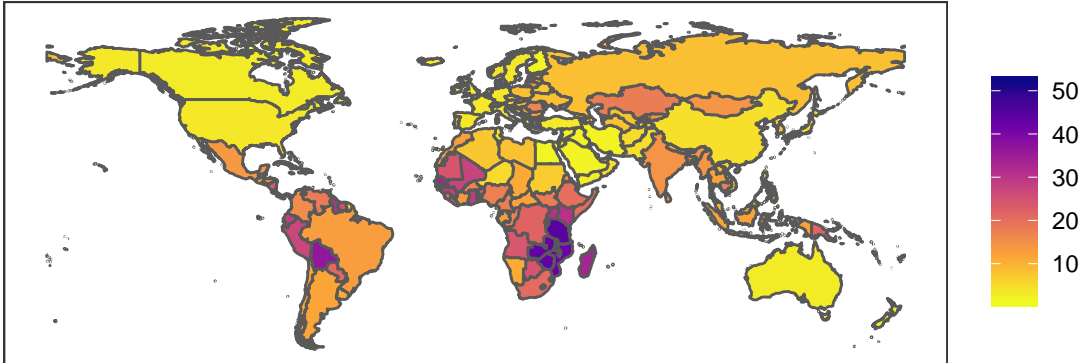
### Deaths averted per 1000 vaccinated girls



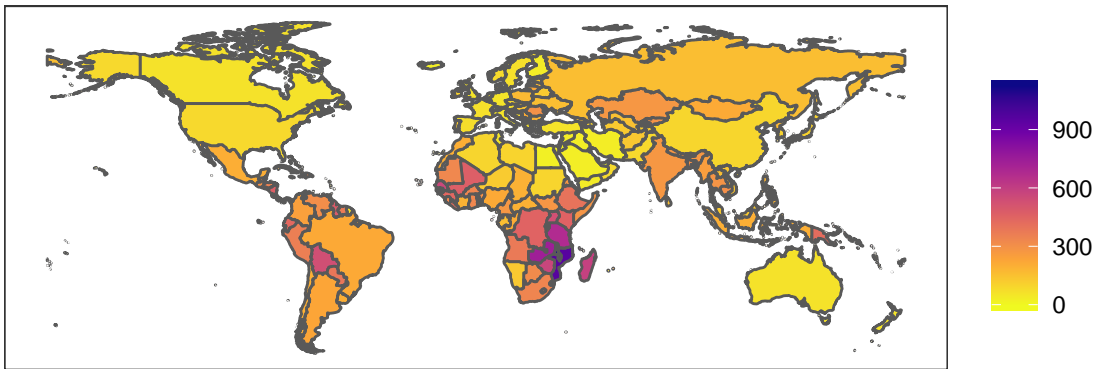
### DALYs averted per 1000 vaccinated girls



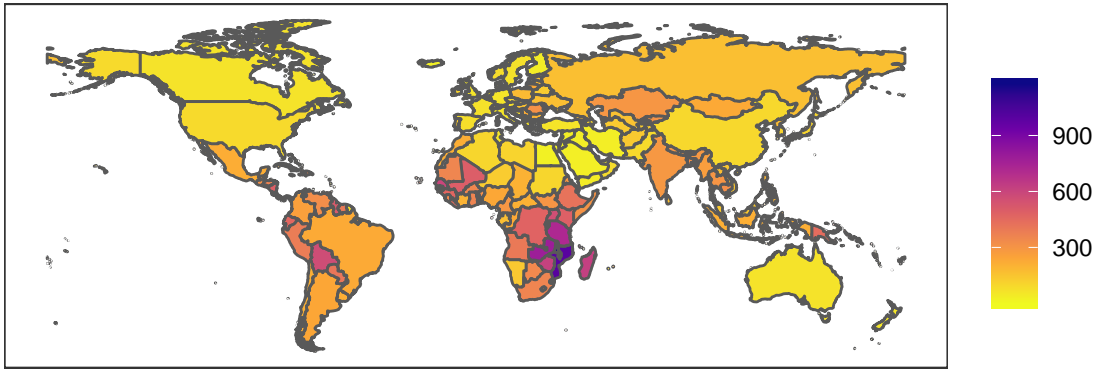
### YLDs averted per 1000 vaccinated girls



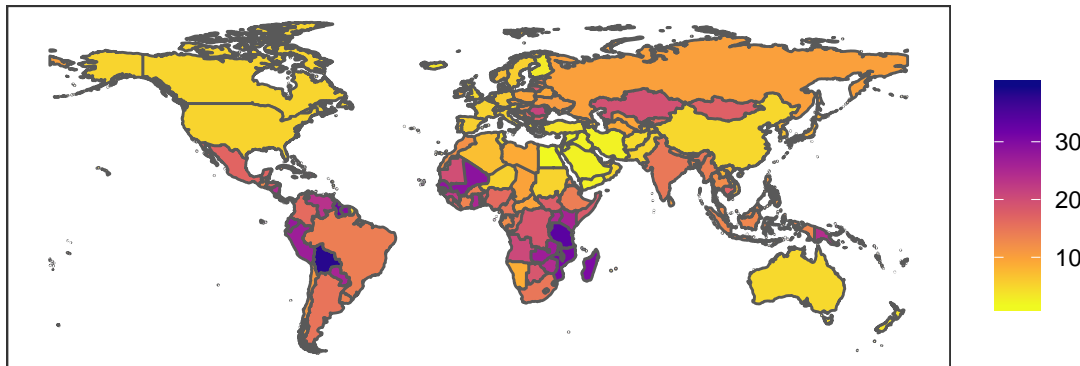
### YLLs averted per 1000 vaccinated girls



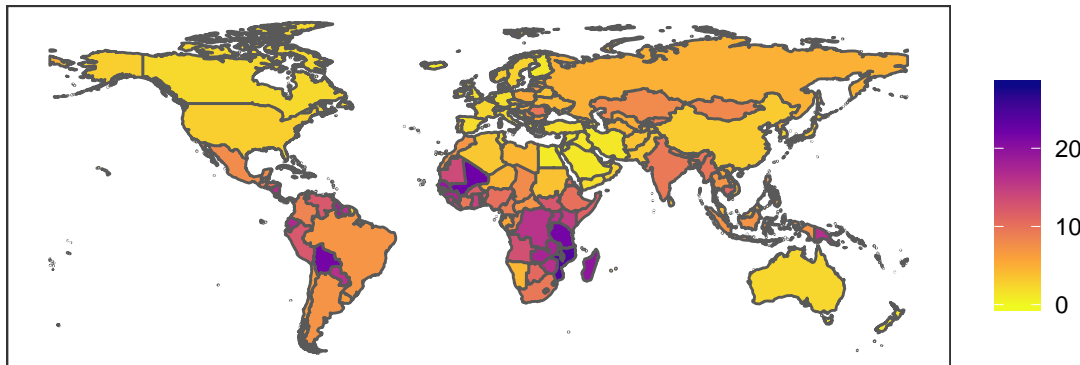
### DALYs averted per 1000 vaccinated girls



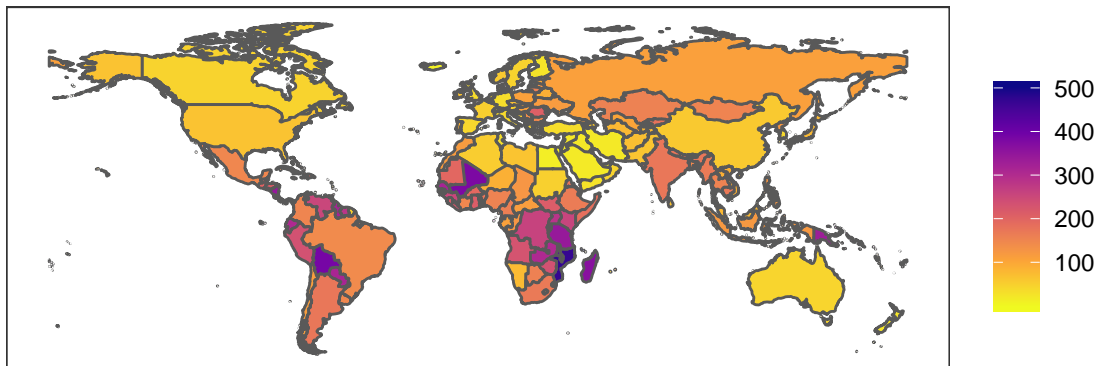
### Cases averted per 1000 vaccinated girls



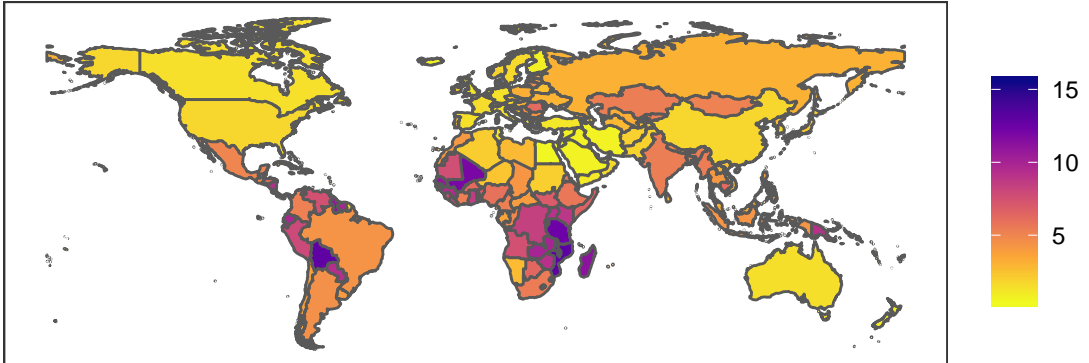
### Deaths averted per 1000 vaccinated girls



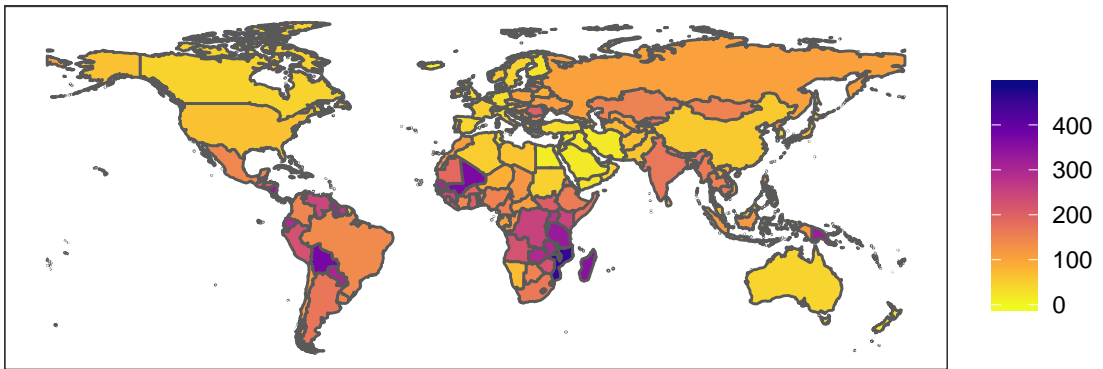
### DALYs averted per 1000 vaccinated girls



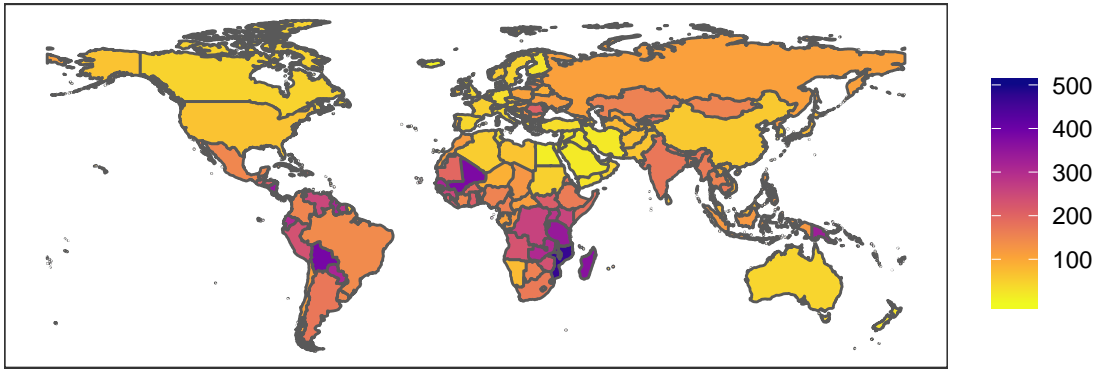
### YLDs averted per 1000 vaccinated girls



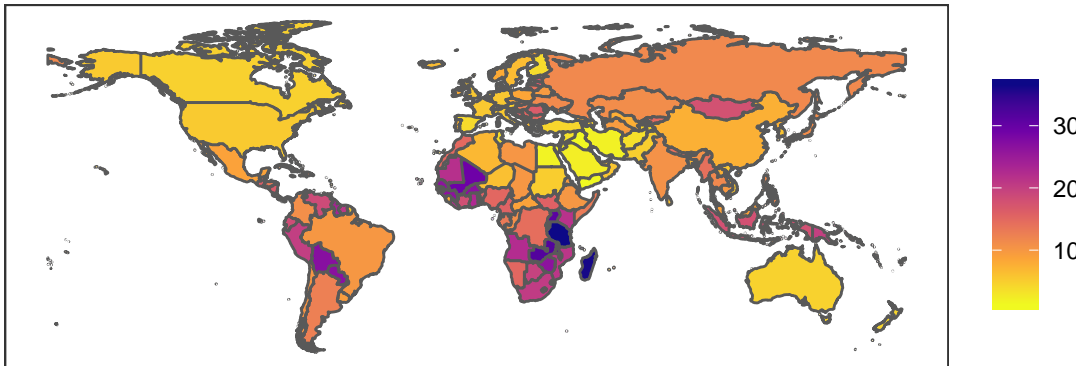
### YLLs averted per 1000 vaccinated girls



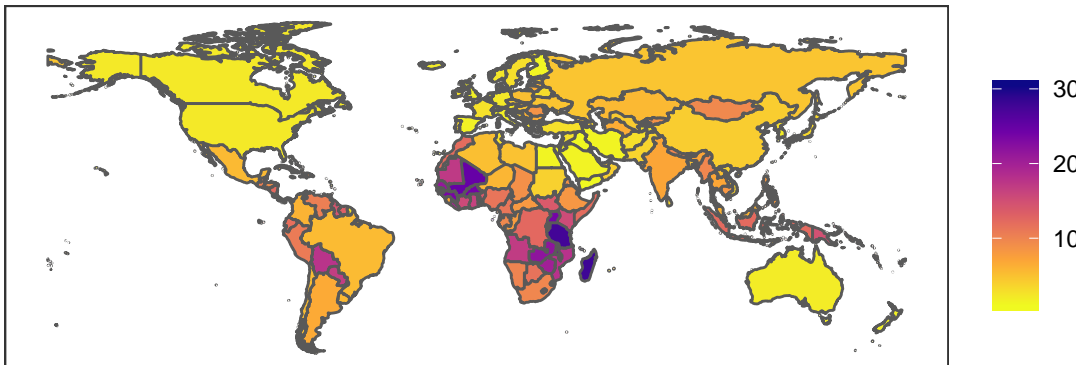
### DALYs averted per 1000 vaccinated girls



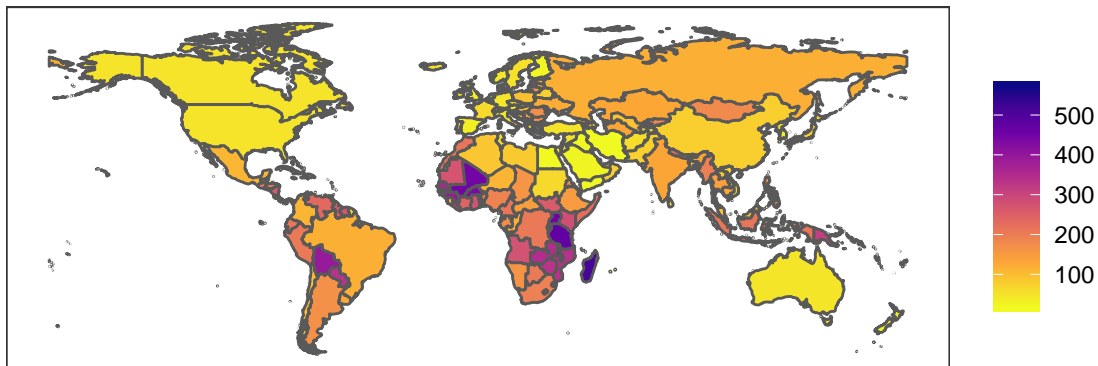
### Cases averted per 1000 vaccinated girls



### Deaths averted per 1000 vaccinated girls

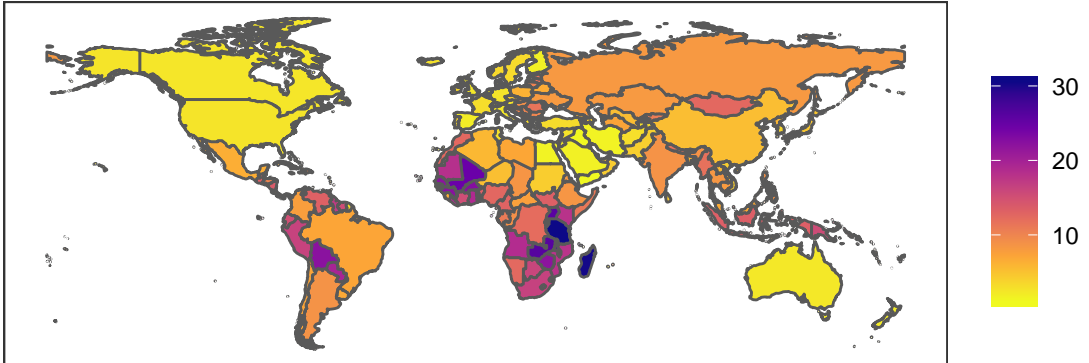


### DALYs averted per 1000 vaccinated girls

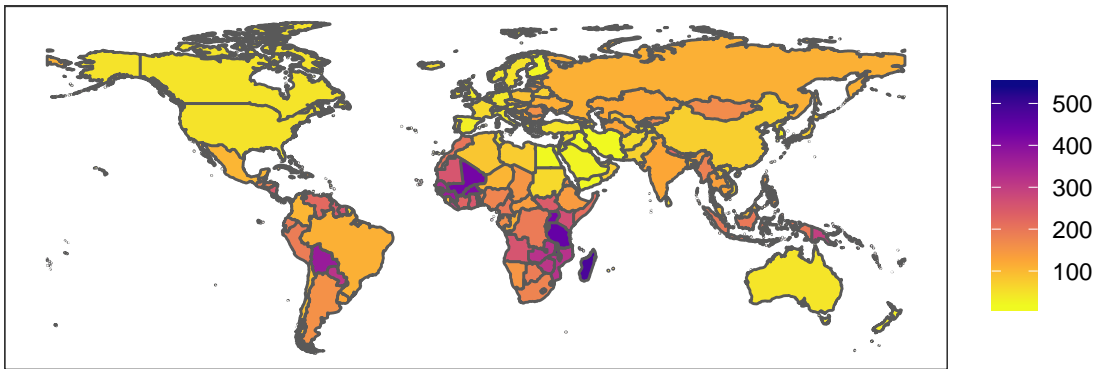




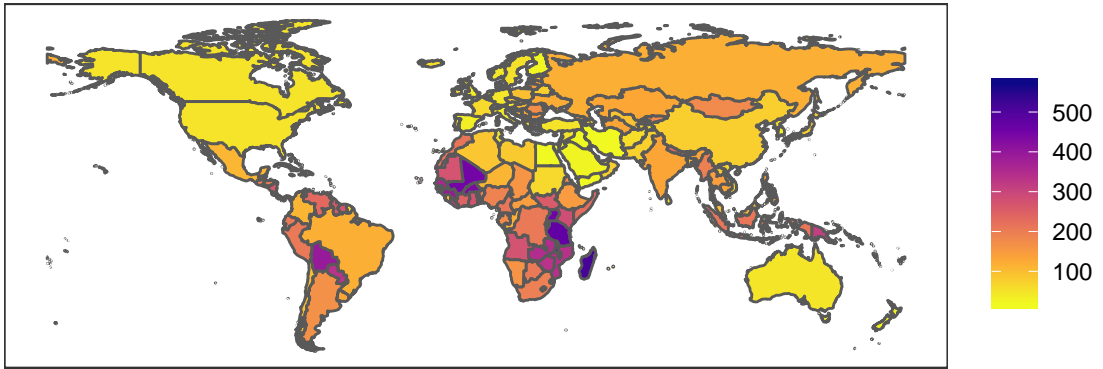
### YLDs averted per 1000 vaccinated girls



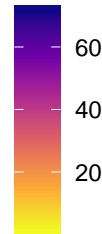
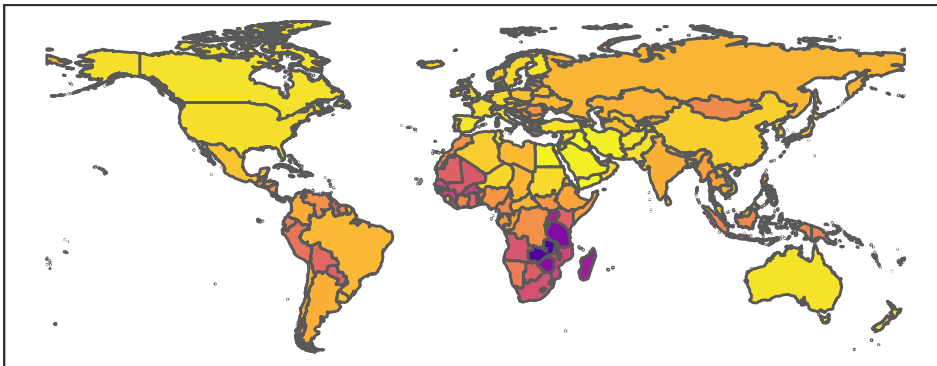
### YLLs averted per 1000 vaccinated girls



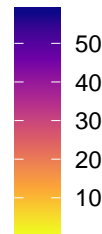
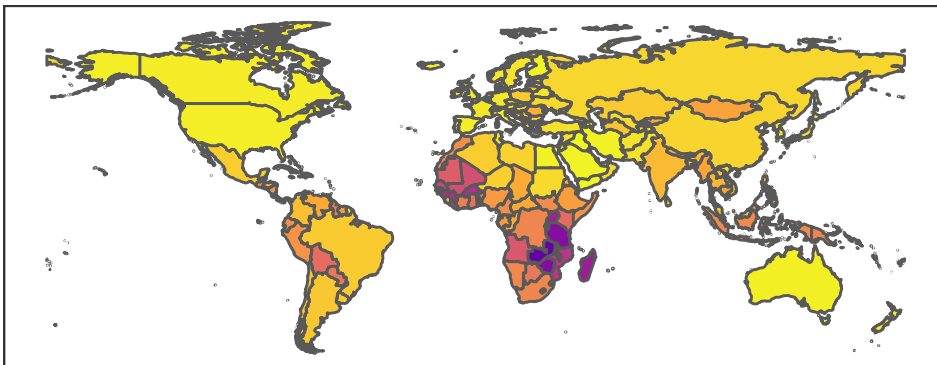
### DALYs averted per 1000 vaccinated girls



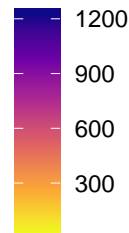
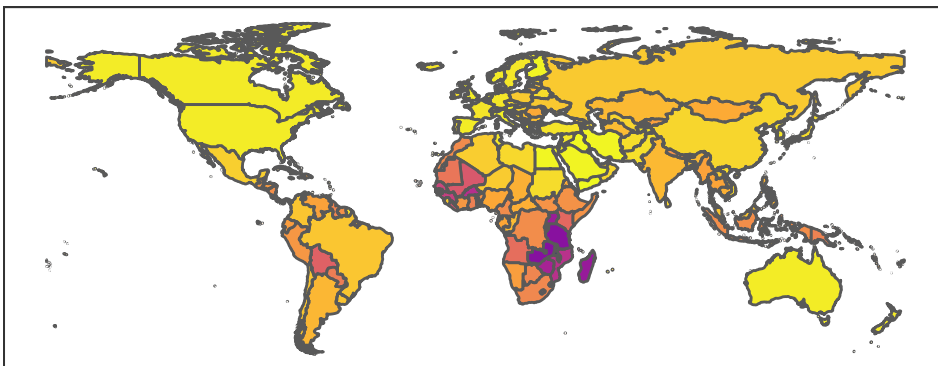
### Cases averted per 1000 vaccinated girls



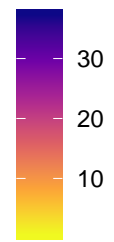
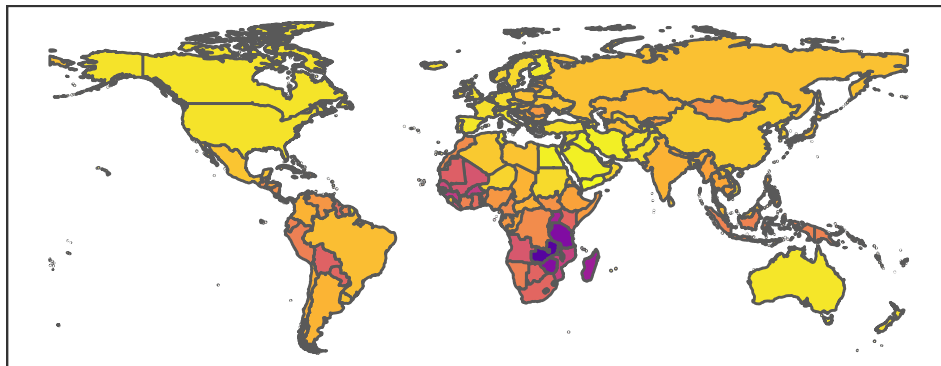
### Deaths averted per 1000 vaccinated girls



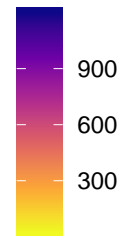
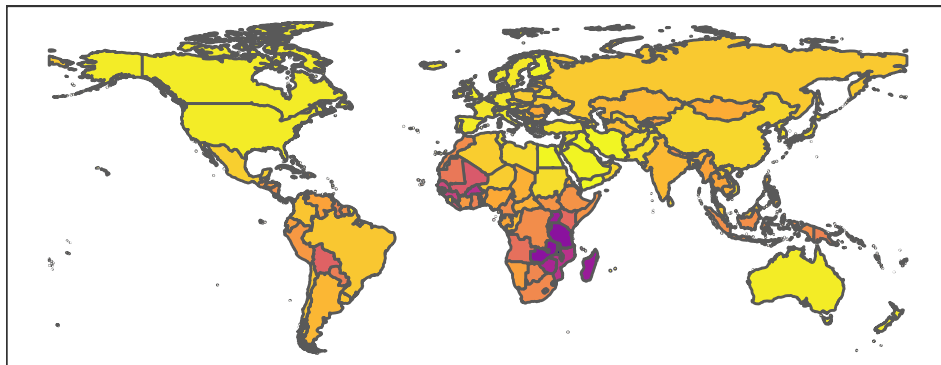
### DALYs averted per 1000 vaccinated girls



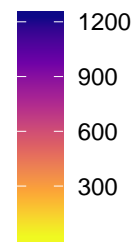
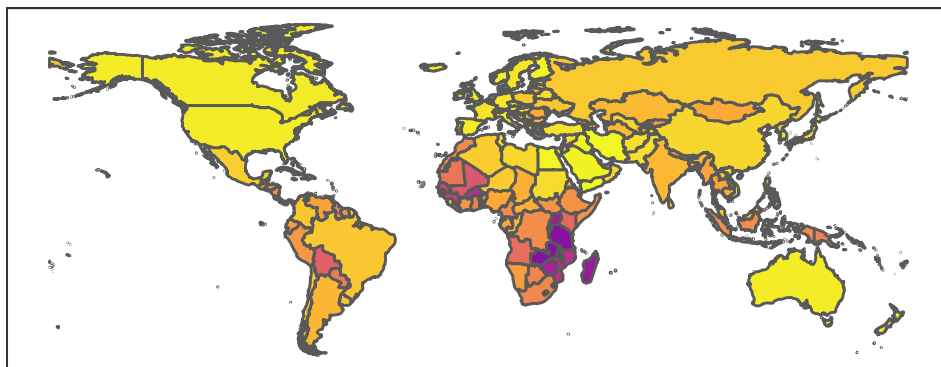
### YLDs averted per 1000 vaccinated girls



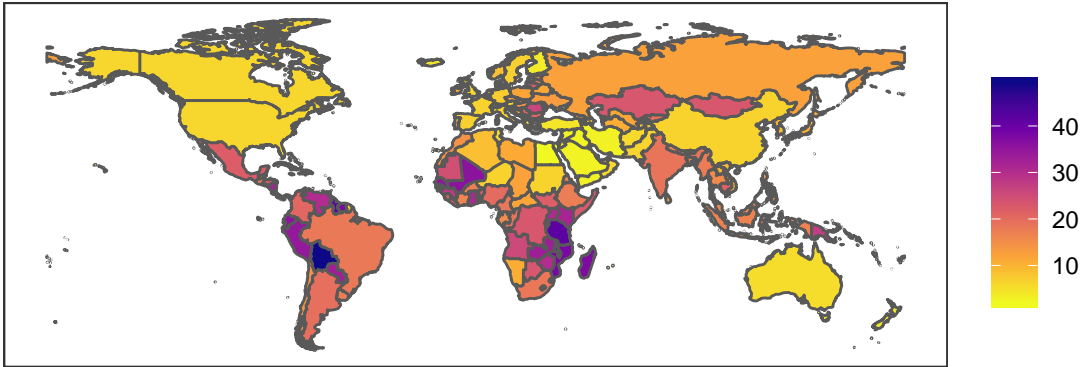
### YLLs averted per 1000 vaccinated girls



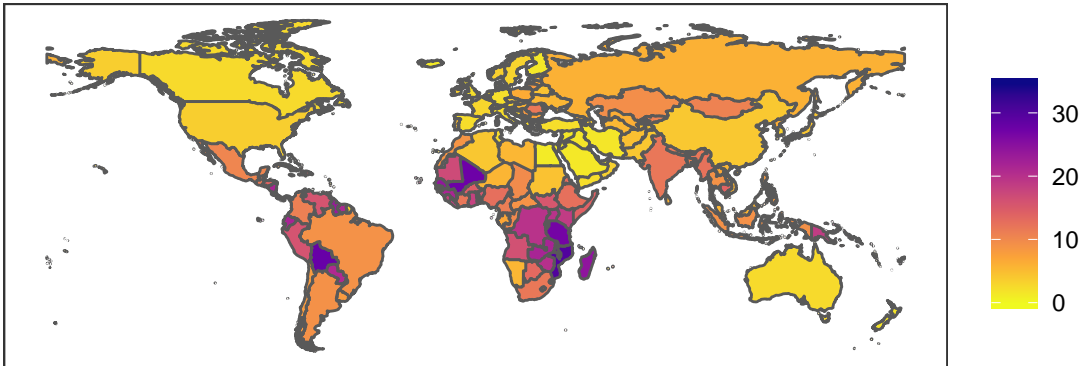
### DALYs averted per 1000 vaccinated girls



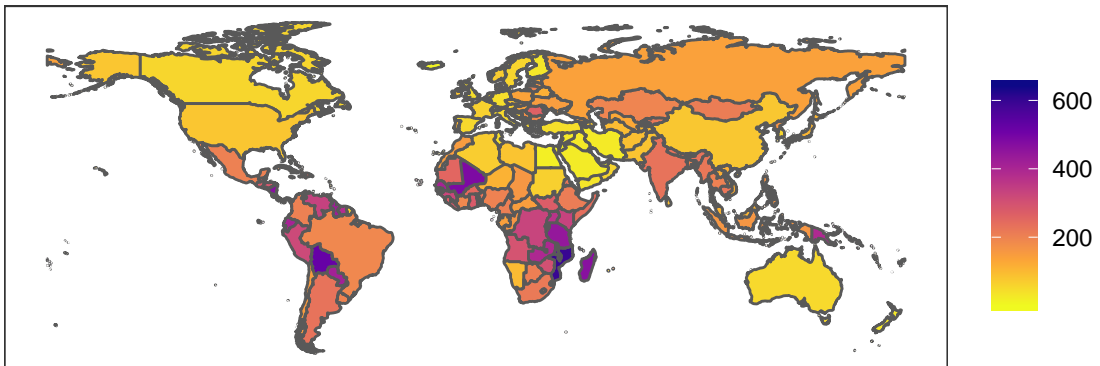
### Cases averted per 1000 vaccinated girls



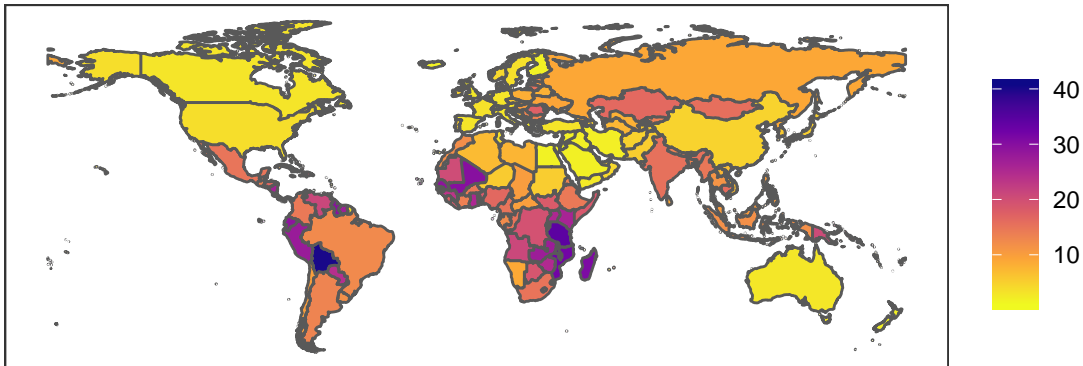
### Deaths averted per 1000 vaccinated girls



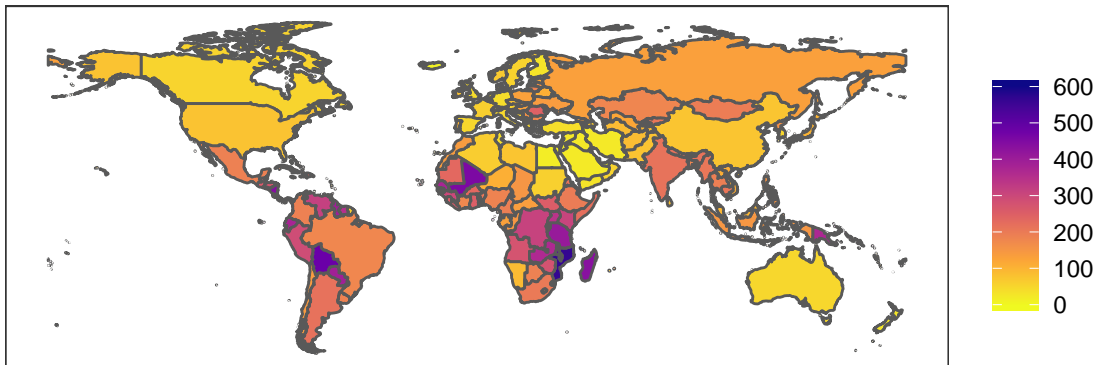
### DALYs averted per 1000 vaccinated girls



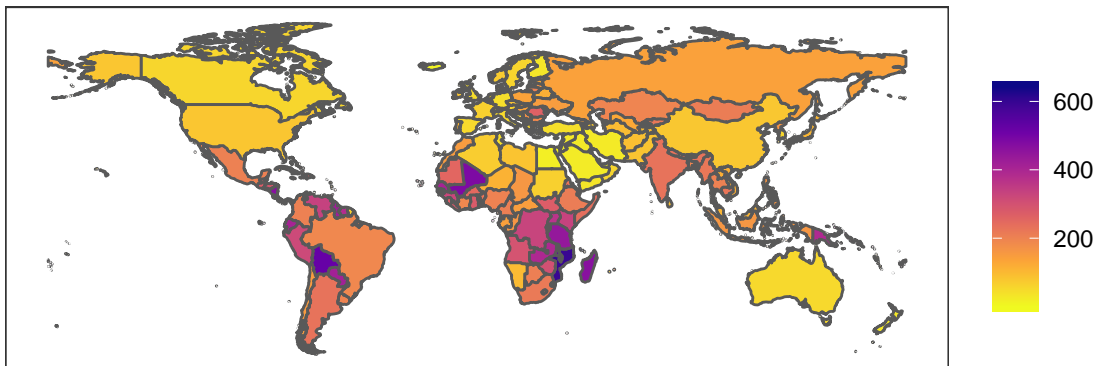
### YLDs averted per 1000 vaccinated girls



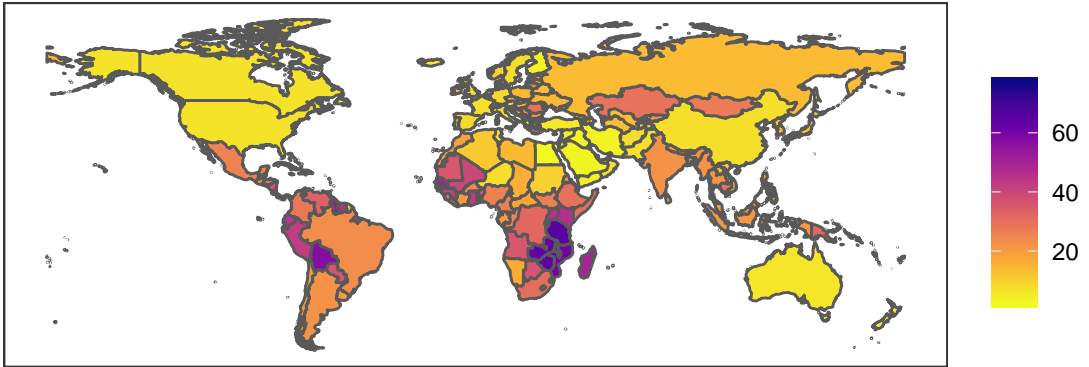
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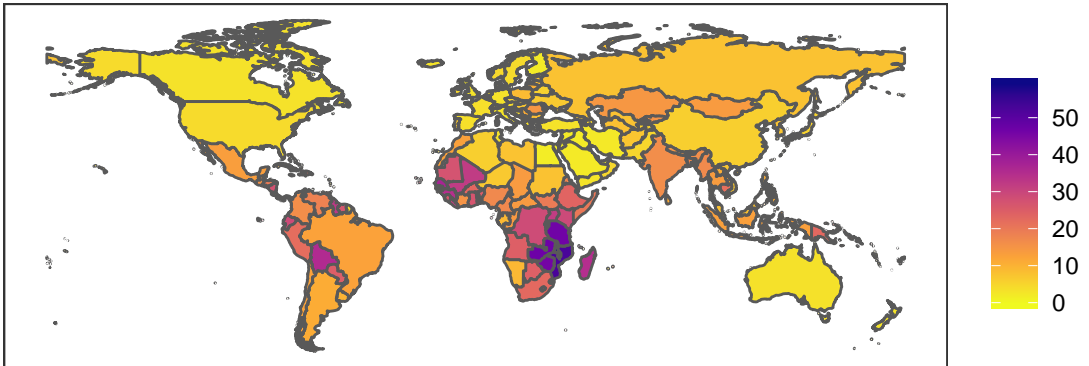
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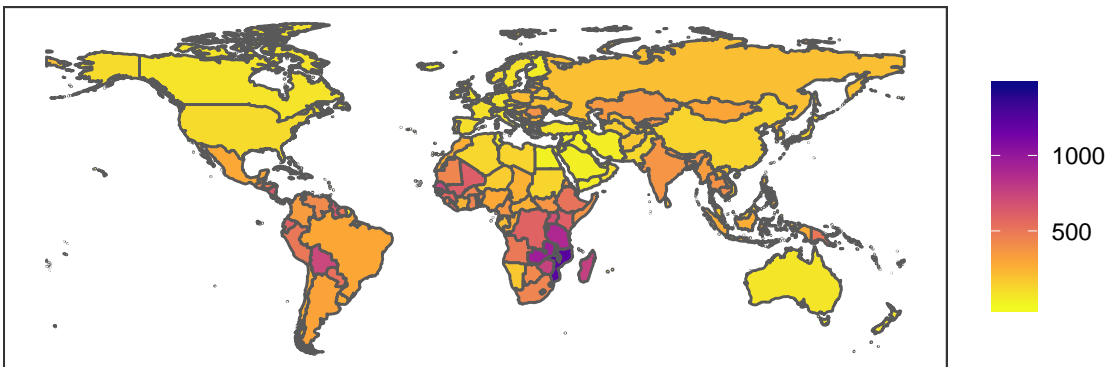
### Cases averted per 1000 vaccinated girls



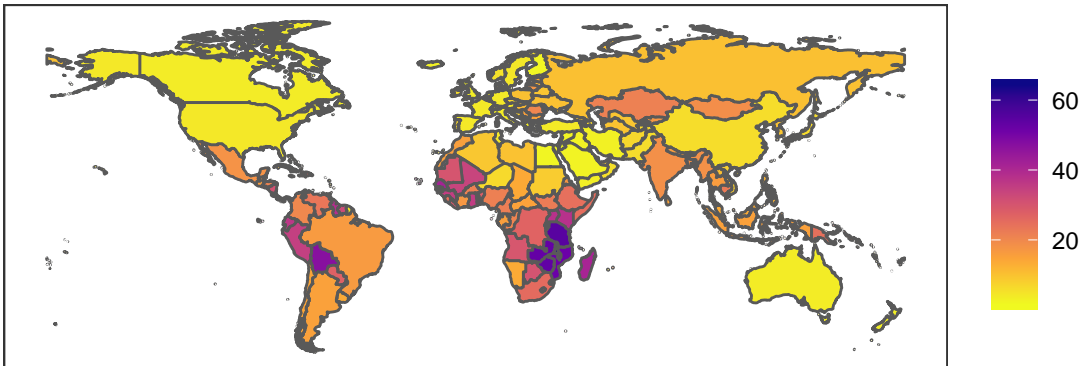
### Deaths averted per 1000 vaccinated girls



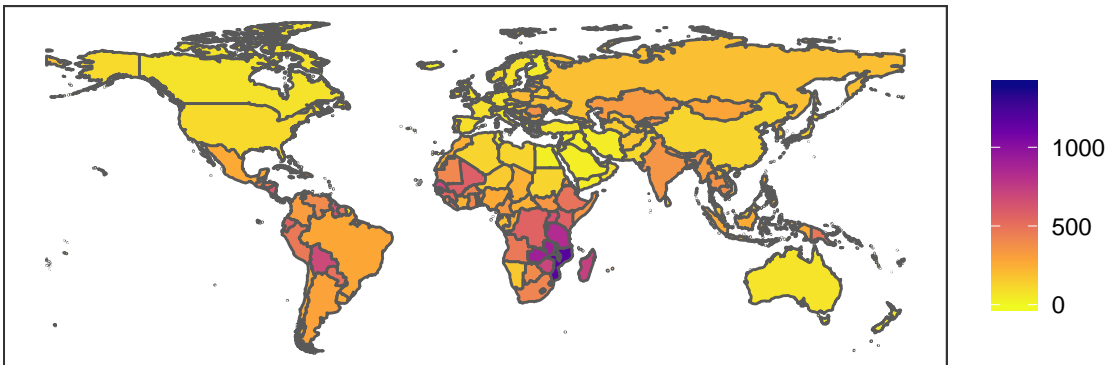
### DALYs averted per 1000 vaccinated girls



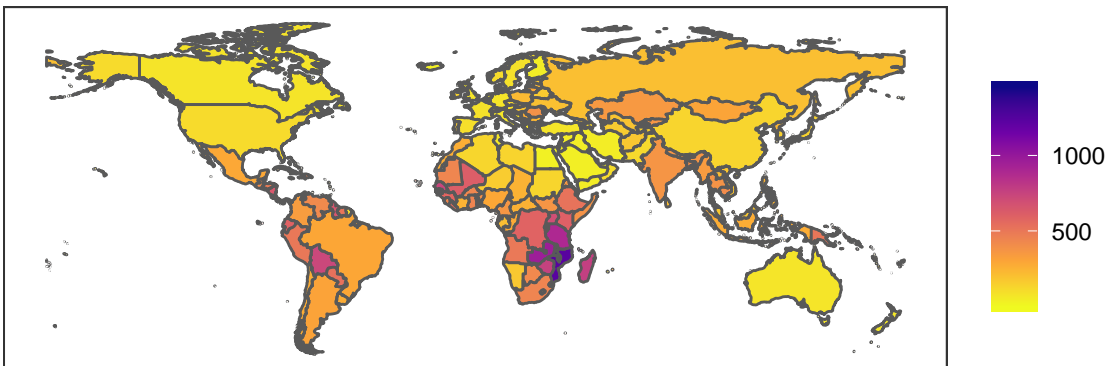
### YLDs averted per 1000 vaccinated girls



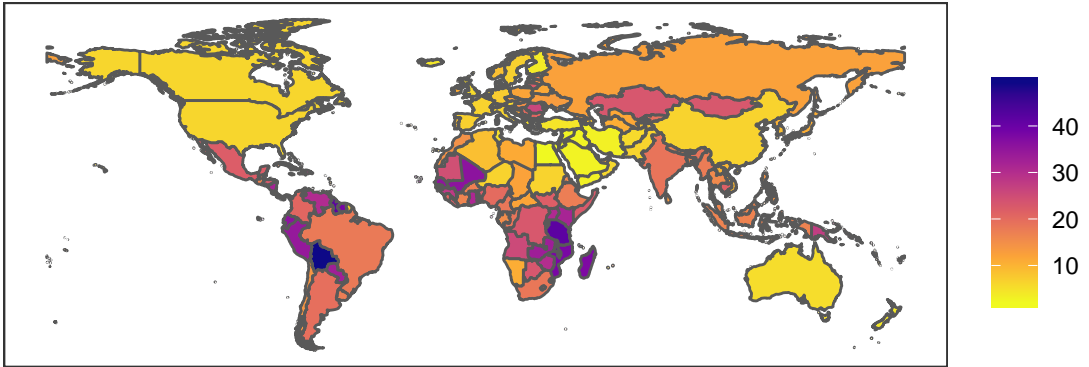
### YLLs averted per 1000 vaccinated girls



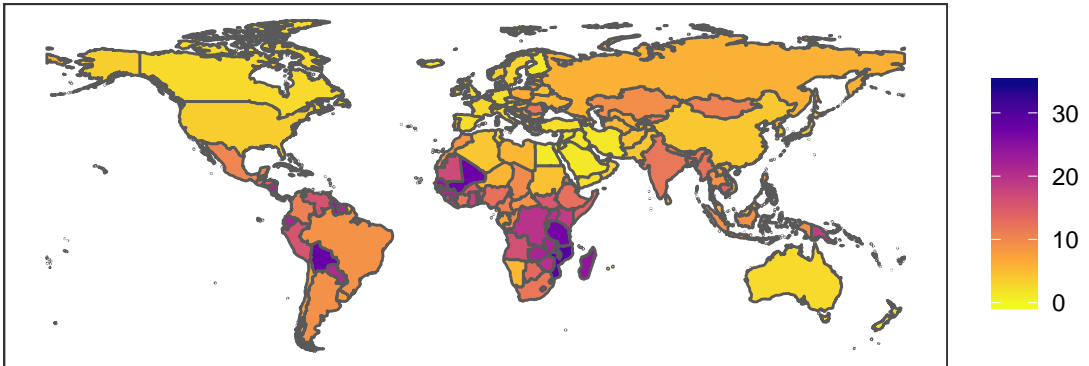
### DALYs averted per 1000 vaccinated girls



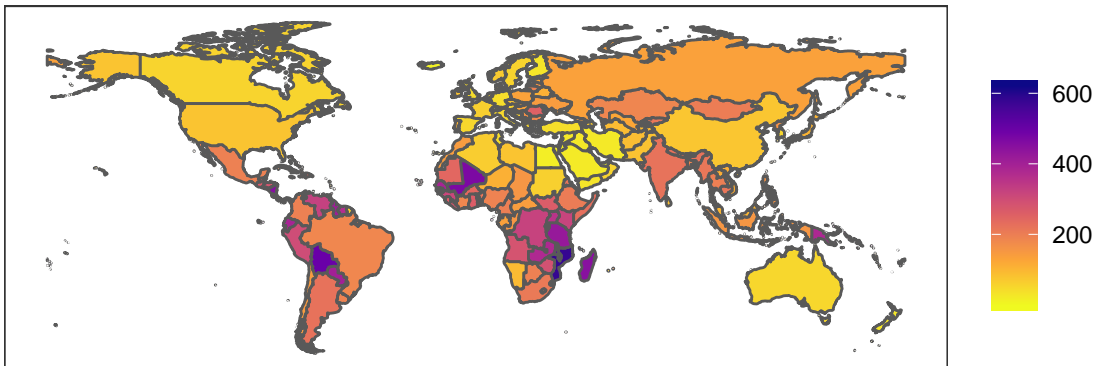
### Cases averted per 1000 vaccinated girls



### Deaths averted per 1000 vaccinated girls

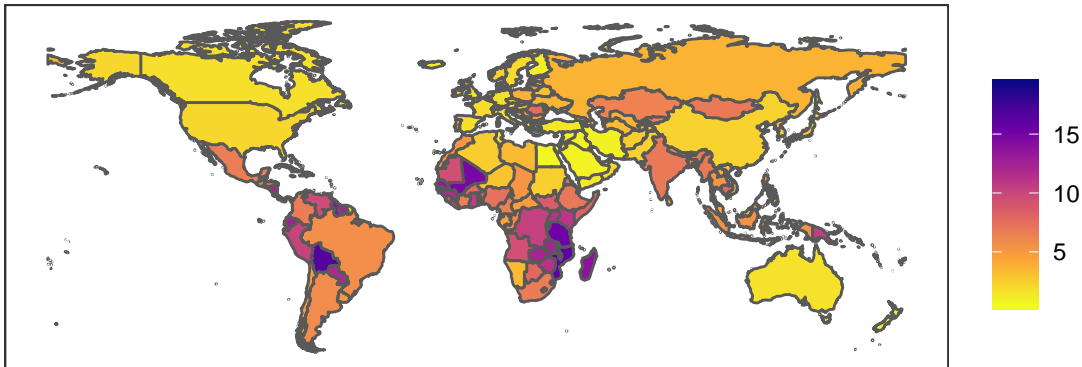


### DALYs averted per 1000 vaccinated girls

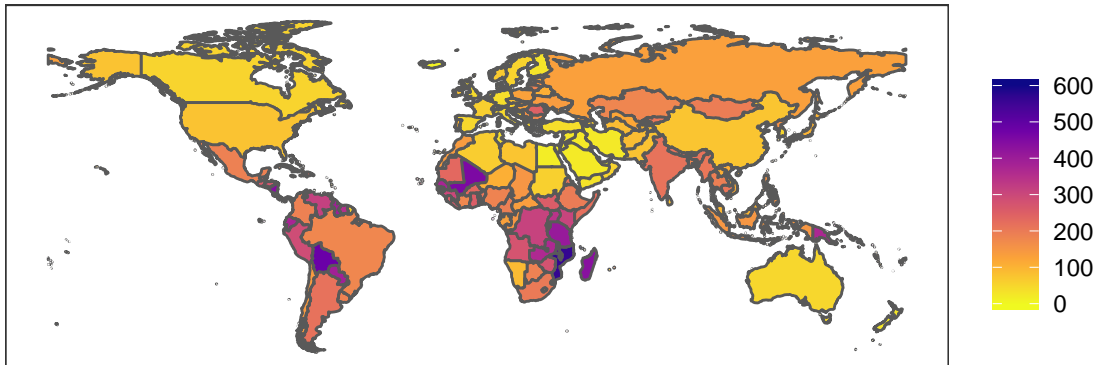




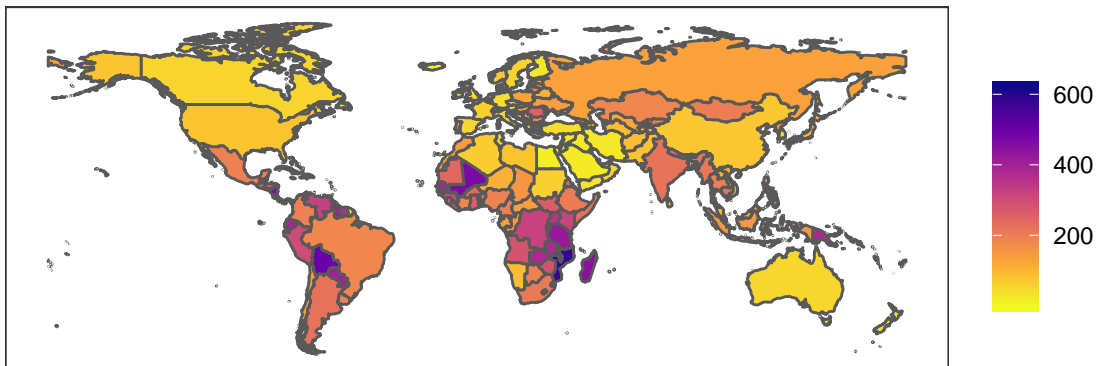
### YLDs averted per 1000 vaccinated girls



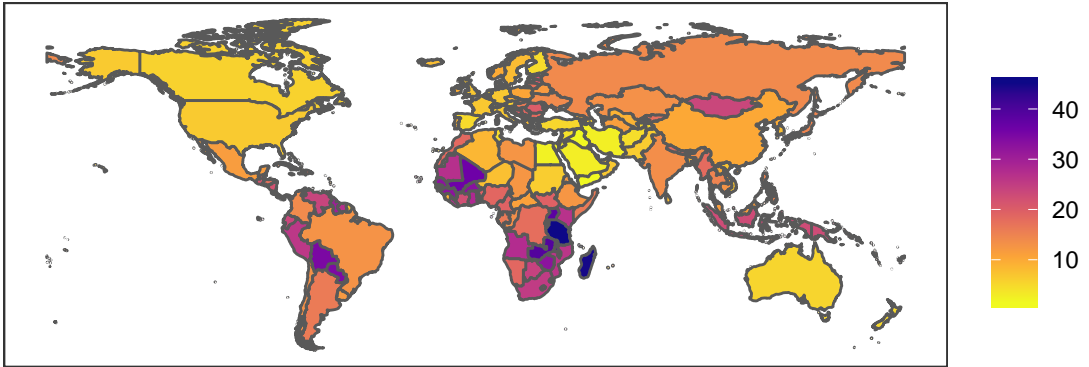
### YLLs averted per 1000 vaccinated girls



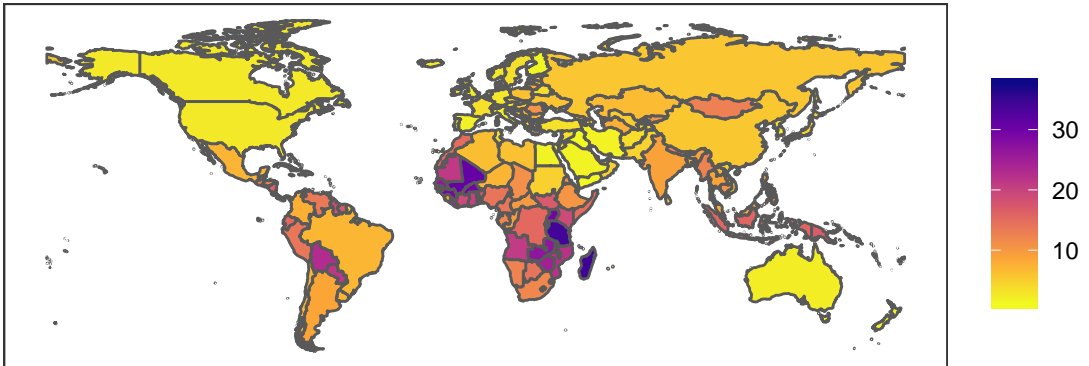
### DALYs averted per 1000 vaccinated girls



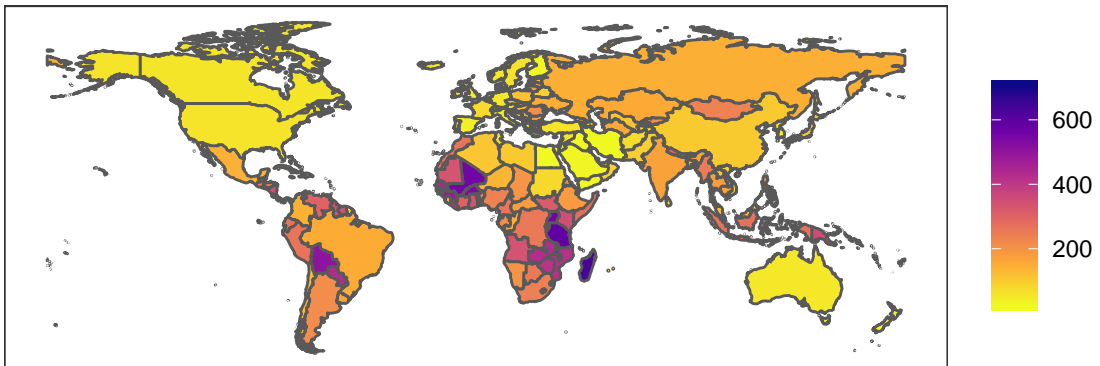
### Cases averted per 1000 vaccinated girls



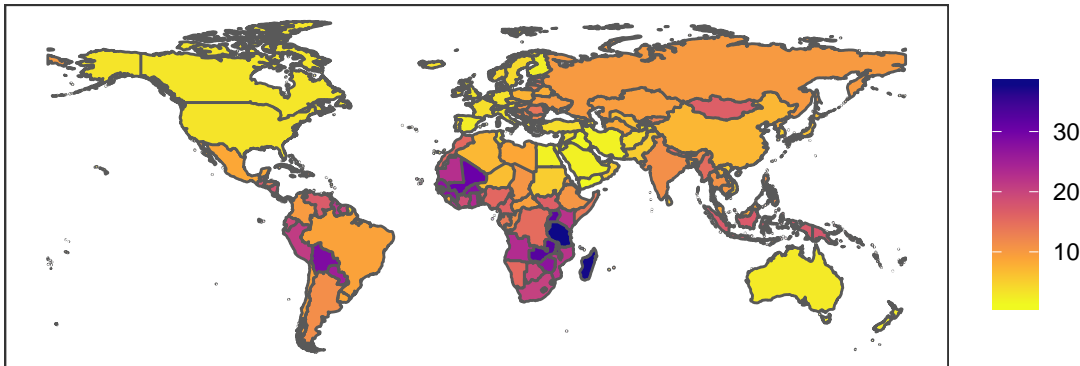
### Deaths averted per 1000 vaccinated girls



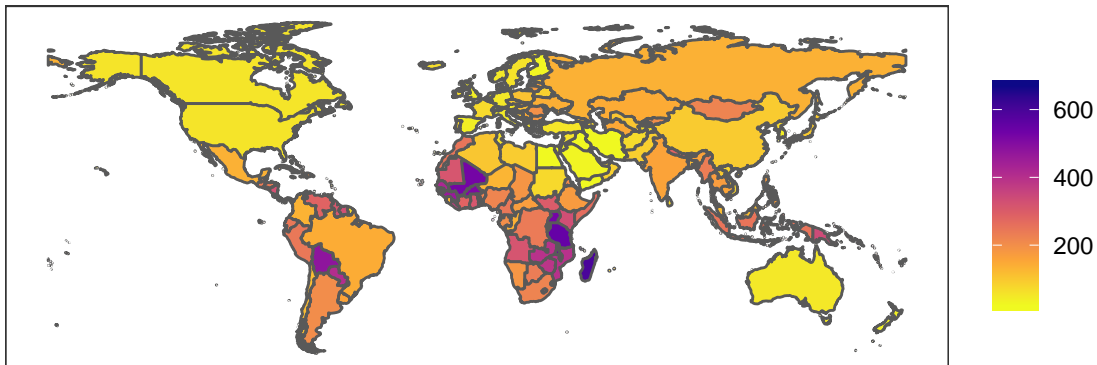
### DALYs averted per 1000 vaccinated girls



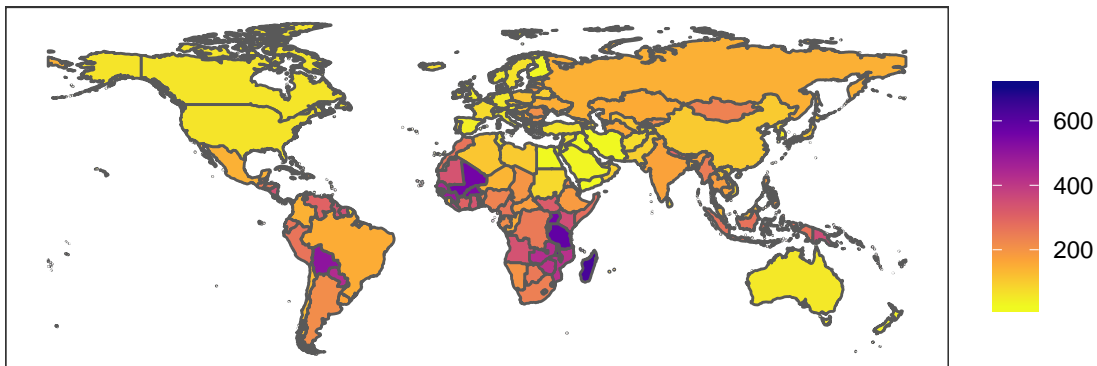
### YLDs averted per 1000 vaccinated girls



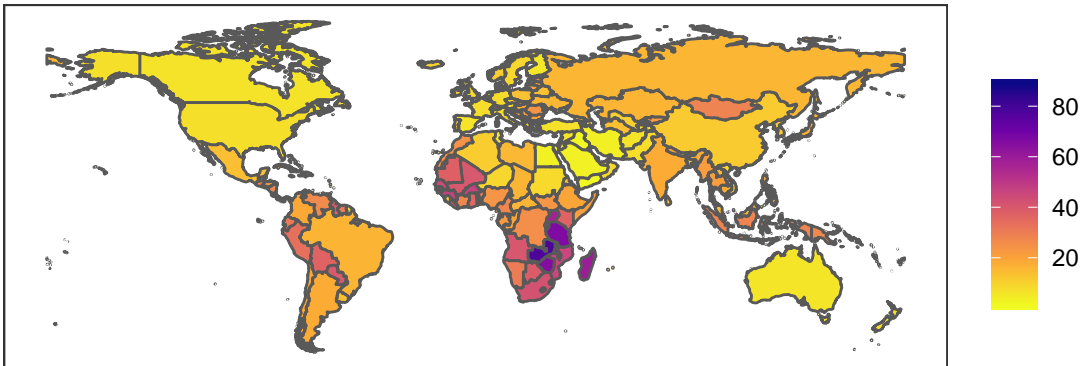
### YLLs averted per 1000 vaccinated girls



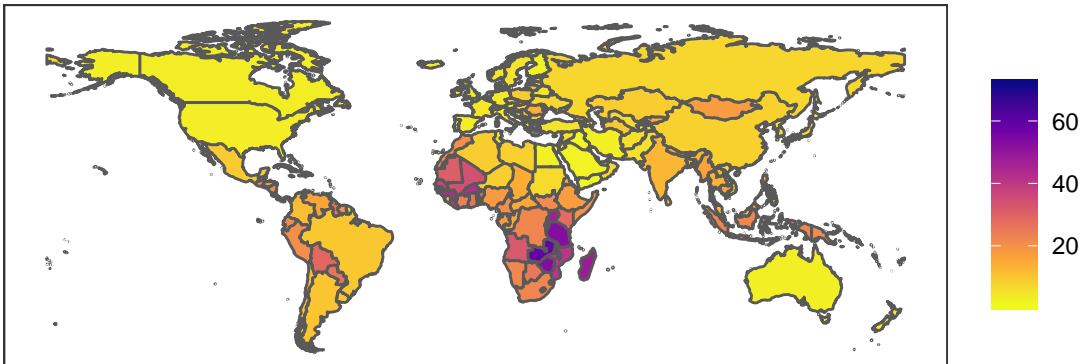
### DALYs averted per 1000 vaccinated girls



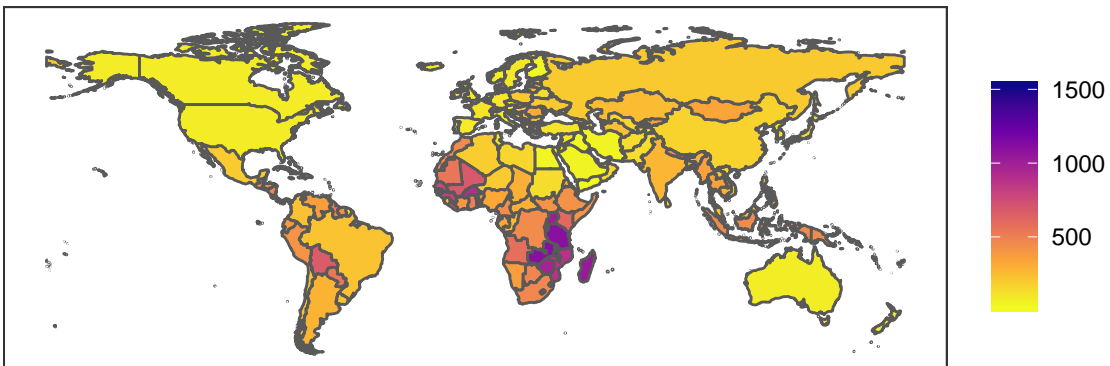
### Cases averted per 1000 vaccinated girls



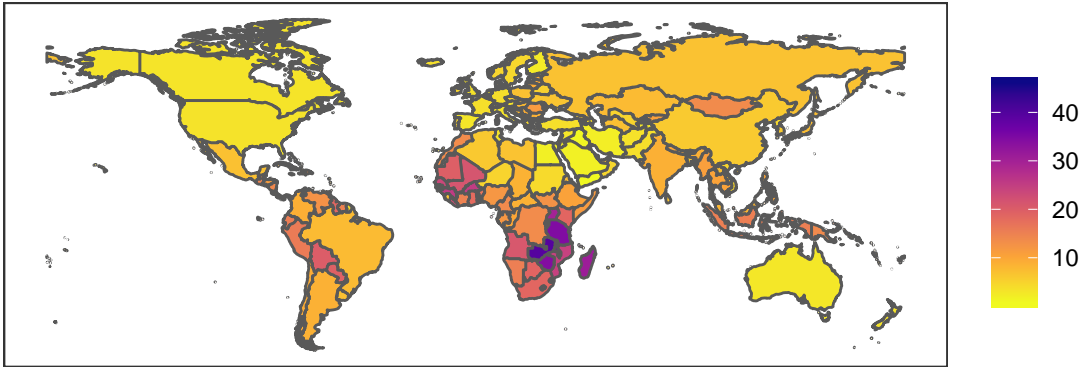
### Deaths averted per 1000 vaccinated girls



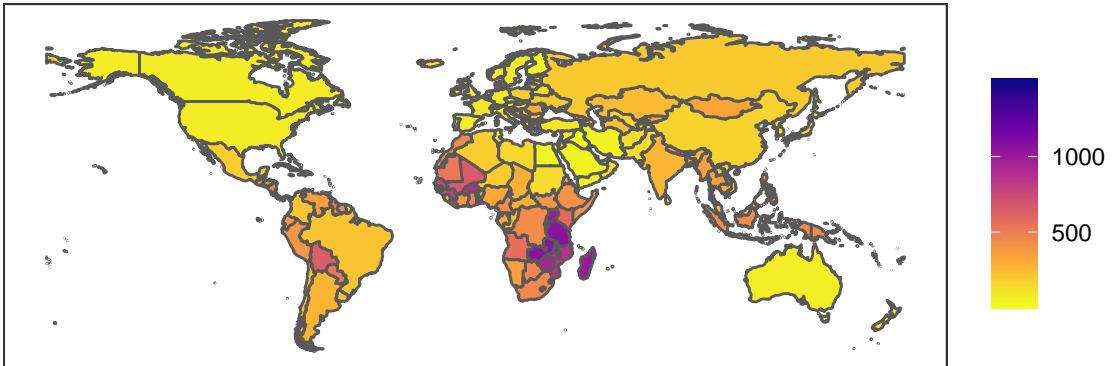
### DALYs averted per 1000 vaccinated girls



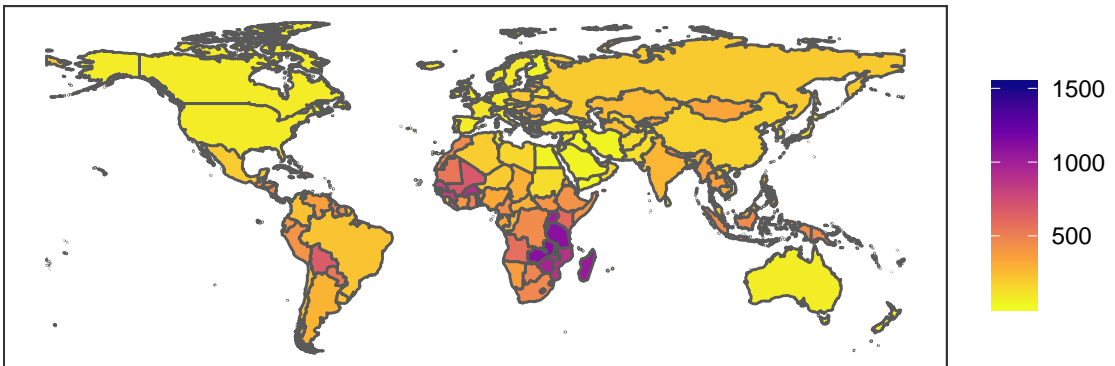
### YLDs averted per 1000 vaccinated girls



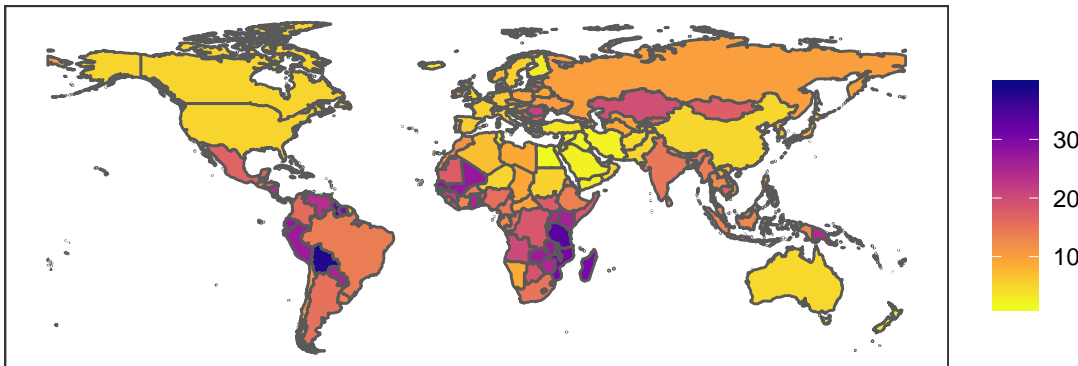
### YLLs averted per 1000 vaccinated girls



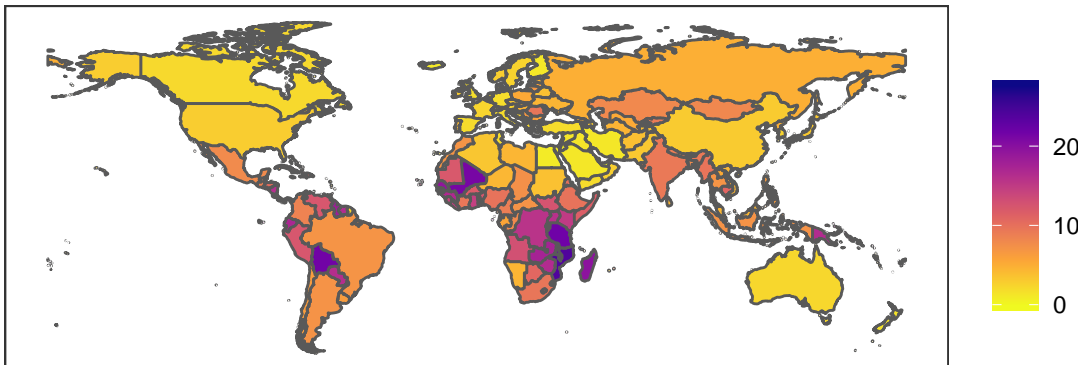
### DALYs averted per 1000 vaccinated girls



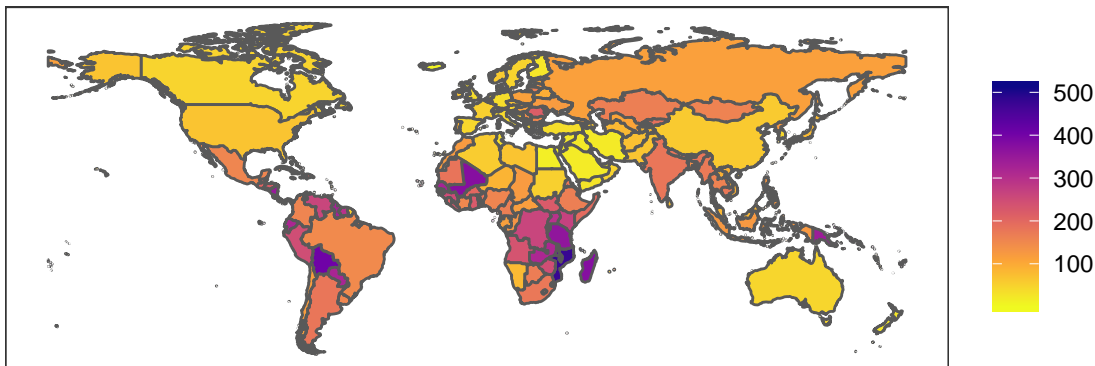
### Cases averted per 1000 vaccinated girls



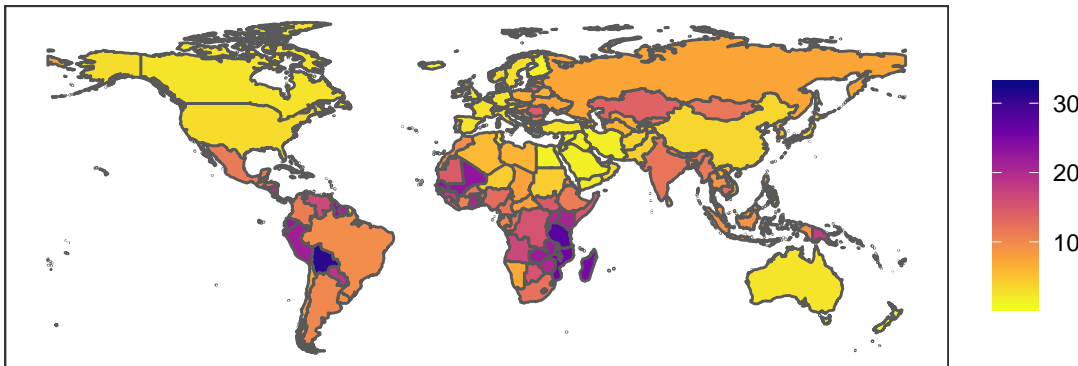
### Deaths averted per 1000 vaccinated girls



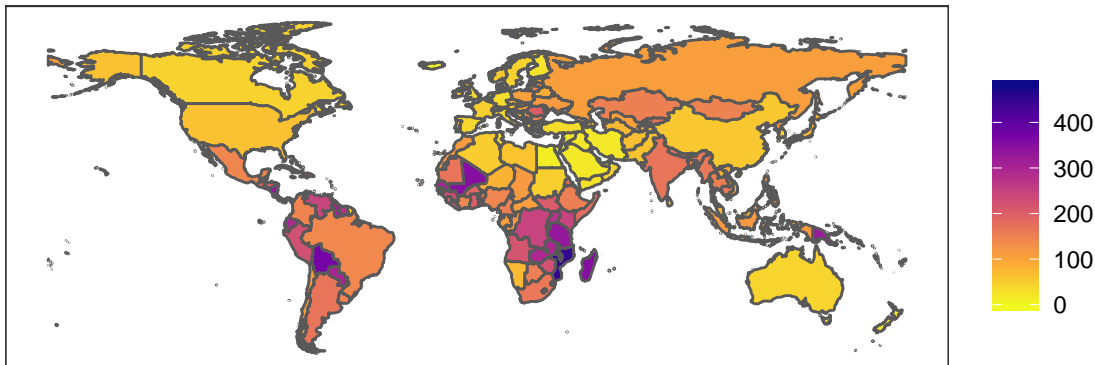
### DALYs averted per 1000 vaccinated girls



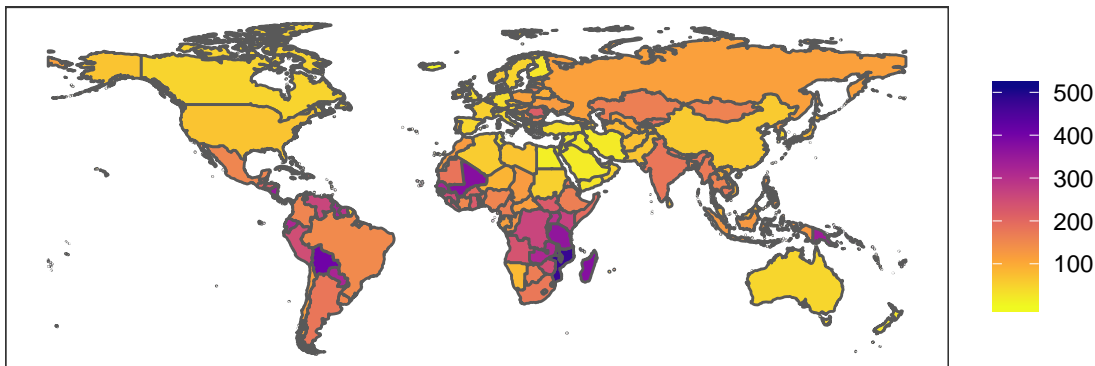
### YLDs averted per 1000 vaccinated girls



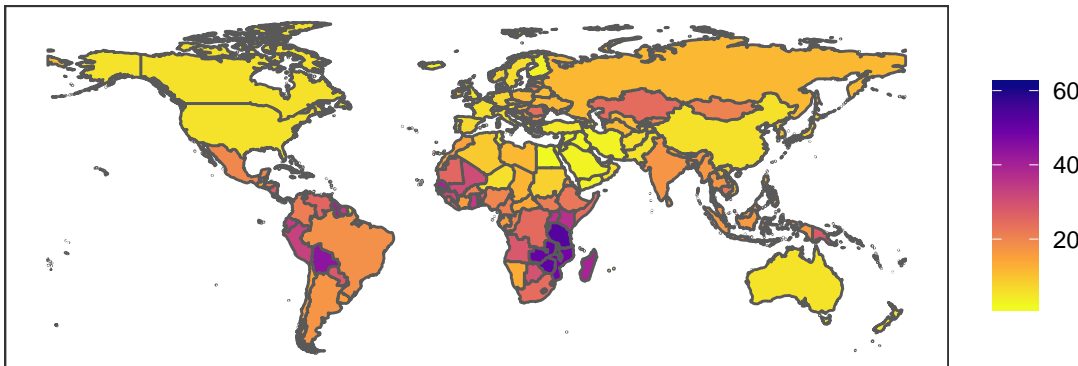
### YLLs averted per 1000 vaccinated girls



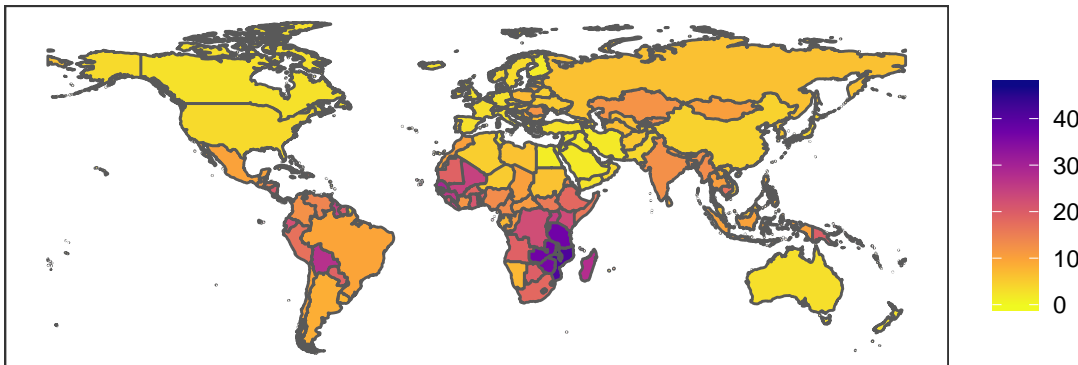
### DALYs averted per 1000 vaccinated girls



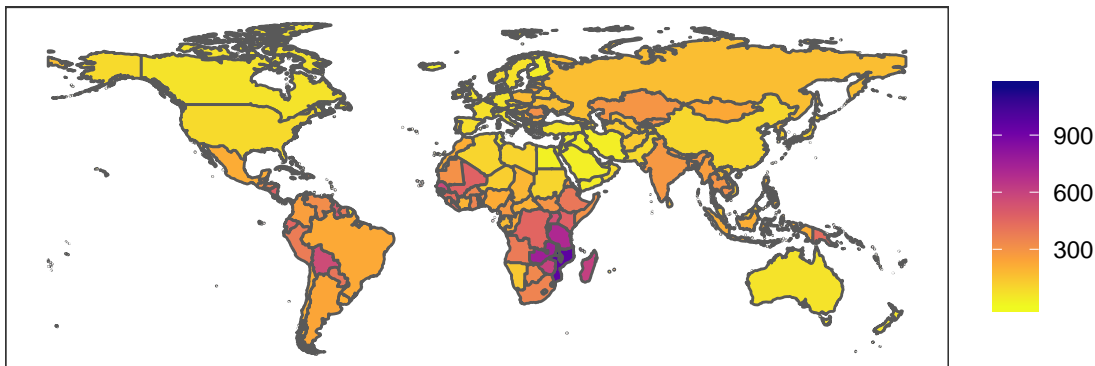
### Cases averted per 1000 vaccinated girls



### Deaths averted per 1000 vaccinated girls

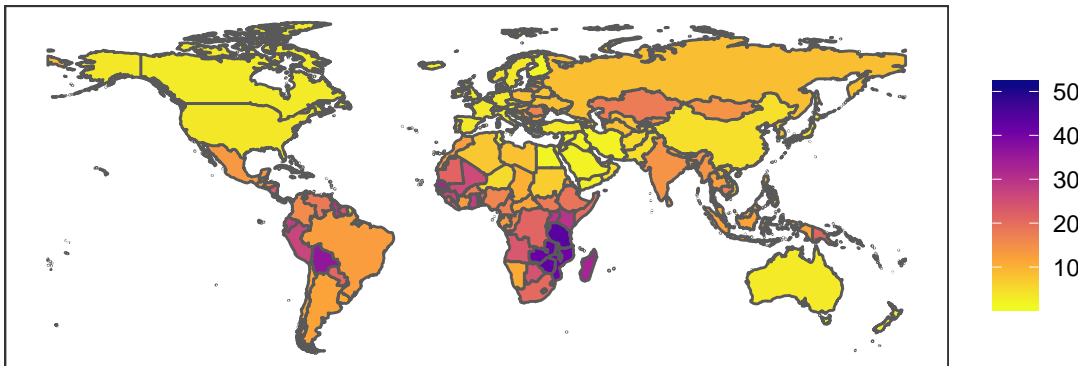


### DALYs averted per 1000 vaccinated girls

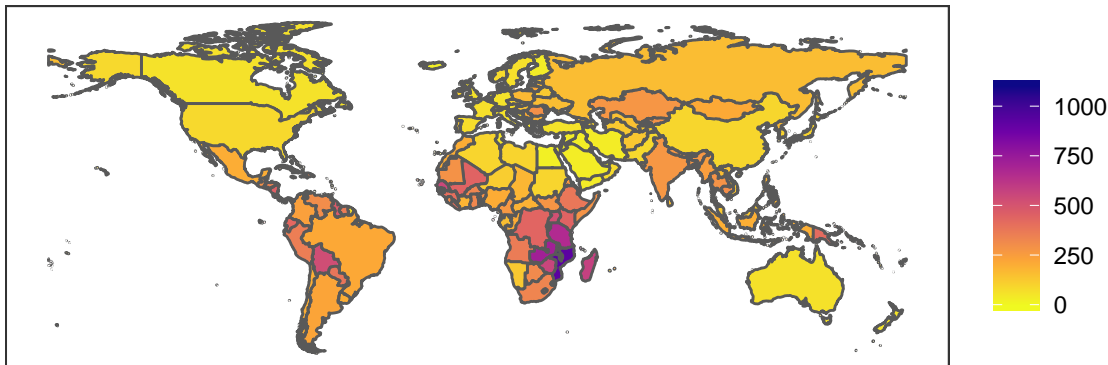




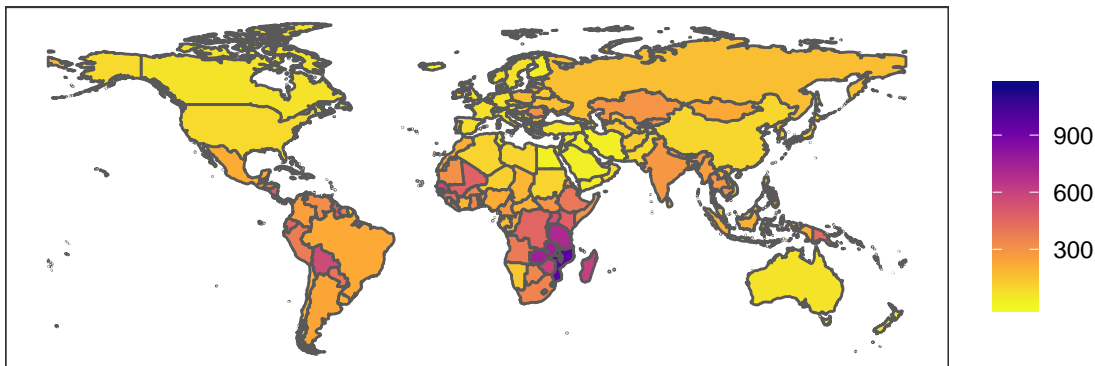
### YLDs averted per 1000 vaccinated girls



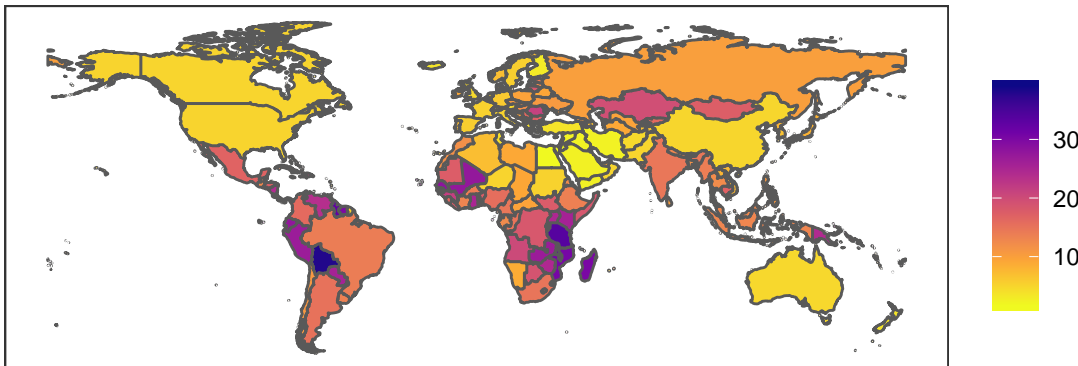
### YLLs averted per 1000 vaccinated girls



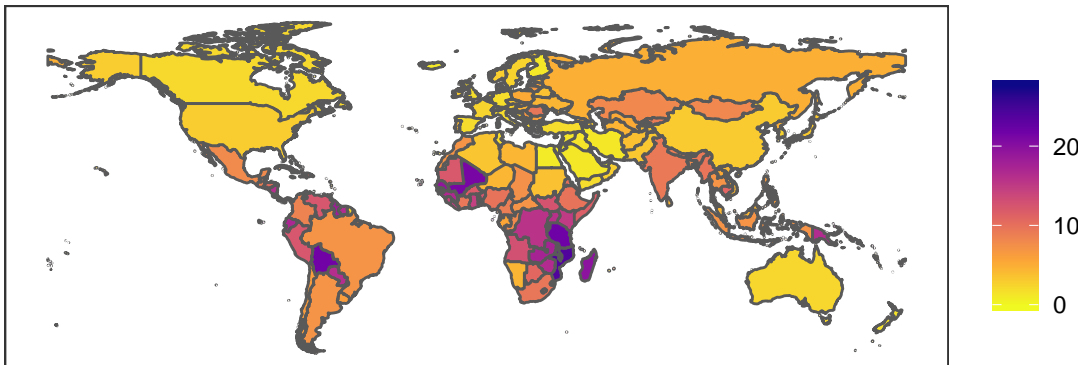
### DALYs averted per 1000 vaccinated girls



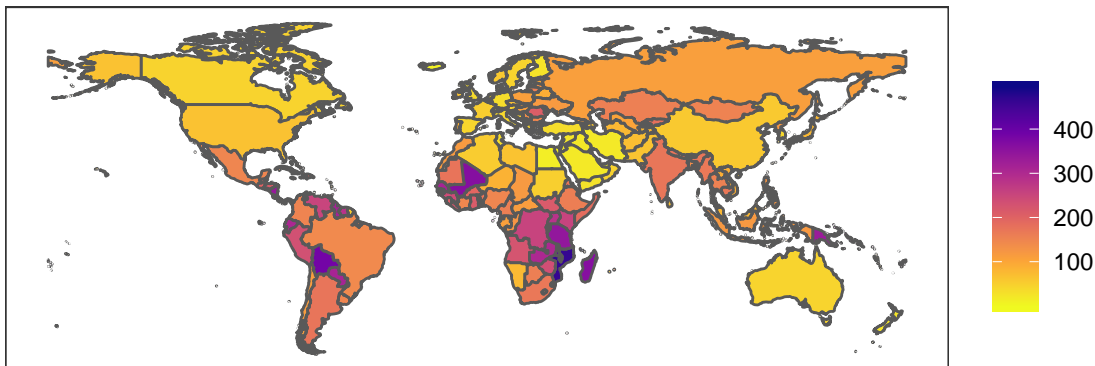
### Cases averted per 1000 vaccinated girls



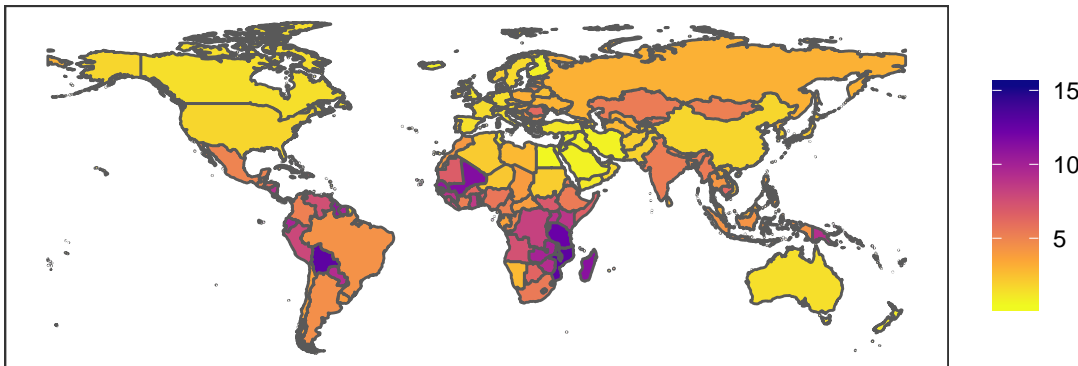
### Deaths averted per 1000 vaccinated girls



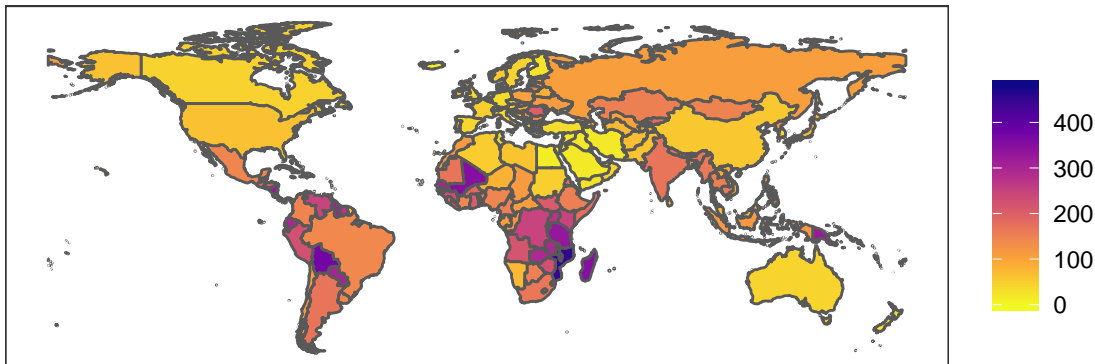
### DALYs averted per 1000 vaccinated girls



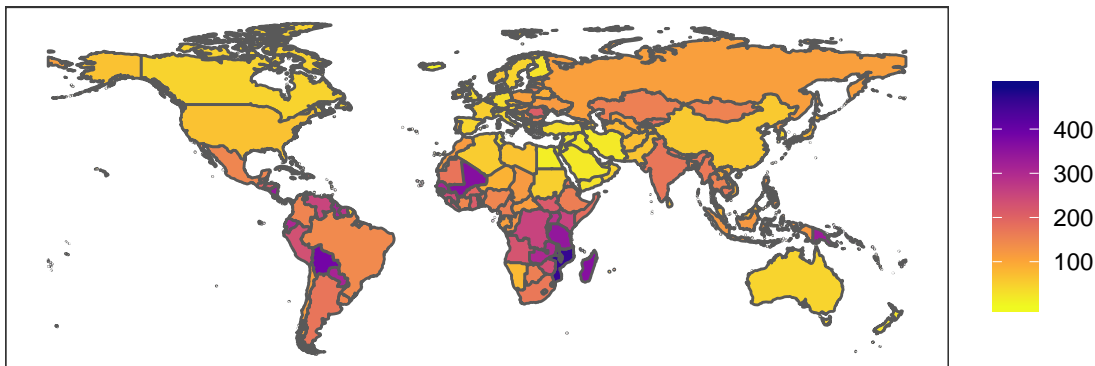
### YLDs averted per 1000 vaccinated girls



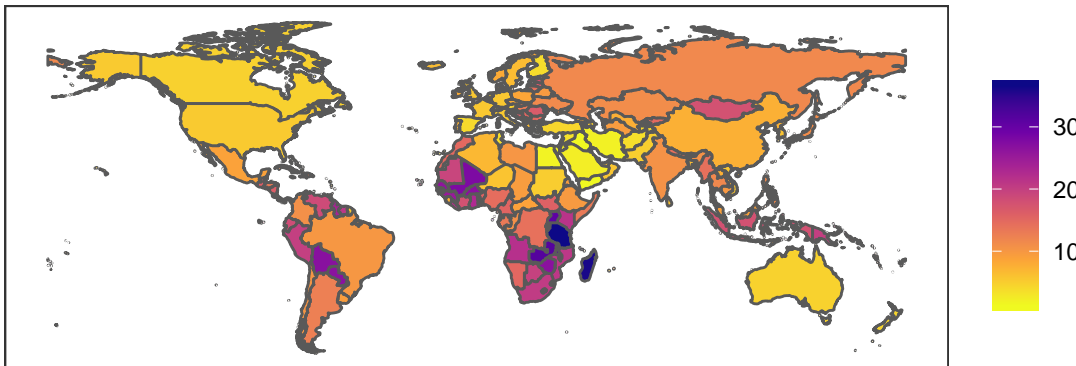
### YLLs averted per 1000 vaccinated girls



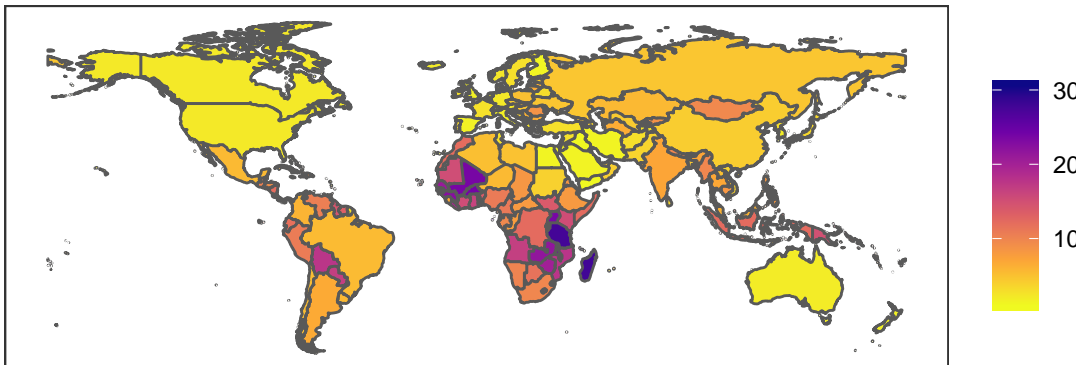
### DALYs averted per 1000 vaccinated girls



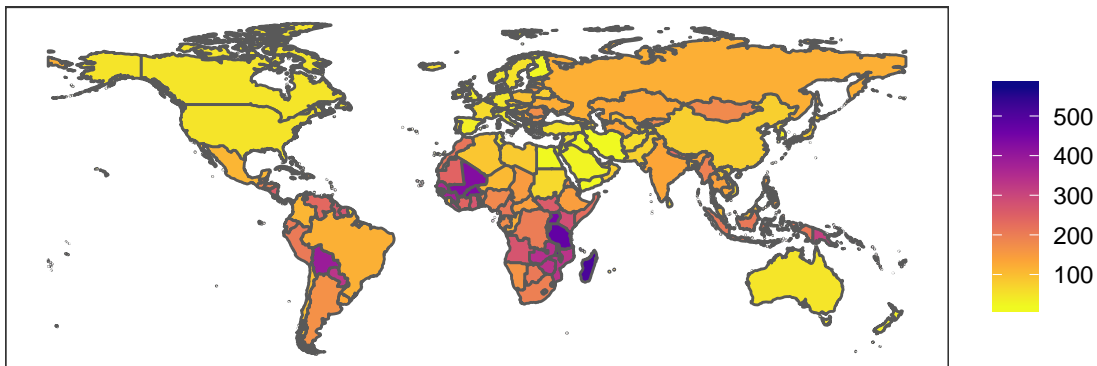
### Cases averted per 1000 vaccinated girls



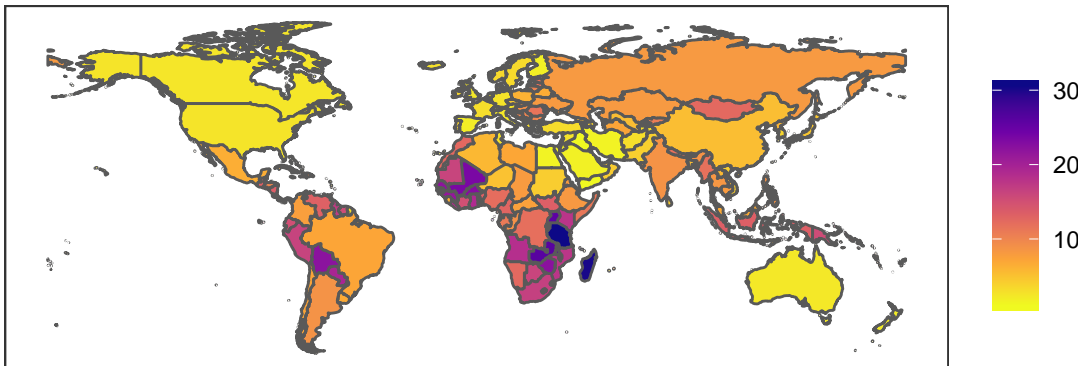
### Deaths averted per 1000 vaccinated girls



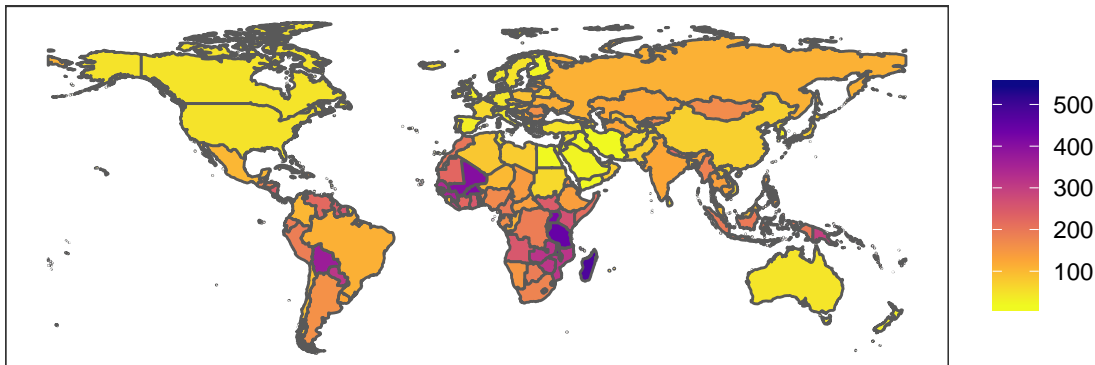
### DALYs averted per 1000 vaccinated girls



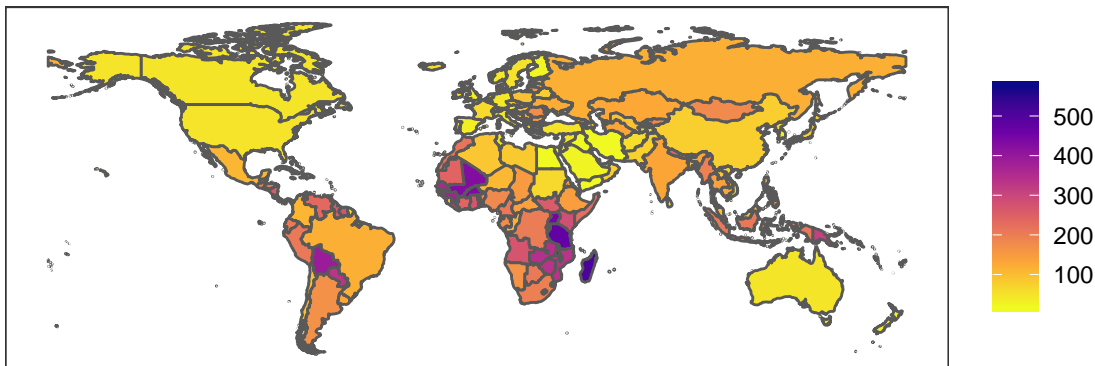
### YLDs averted per 1000 vaccinated girls



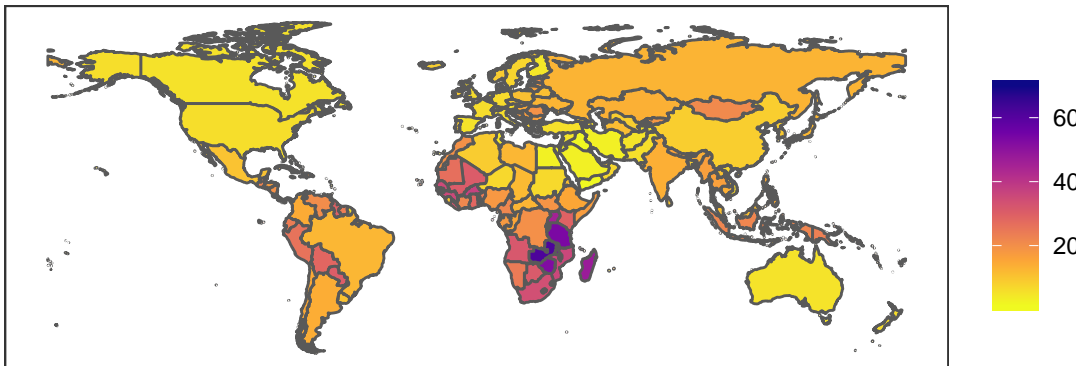
### YLLs averted per 1000 vaccinated girls



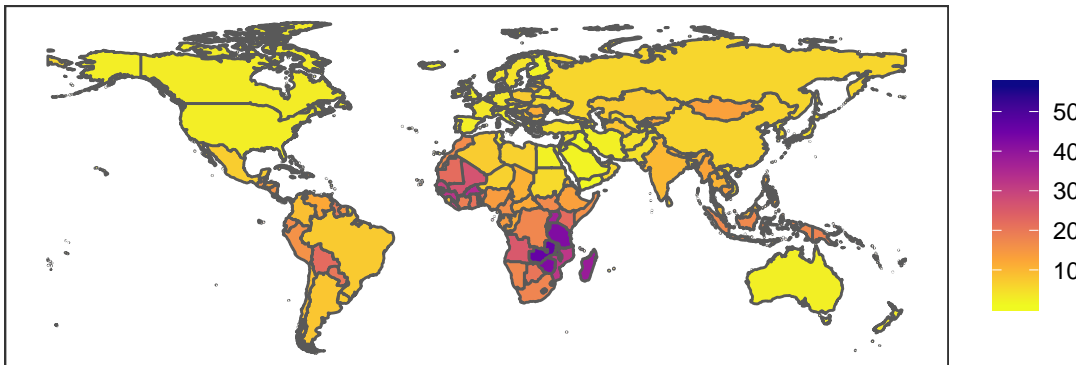
### DALYs averted per 1000 vaccinated girls



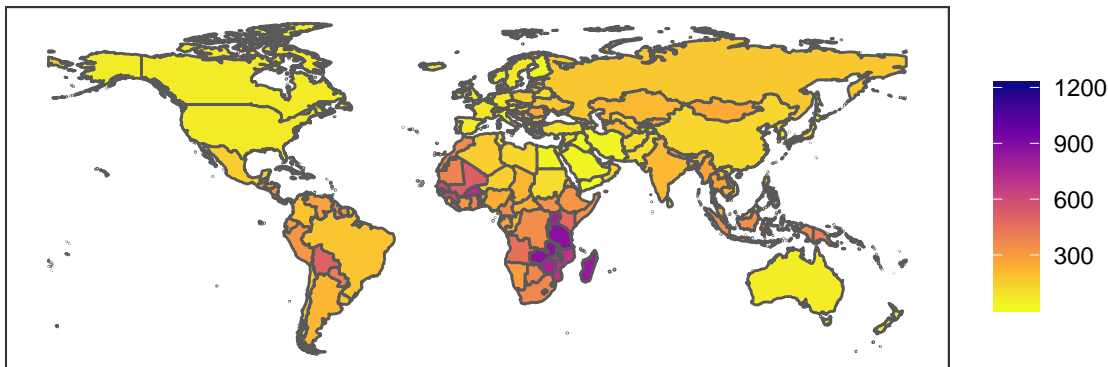
### Cases averted per 1000 vaccinated girls



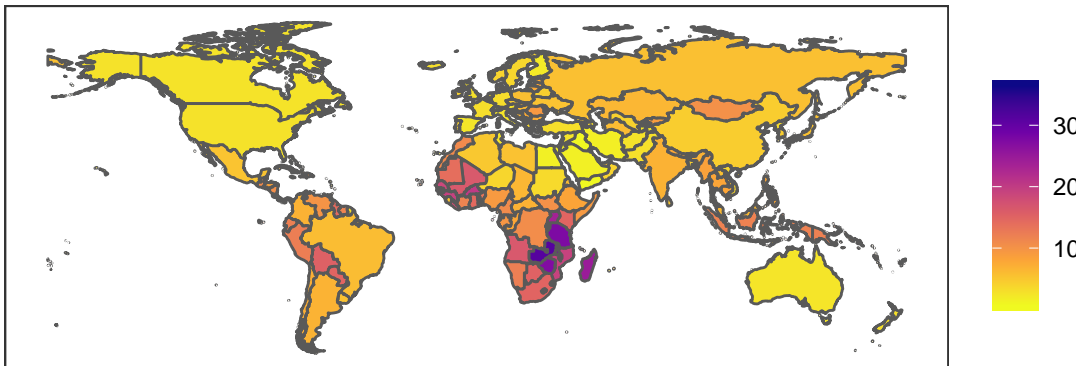
### Deaths averted per 1000 vaccinated girls



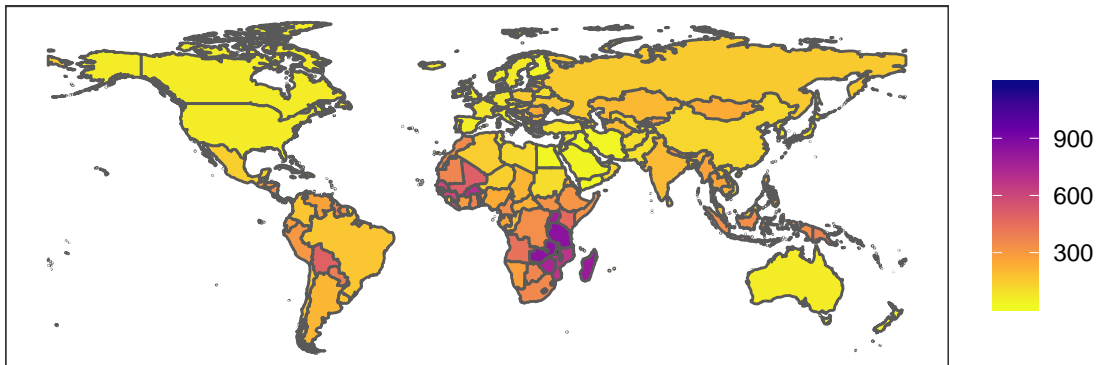
### DALYs averted per 1000 vaccinated girls



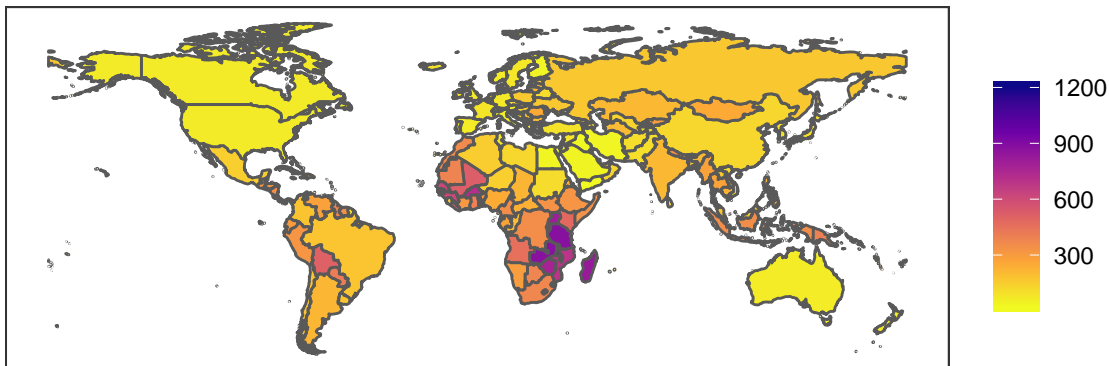
### YLDs averted per 1000 vaccinated girls



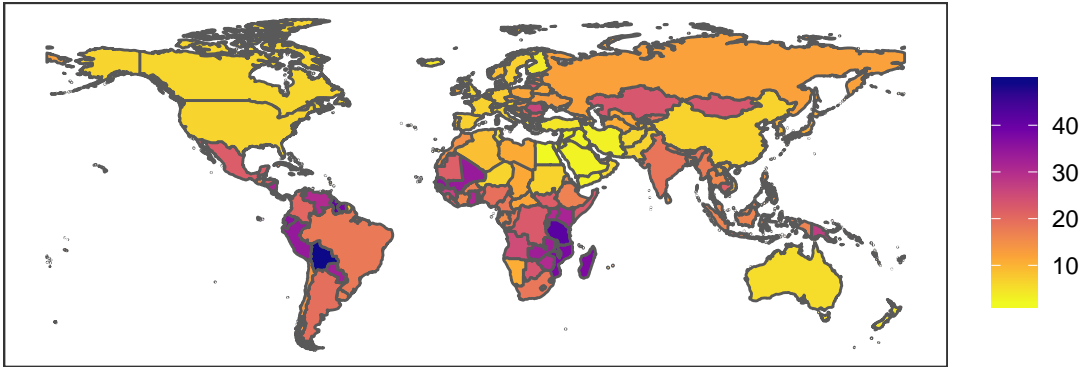
### YLLs averted per 1000 vaccinated girls



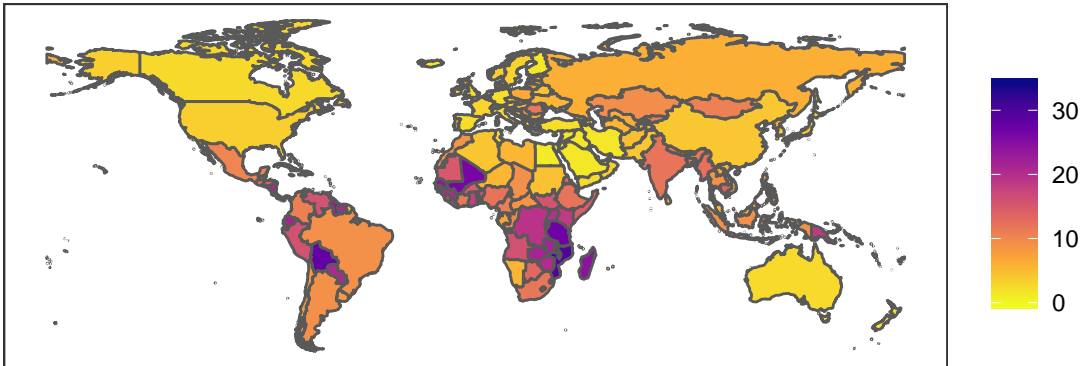
### DALYs averted per 1000 vaccinated girls



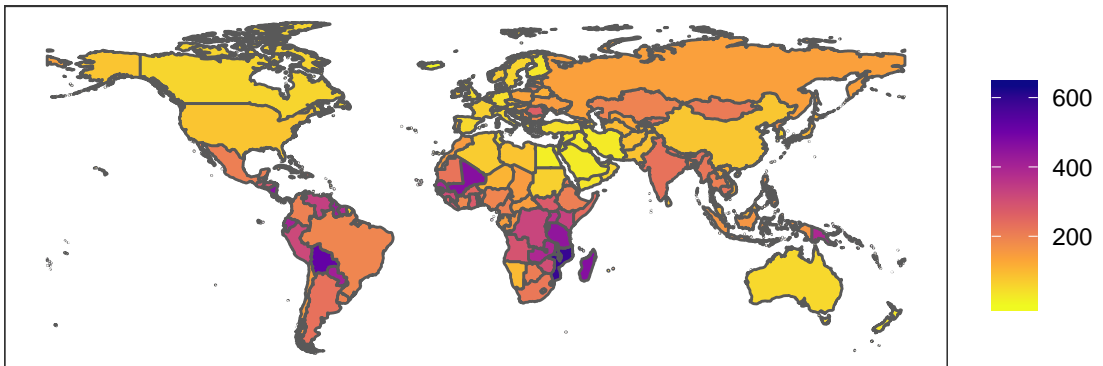
### Cases averted per 1000 vaccinated girls



### Deaths averted per 1000 vaccinated girls

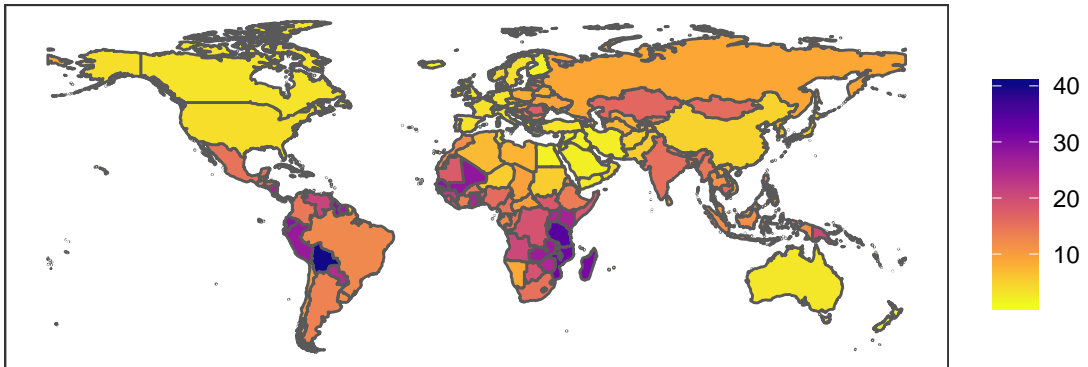


### DALYs averted per 1000 vaccinated girls

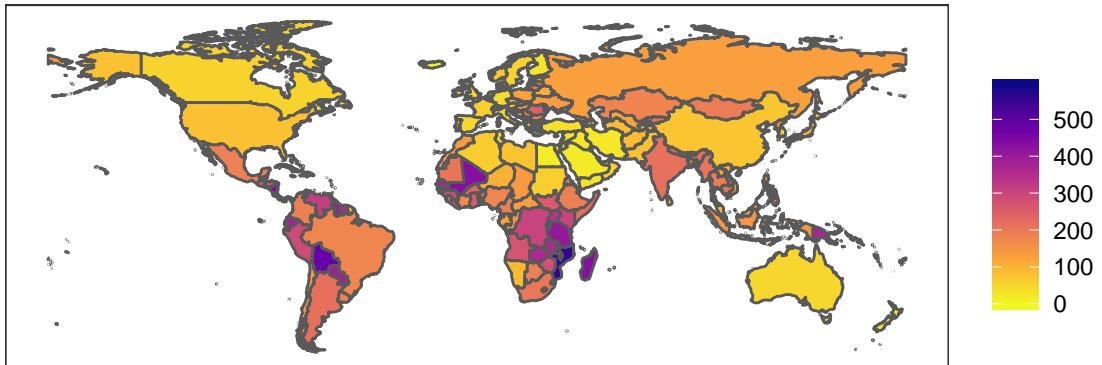




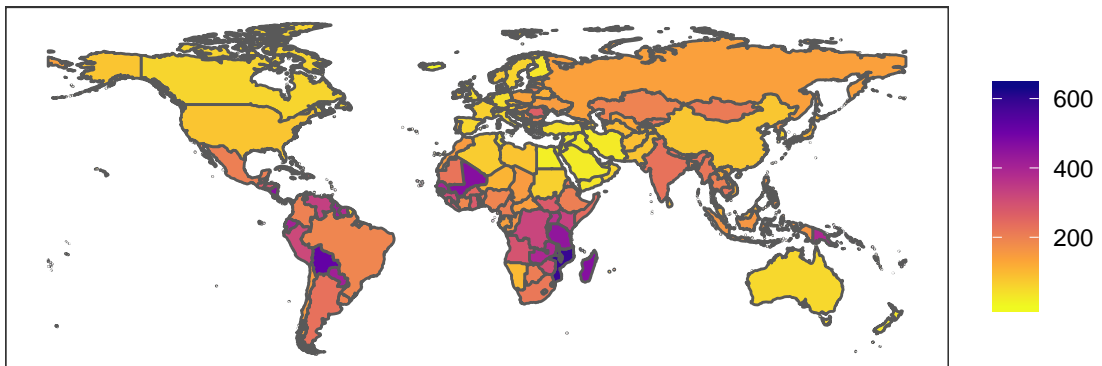
### YLDs averted per 1000 vaccinated girls



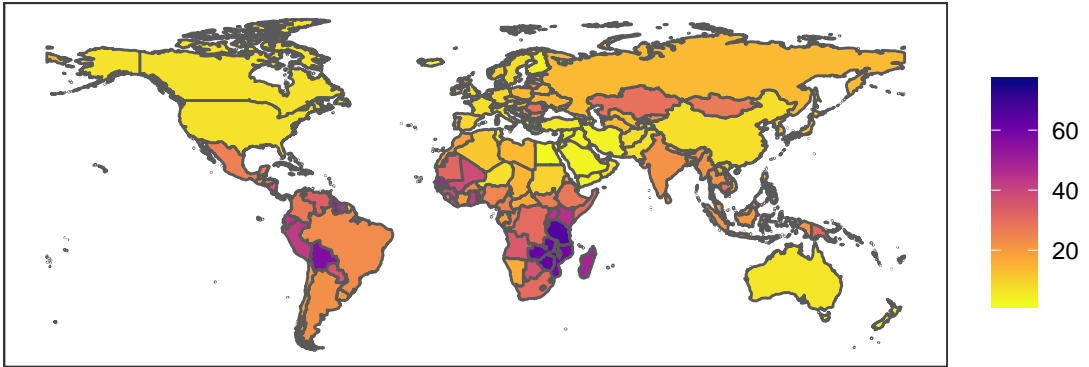
### YLLs averted per 1000 vaccinated girls



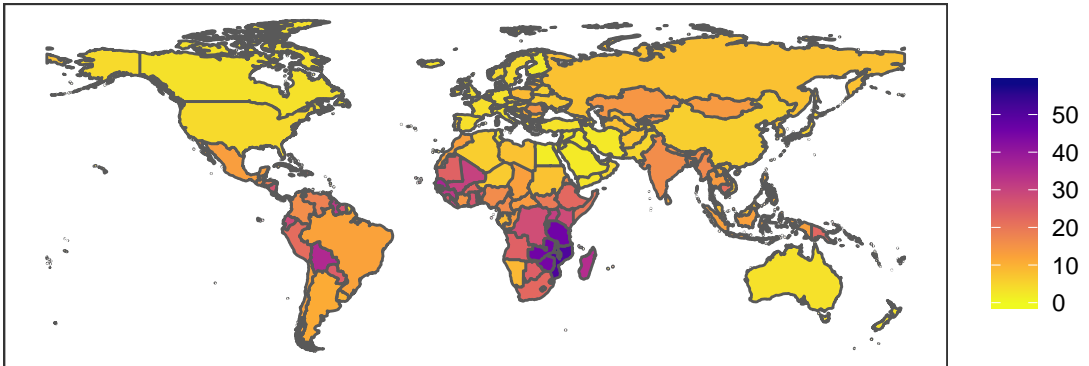
### DALYs averted per 1000 vaccinated girls



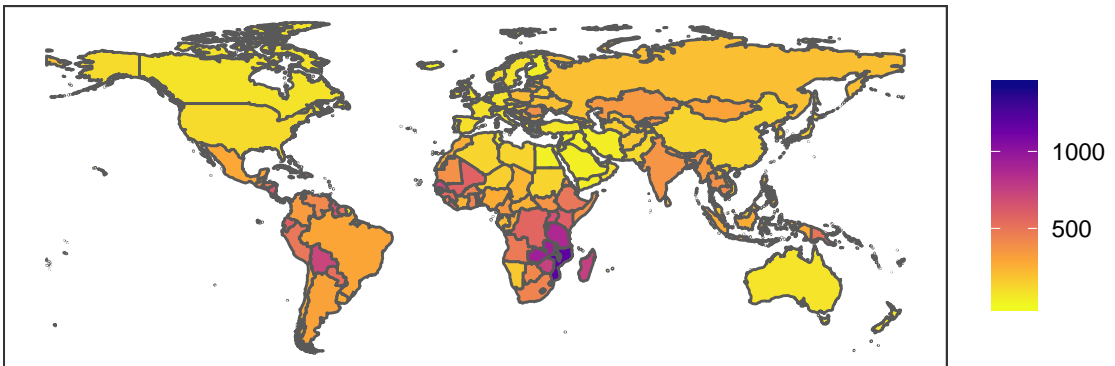
### Cases averted per 1000 vaccinated girls



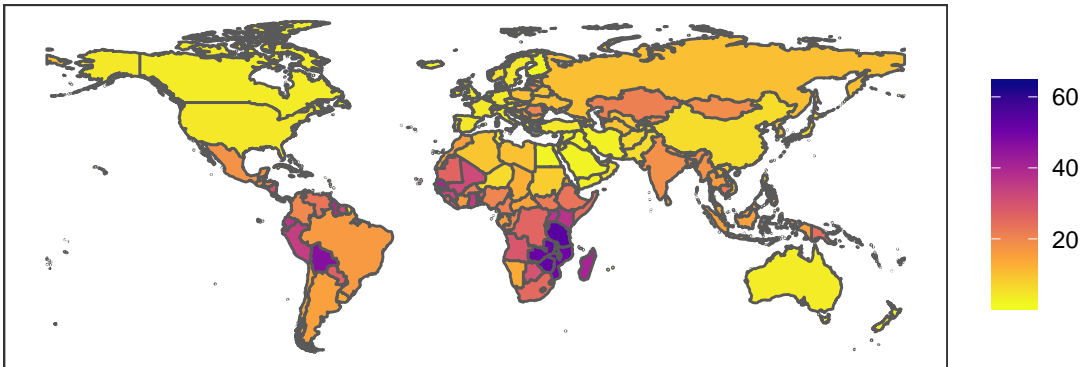
### Deaths averted per 1000 vaccinated girls



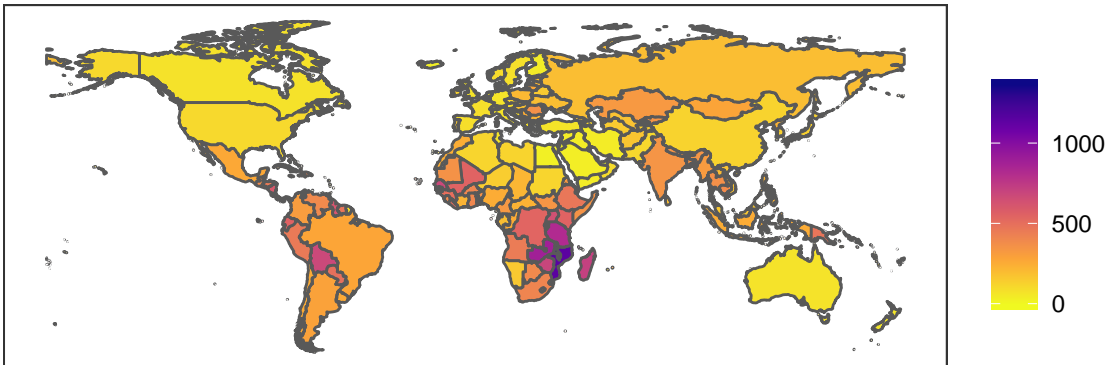
### DALYs averted per 1000 vaccinated girls



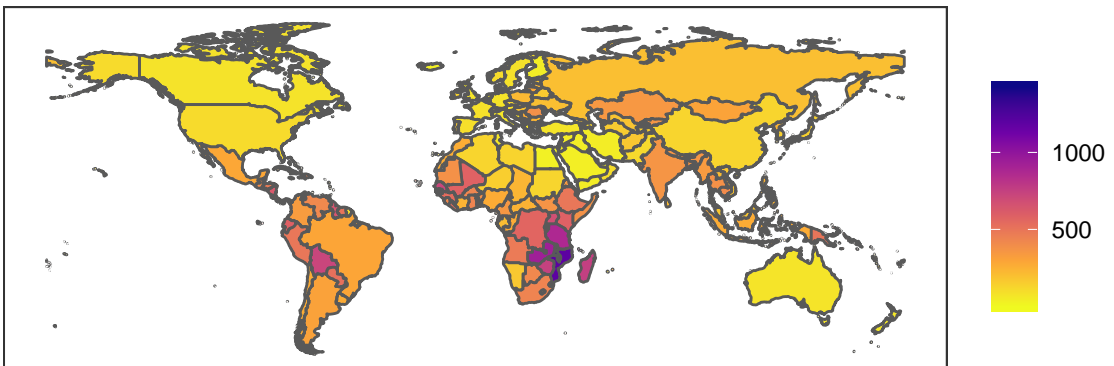
### YLDs averted per 1000 vaccinated girls



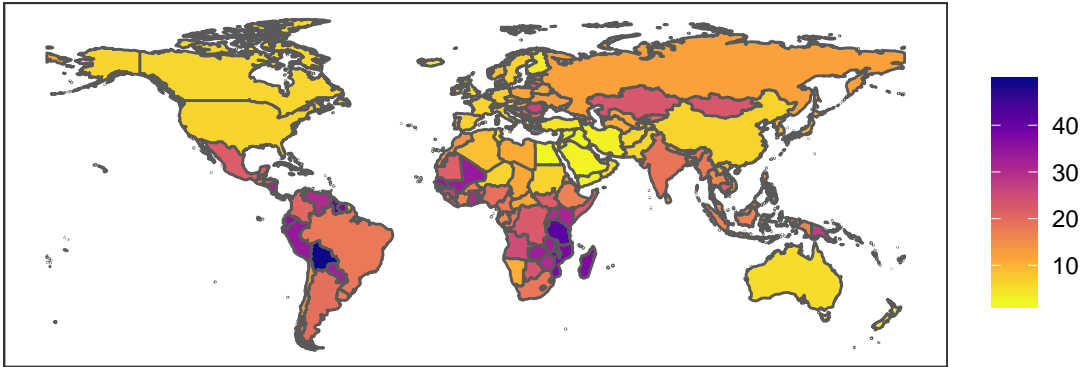
### YLLs averted per 1000 vaccinated girls



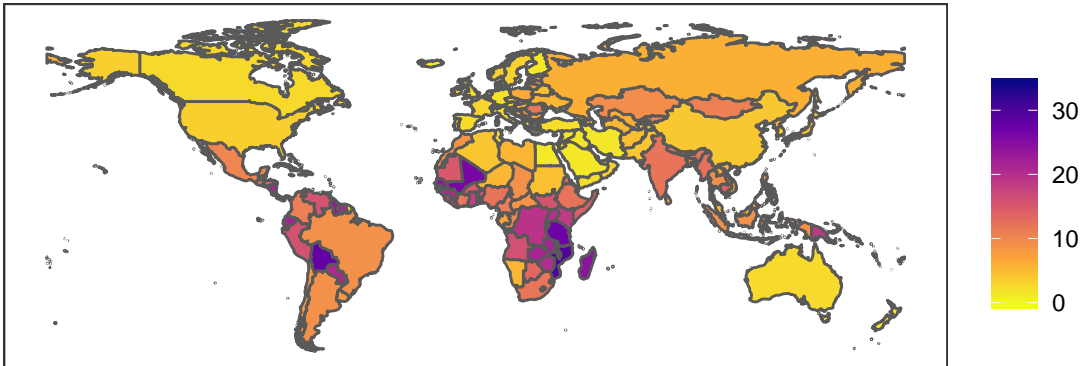
### DALYs averted per 1000 vaccinated girls



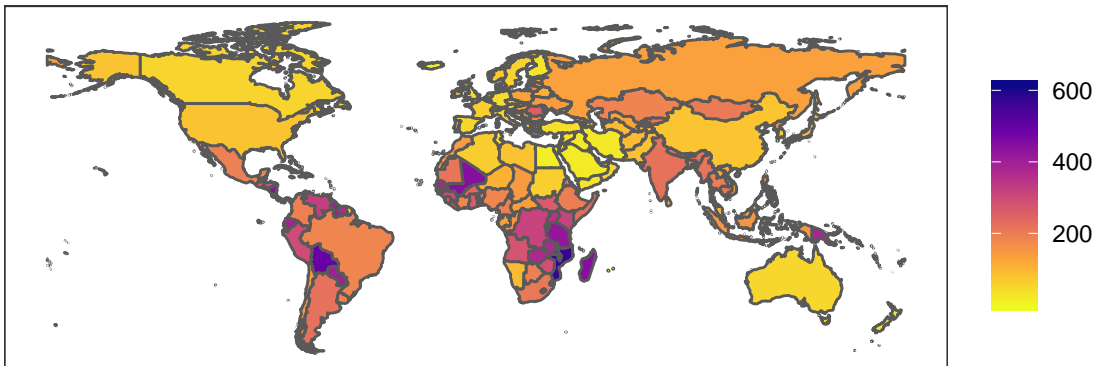
### Cases averted per 1000 vaccinated girls



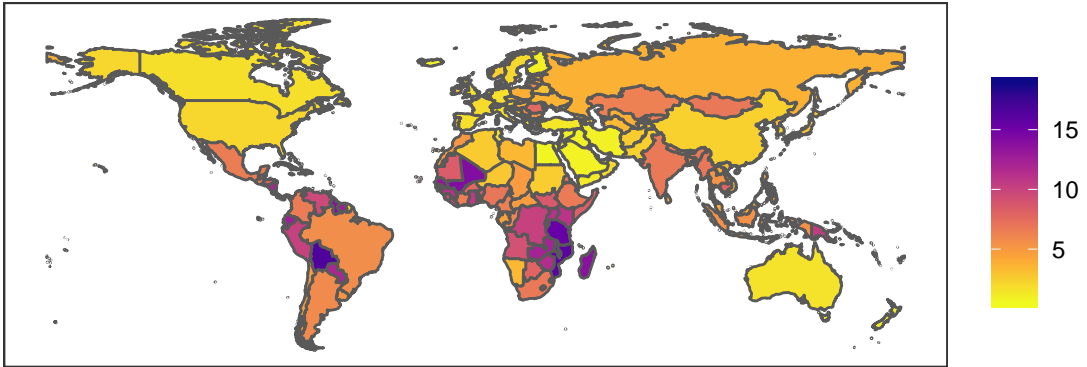
### Deaths averted per 1000 vaccinated girls



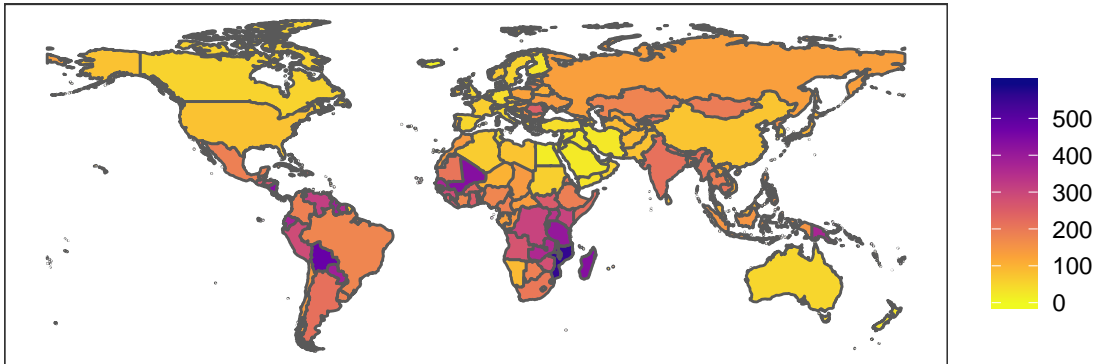
### DALYs averted per 1000 vaccinated girls



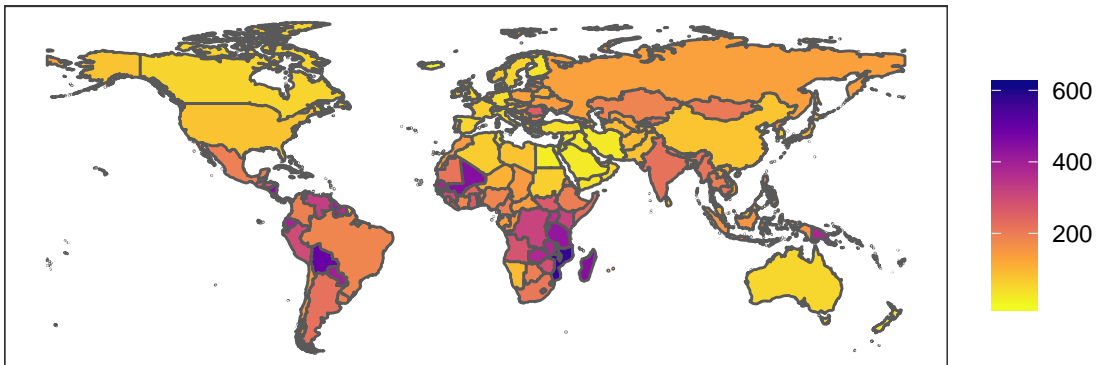
### YLDs averted per 1000 vaccinated girls



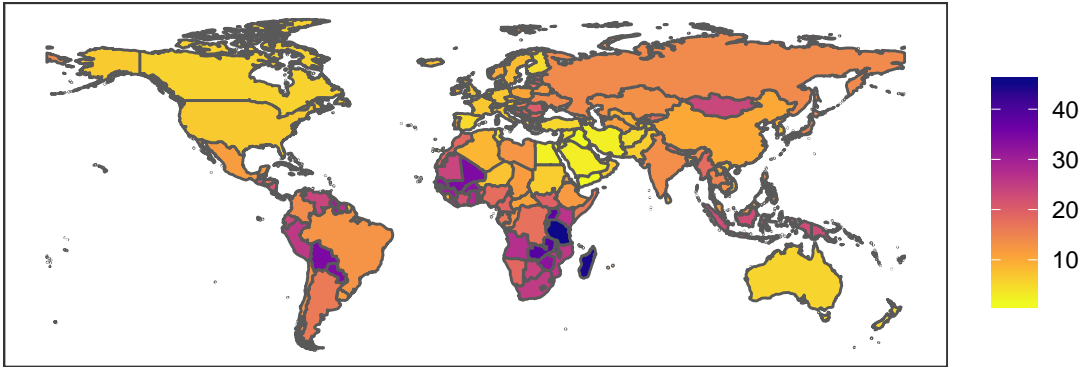
### YLLs averted per 1000 vaccinated girls



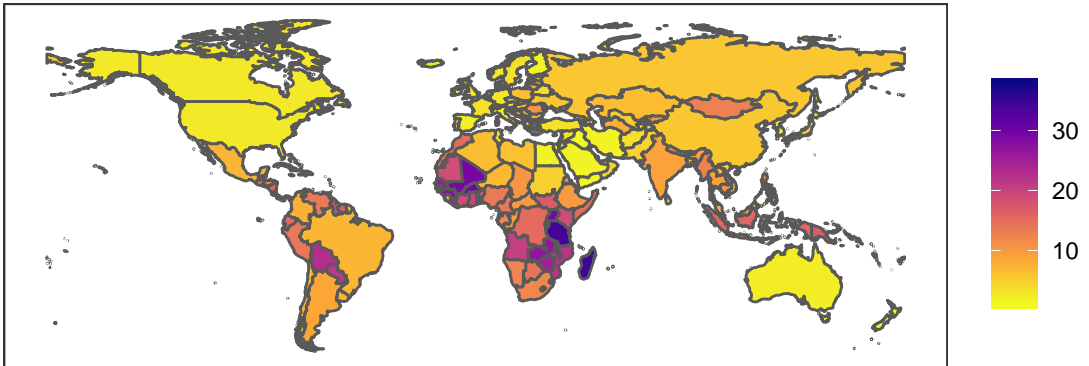
### DALYs averted per 1000 vaccinated girls



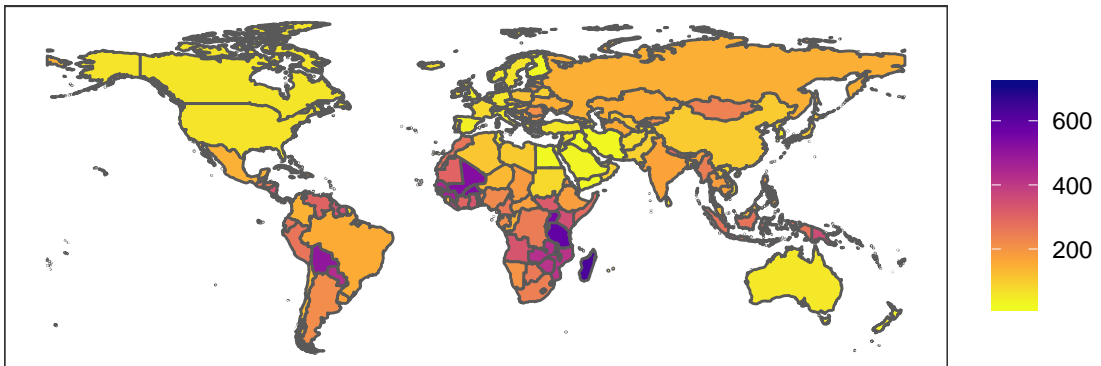
### Cases averted per 1000 vaccinated girls



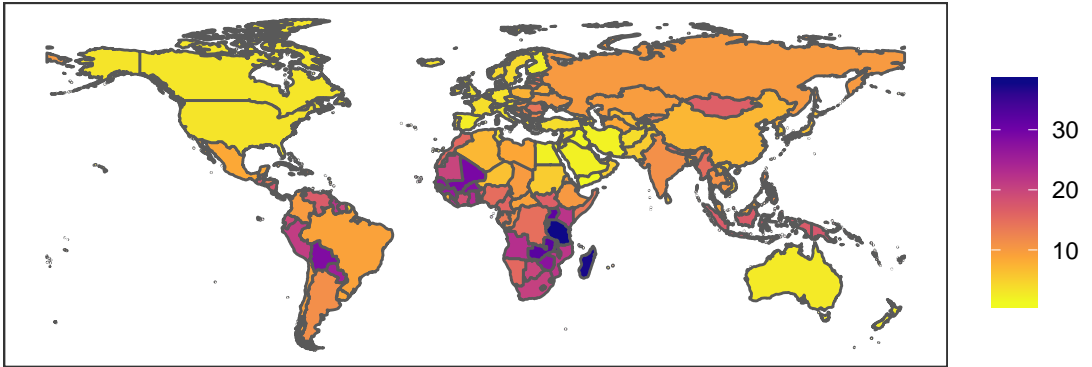
### Deaths averted per 1000 vaccinated girls



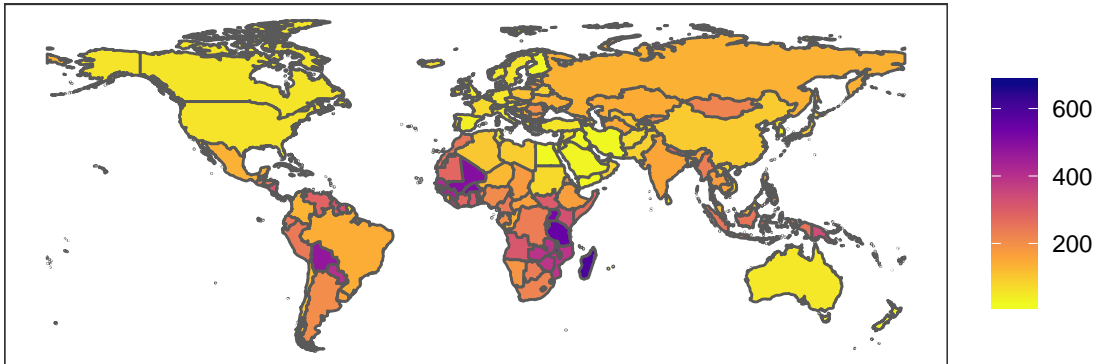
### DALYs averted per 1000 vaccinated girls



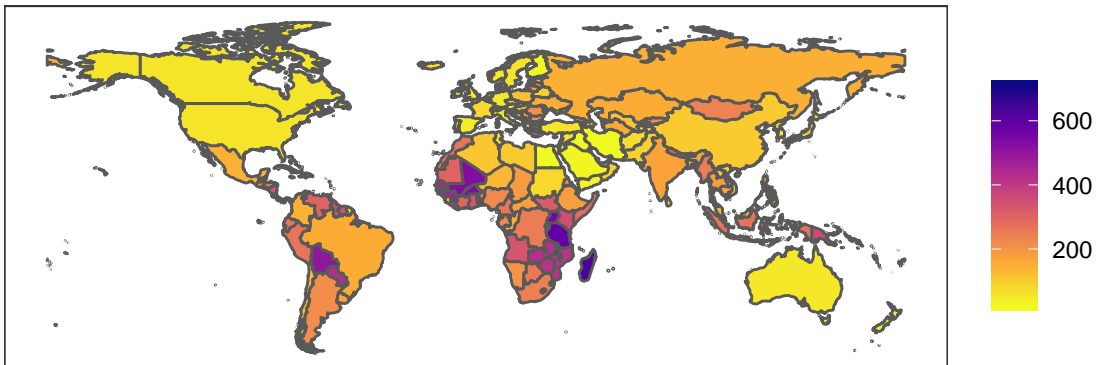
### YLDs averted per 1000 vaccinated girls



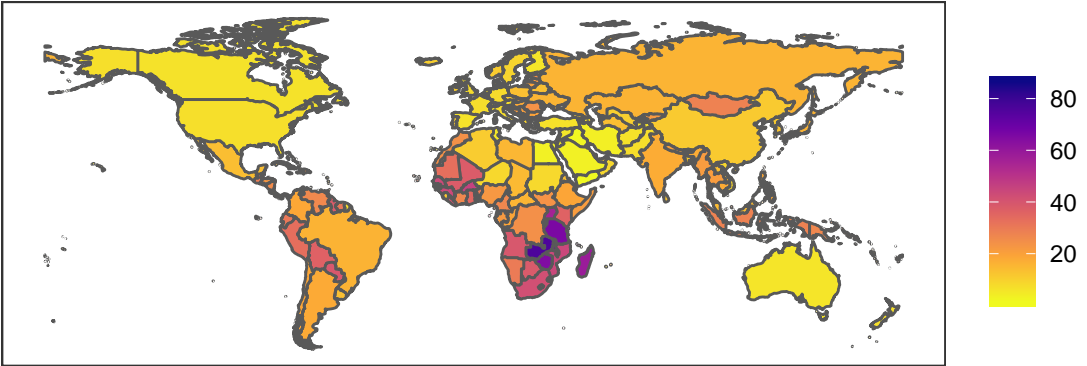
### YLLs averted per 1000 vaccinated girls



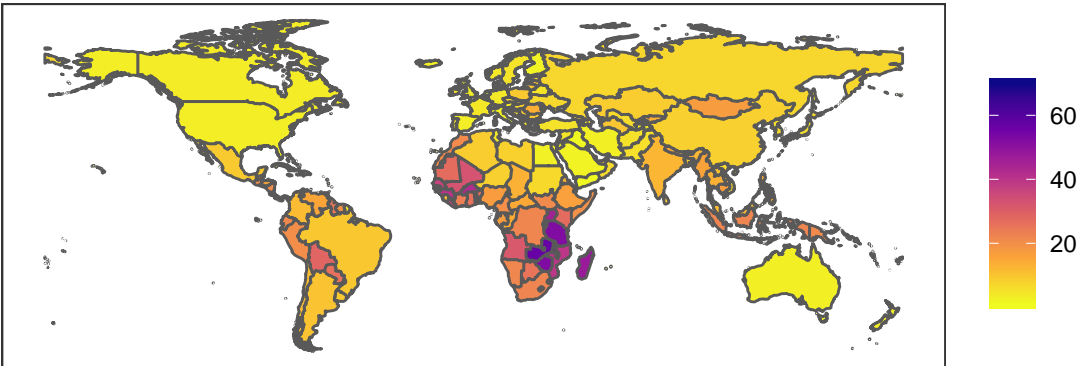
### DALYs averted per 1000 vaccinated girls



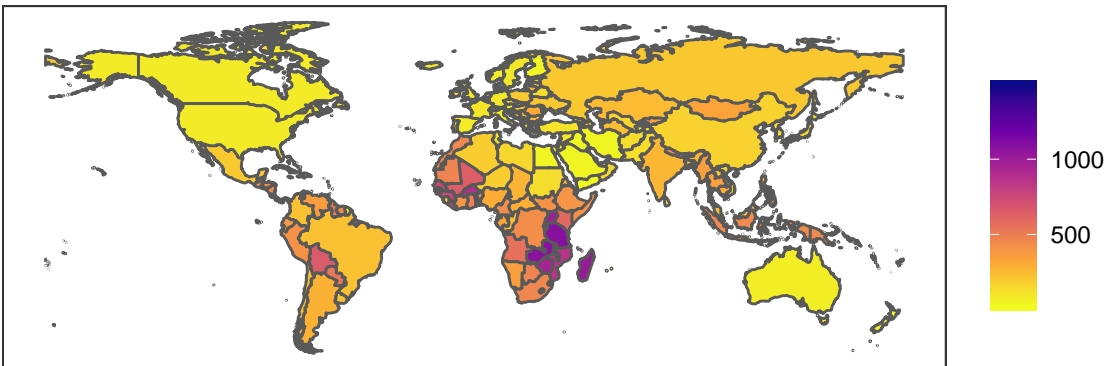
### Cases averted per 1000 vaccinated girls



### Deaths averted per 1000 vaccinated girls

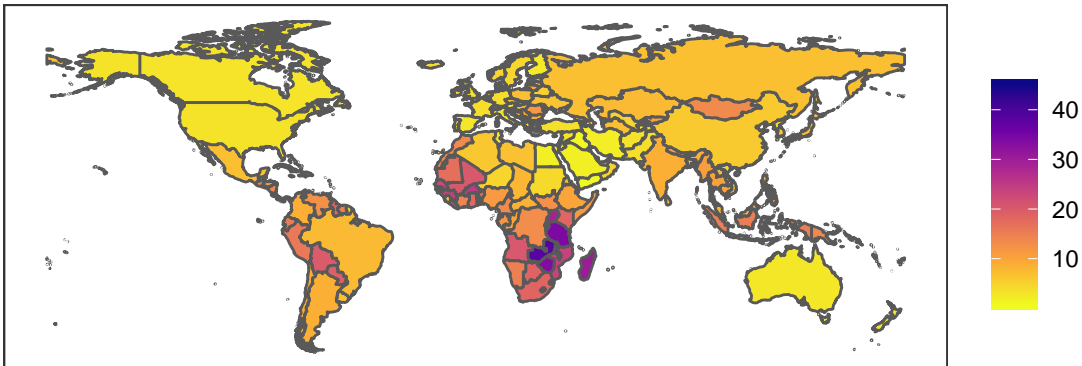


### DALYs averted per 1000 vaccinated girls

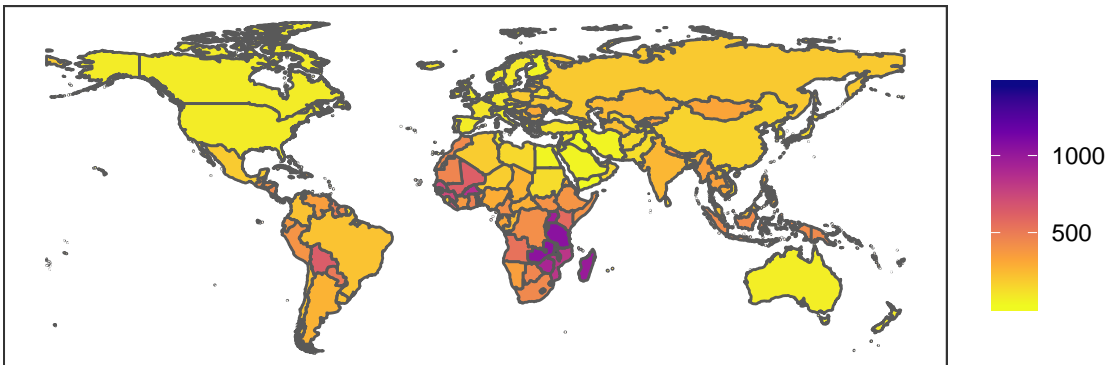




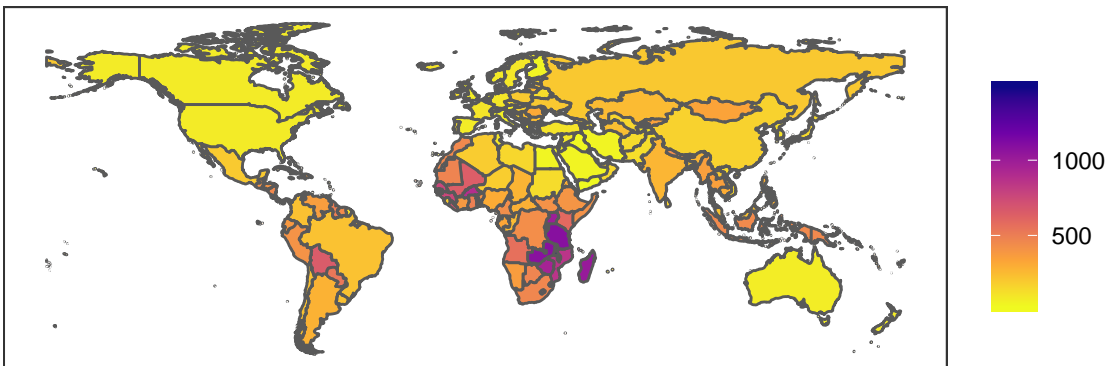
### YLDs averted per 1000 vaccinated girls



### YLLs averted per 1000 vaccinated girls



### DALYs averted per 1000 vaccinated girls



#### **A16. Vaccination impact per 1000 vaccinated girls at the national level**

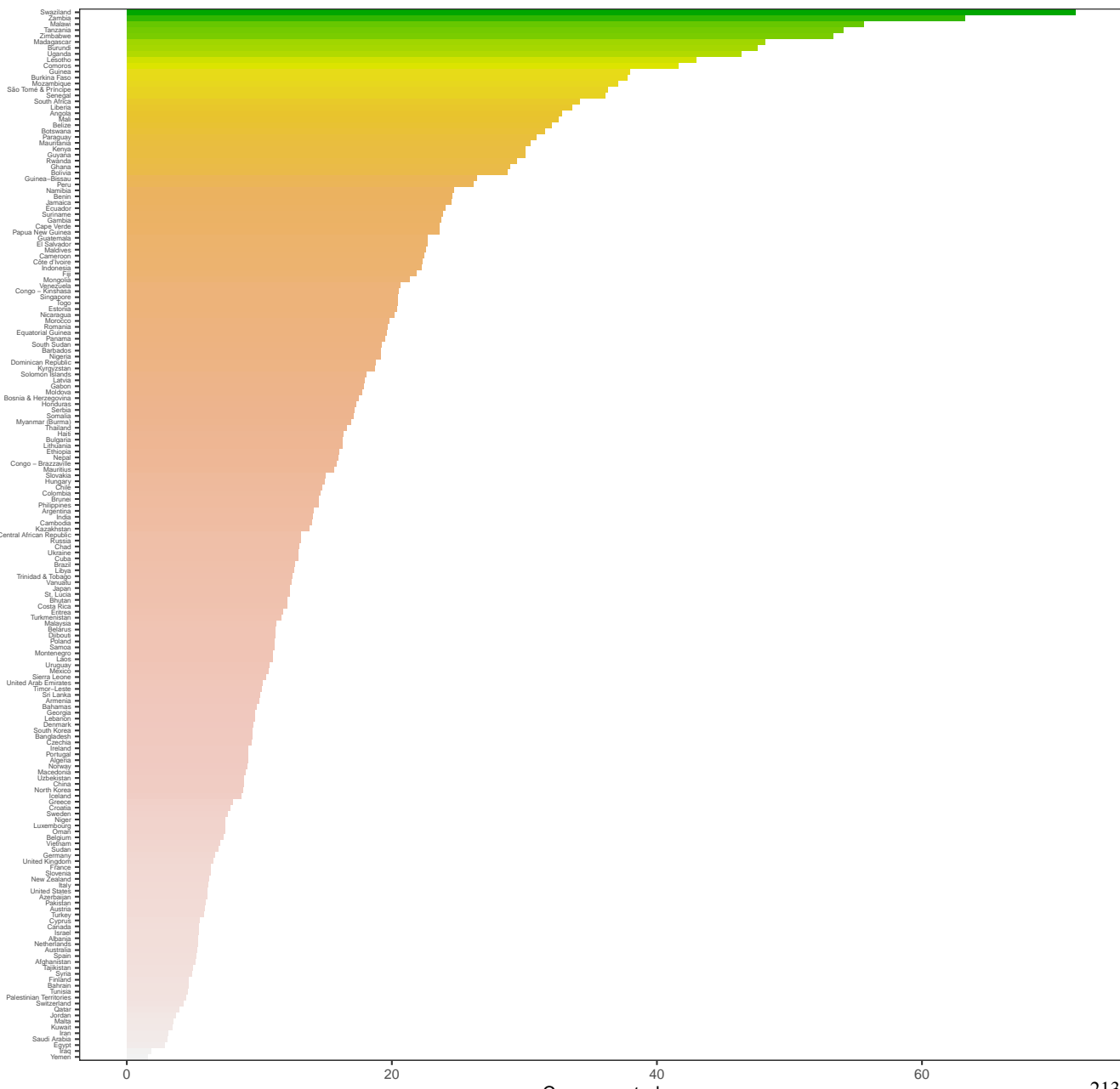
Lifetime health impact of HPV vaccination on cases, deaths, YLLs, YLDs and DALYs averted per 1000 vaccinated girls in 177 countries for the 5 comparative scenarios for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls.

See appendix 2 for data on the lifetime health impact of HPV vaccination.

**A17. Vaccination impact per 1000 vaccinated girls at the national level – updated PRIME estimates**

Lifetime health impact of HPV vaccination on cases, deaths, YLLs, YLDs and DALYs averted per 1000 vaccinated girls in 177 countries for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls (estimates after the combined PRIME updates for demography, disability weights and cervical cancer burden).

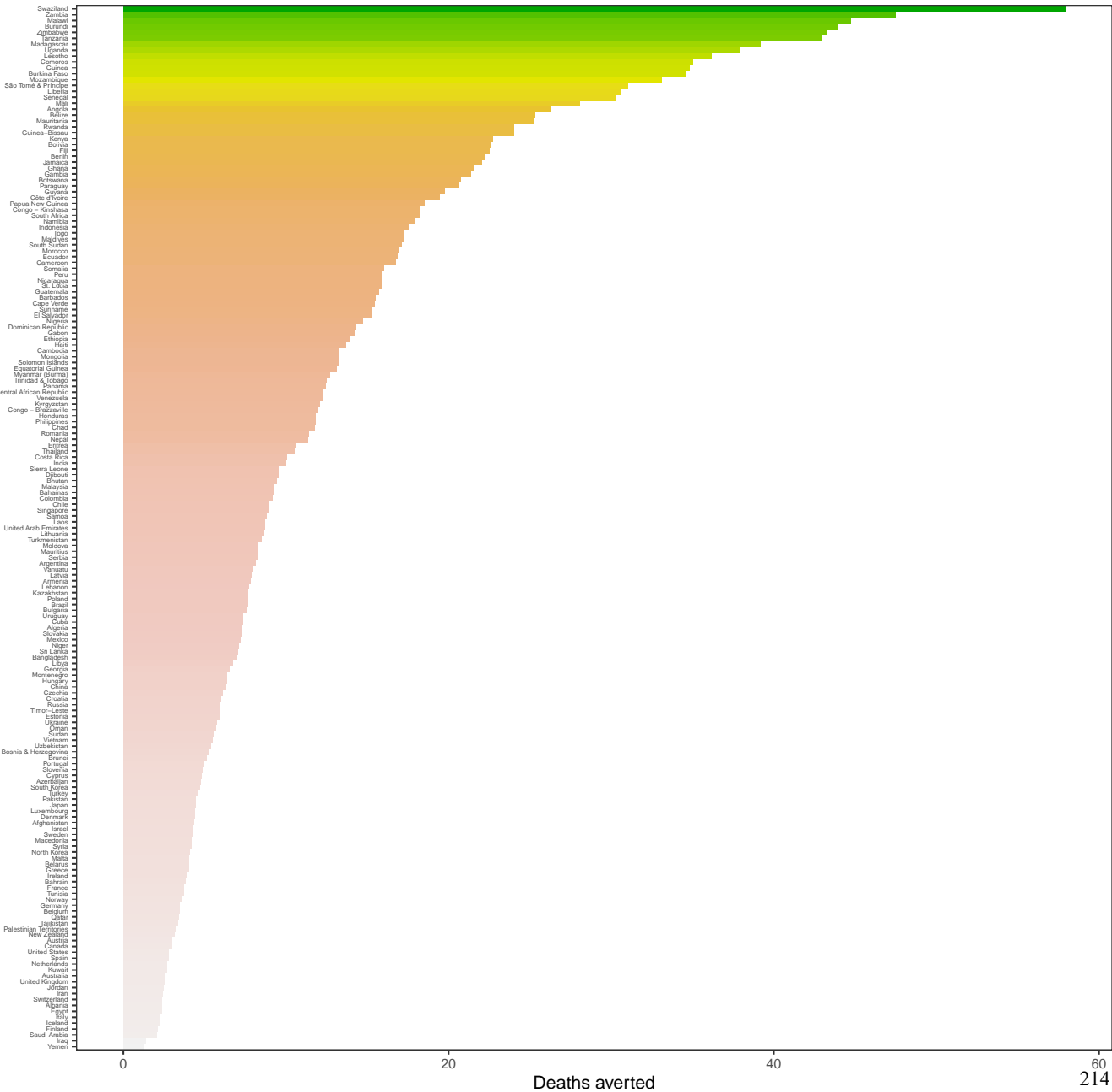
# Cases averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)



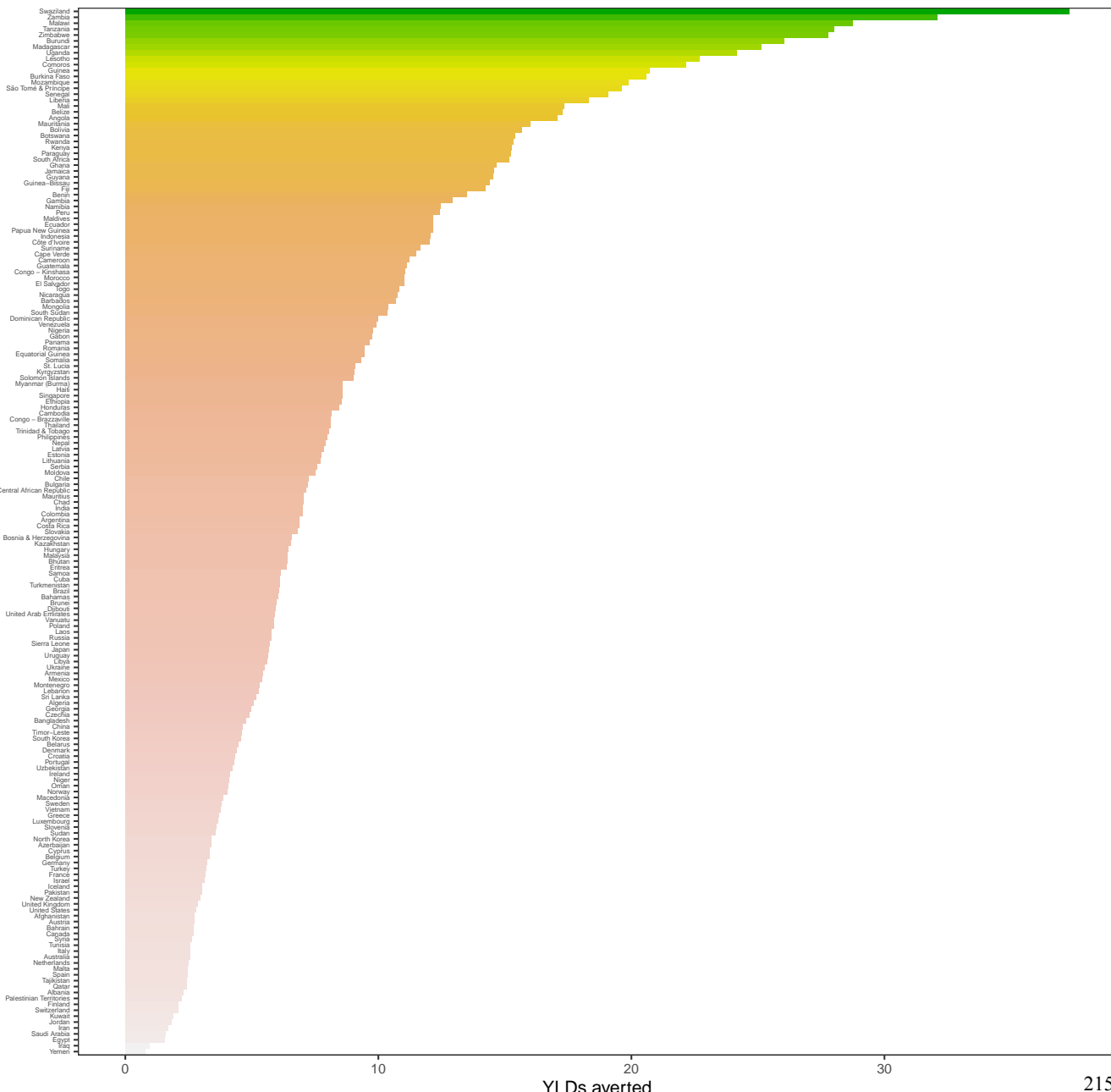
Cases averted

213

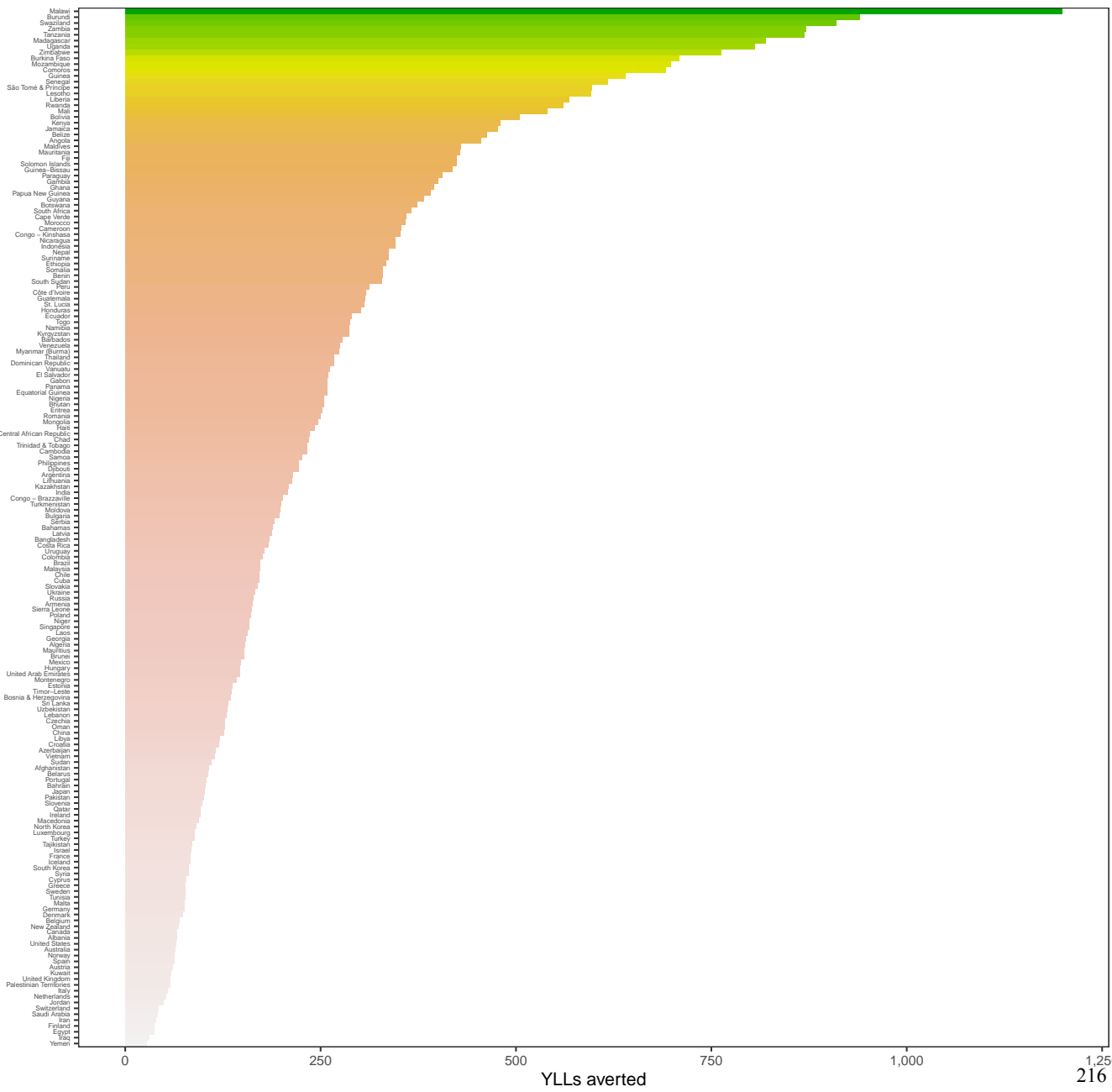
# Deaths averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)



# YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)



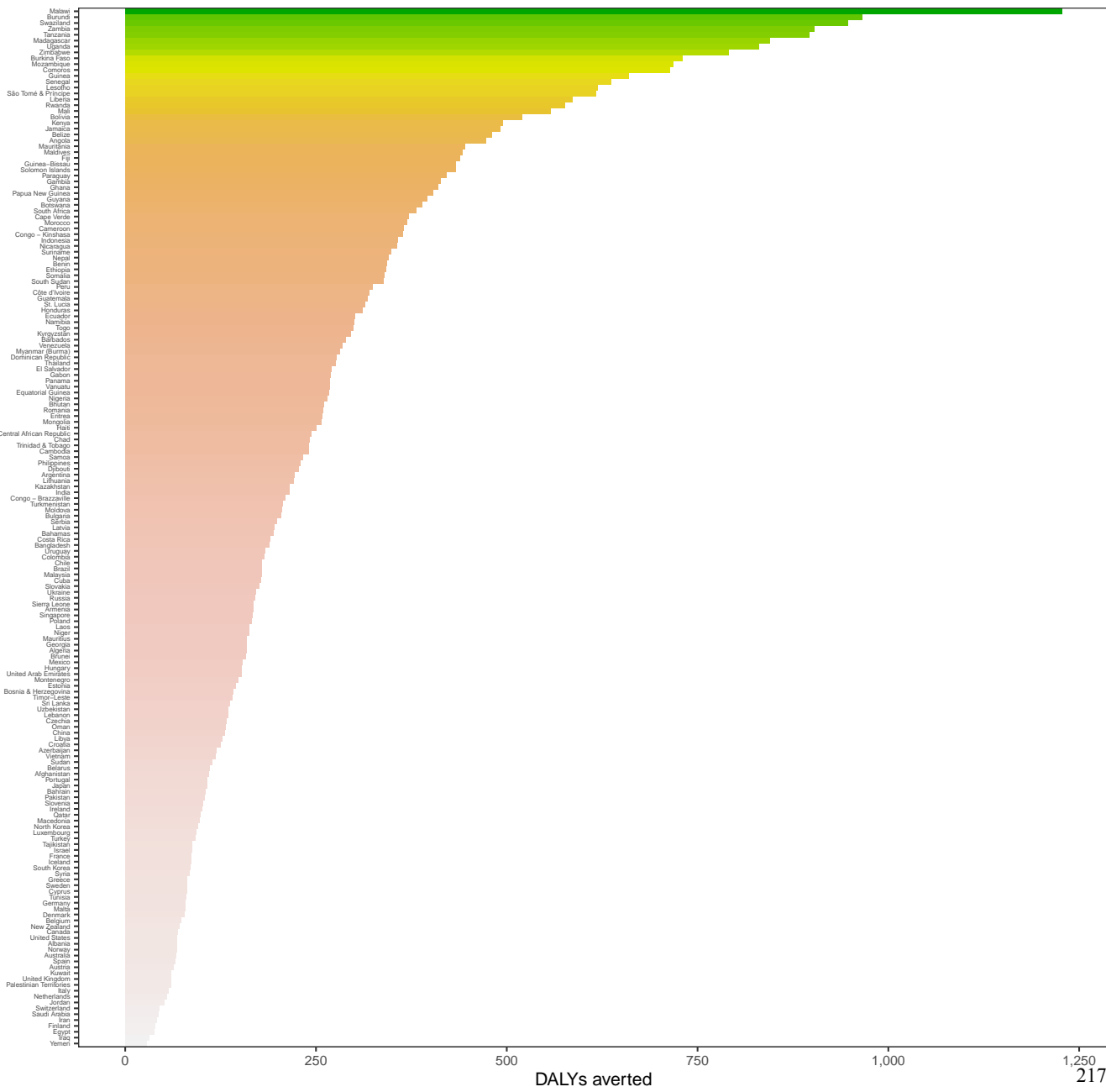
# YLLs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)



YLLs averted

1,250  
216

# DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)



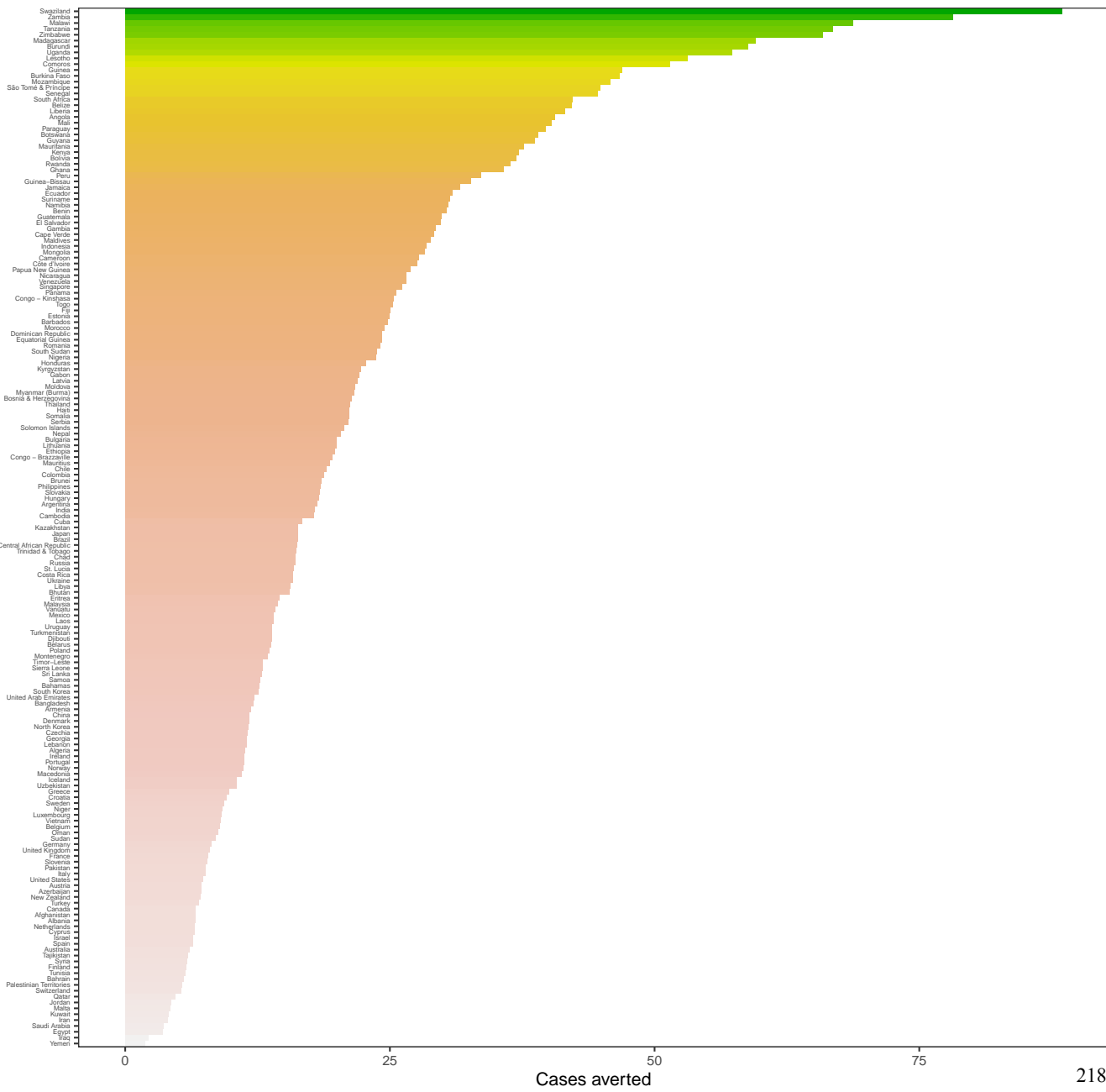
DALYs averted

1,250

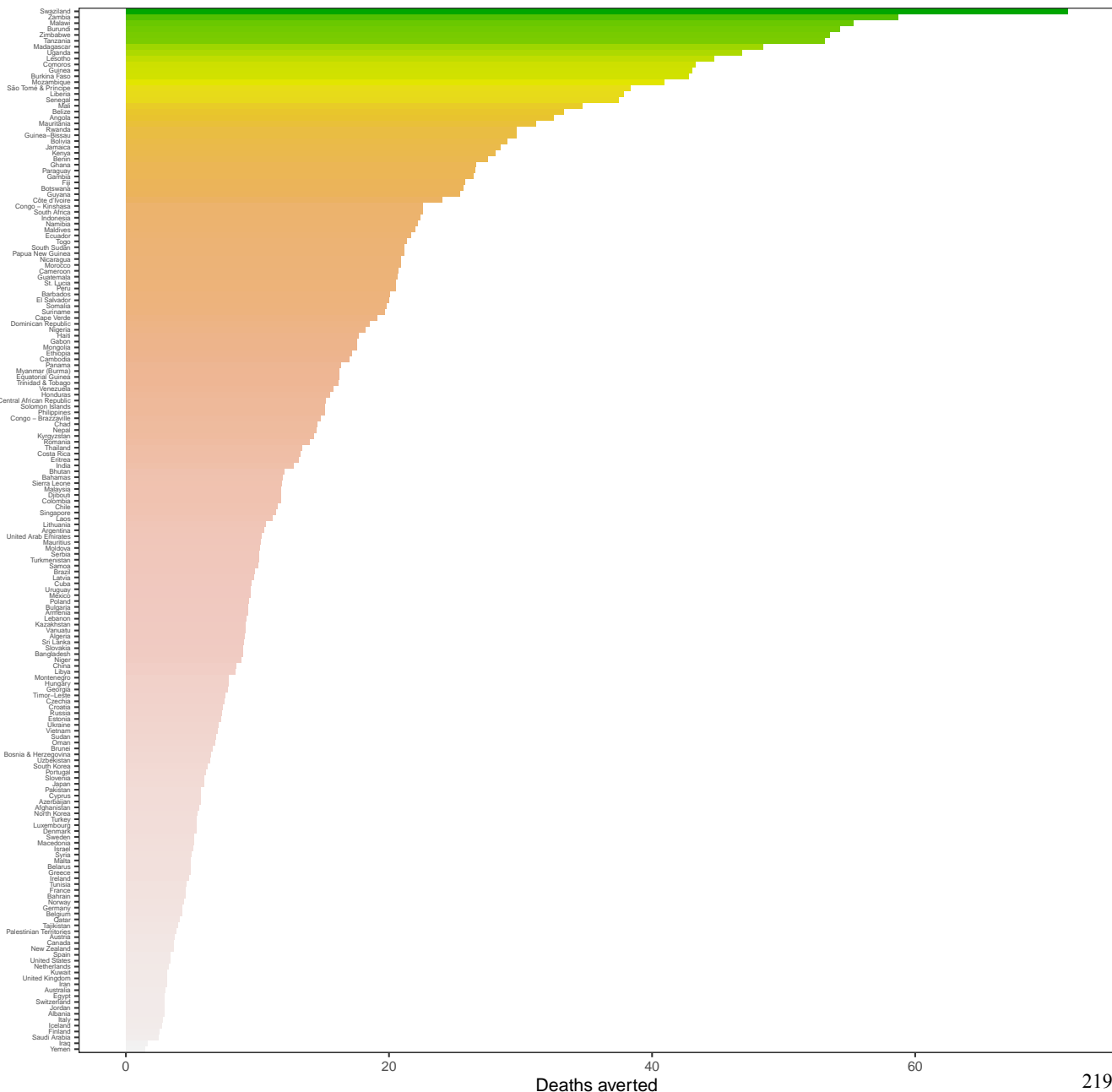
217



# Cases averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)



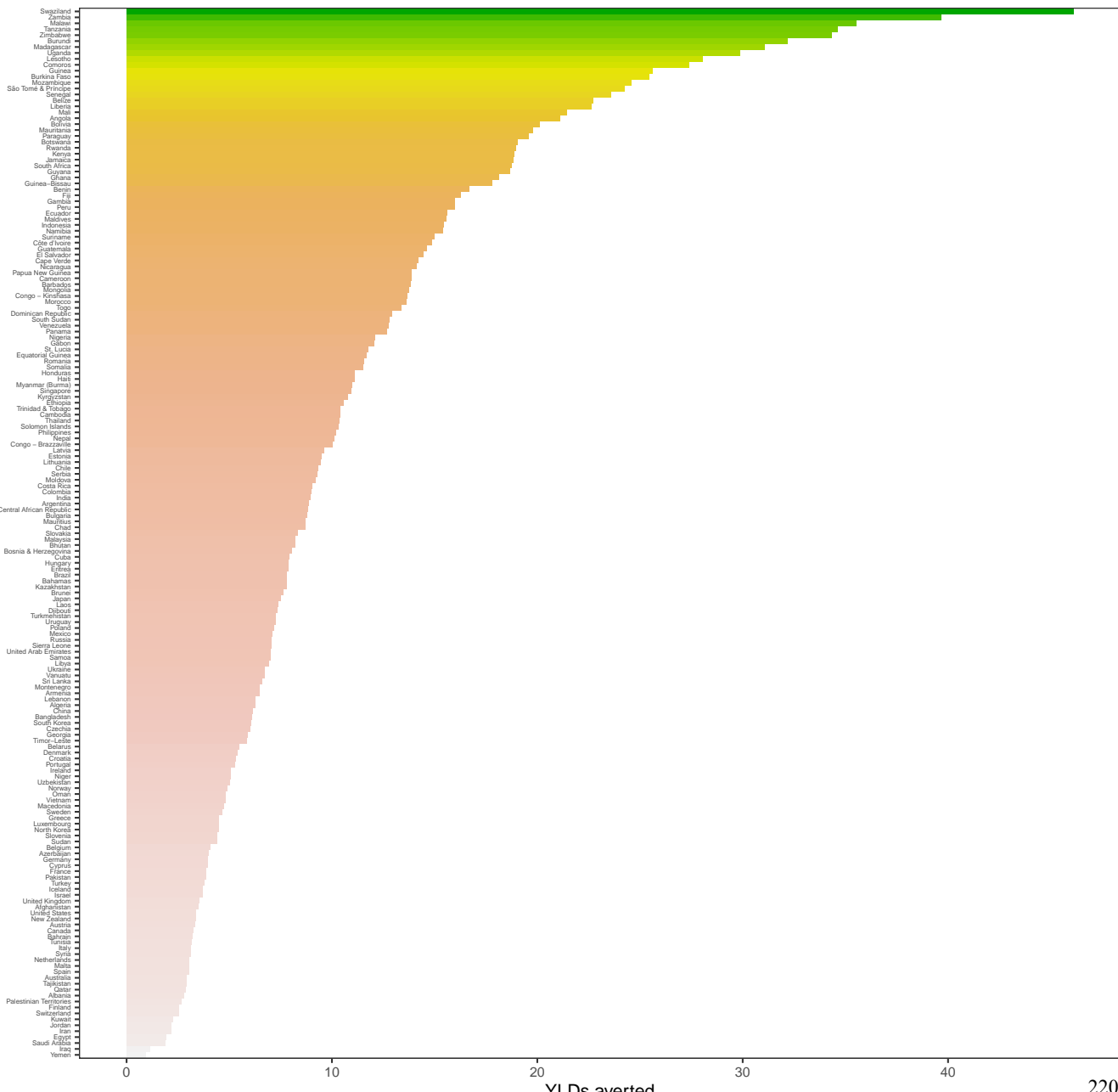
# Deaths averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)



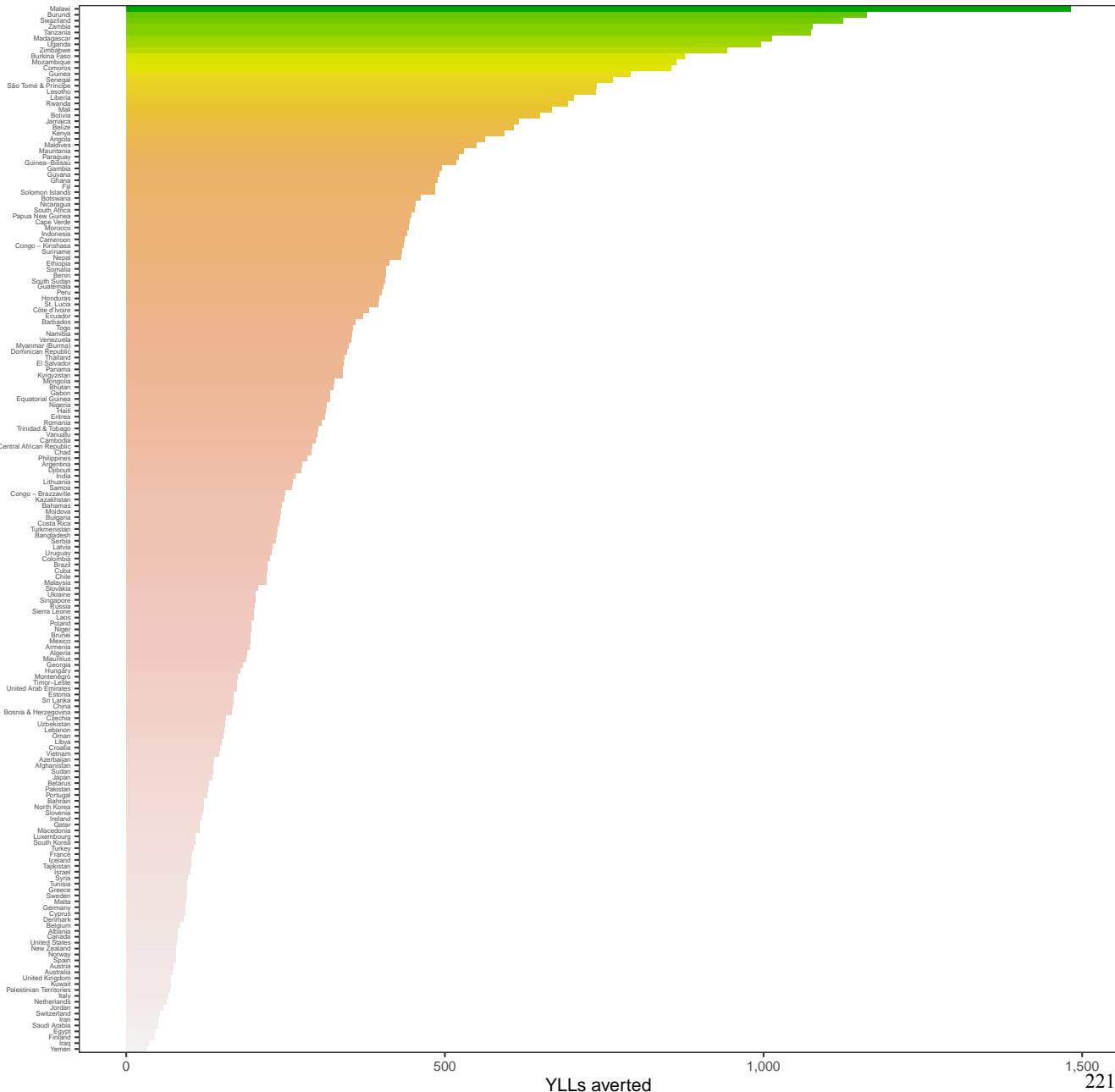
Deaths averted

219

# YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)



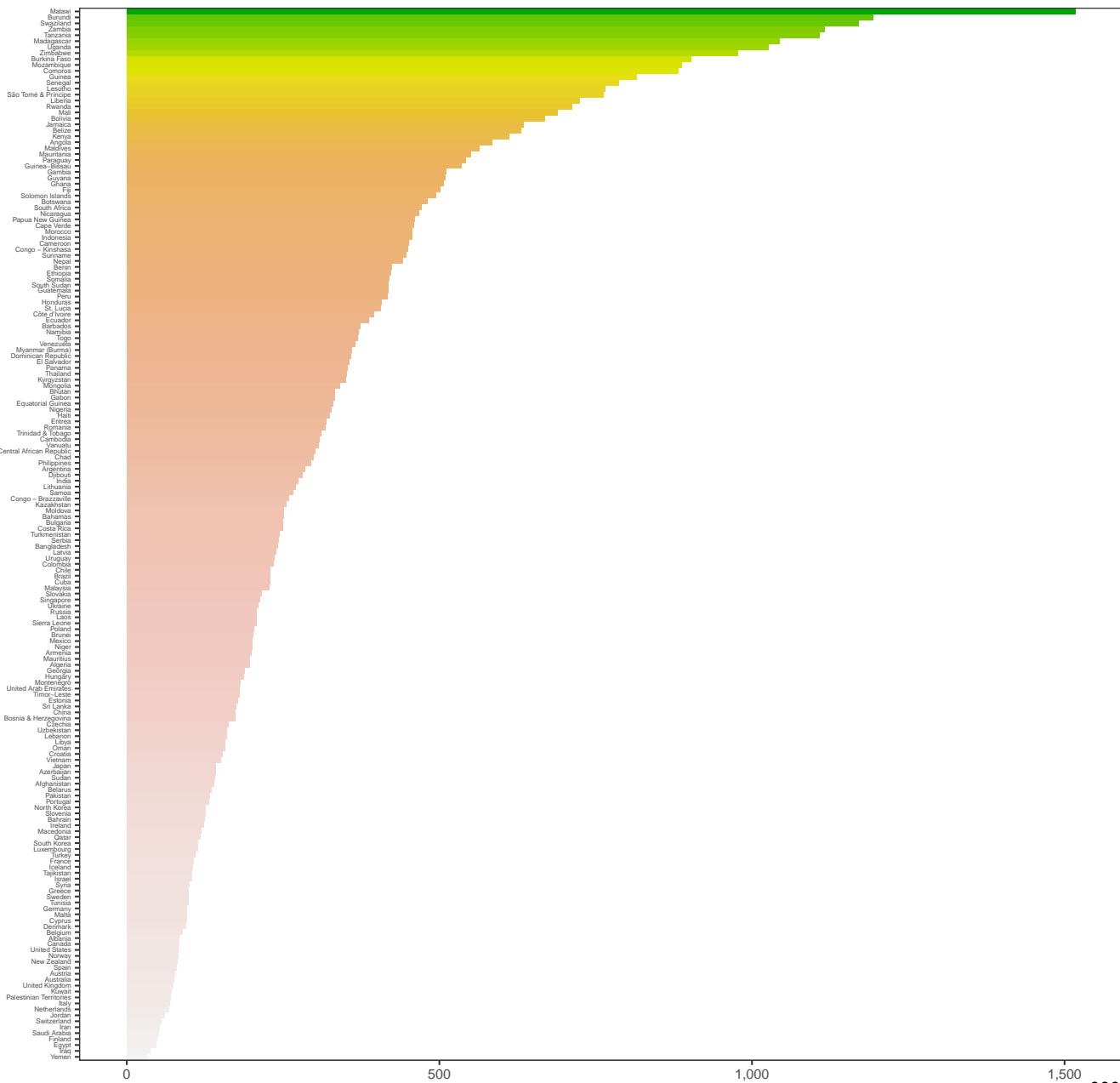
# YLLs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)



YLLs averted

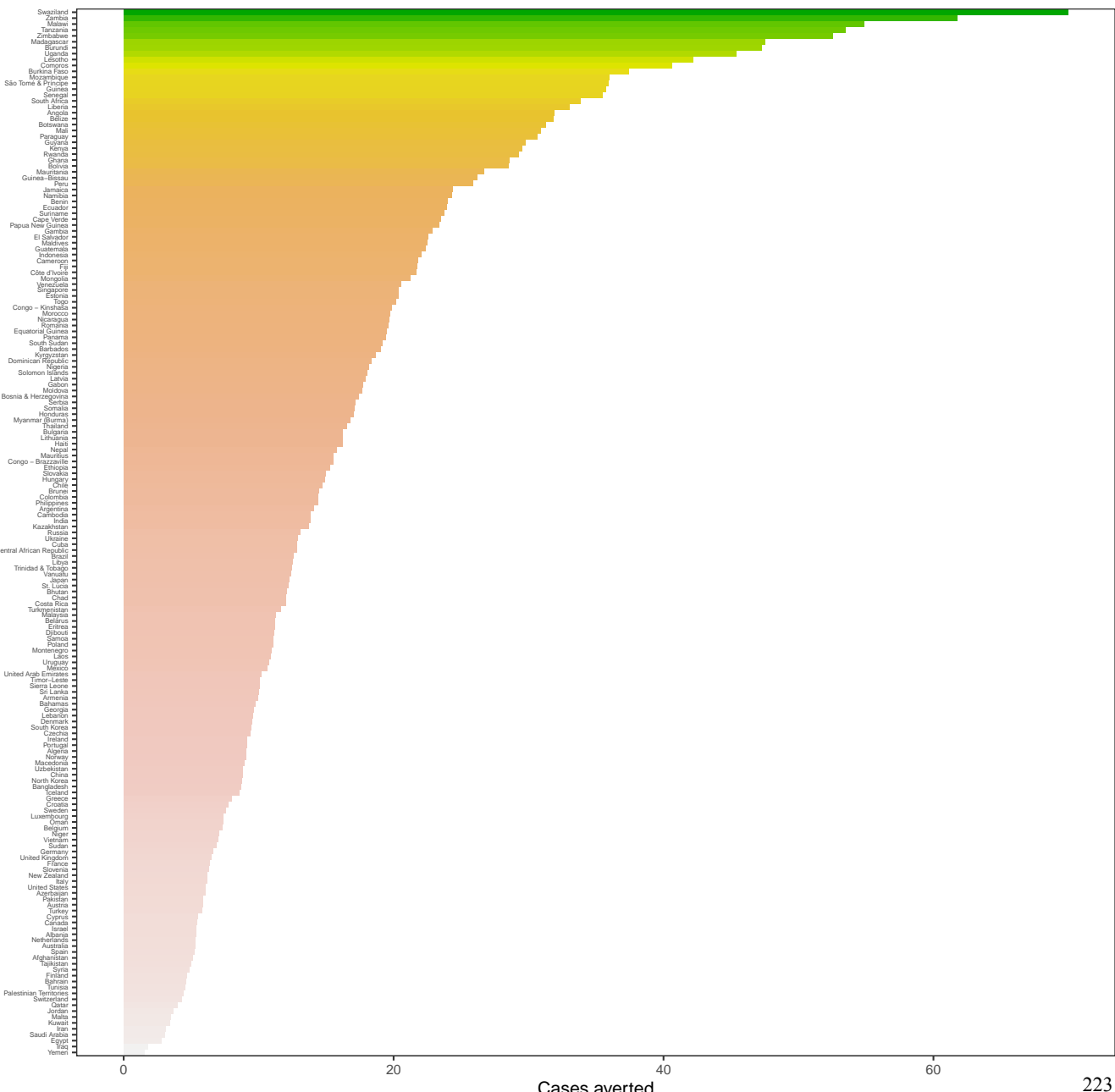
221

# DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

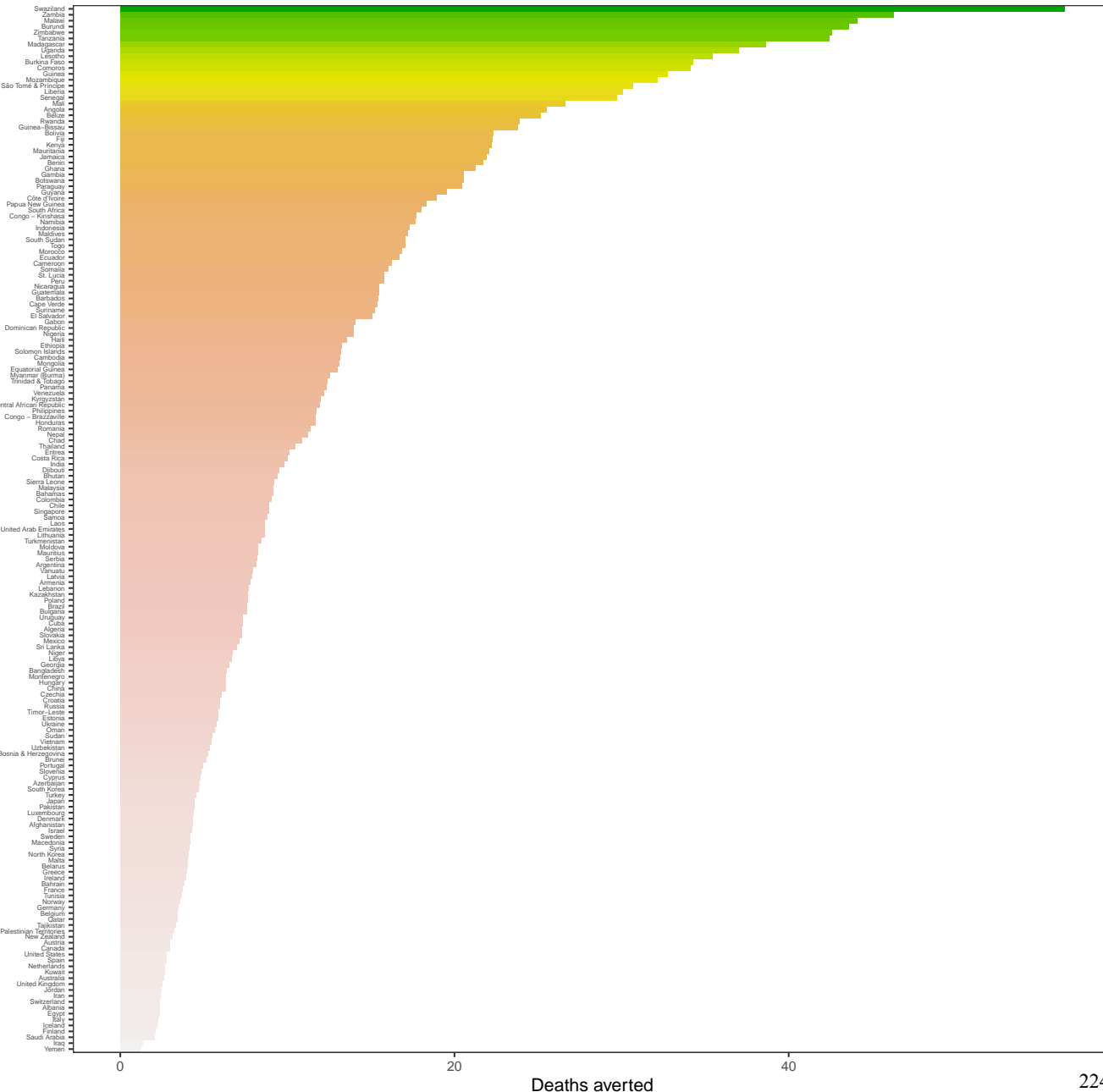


DALYs averted

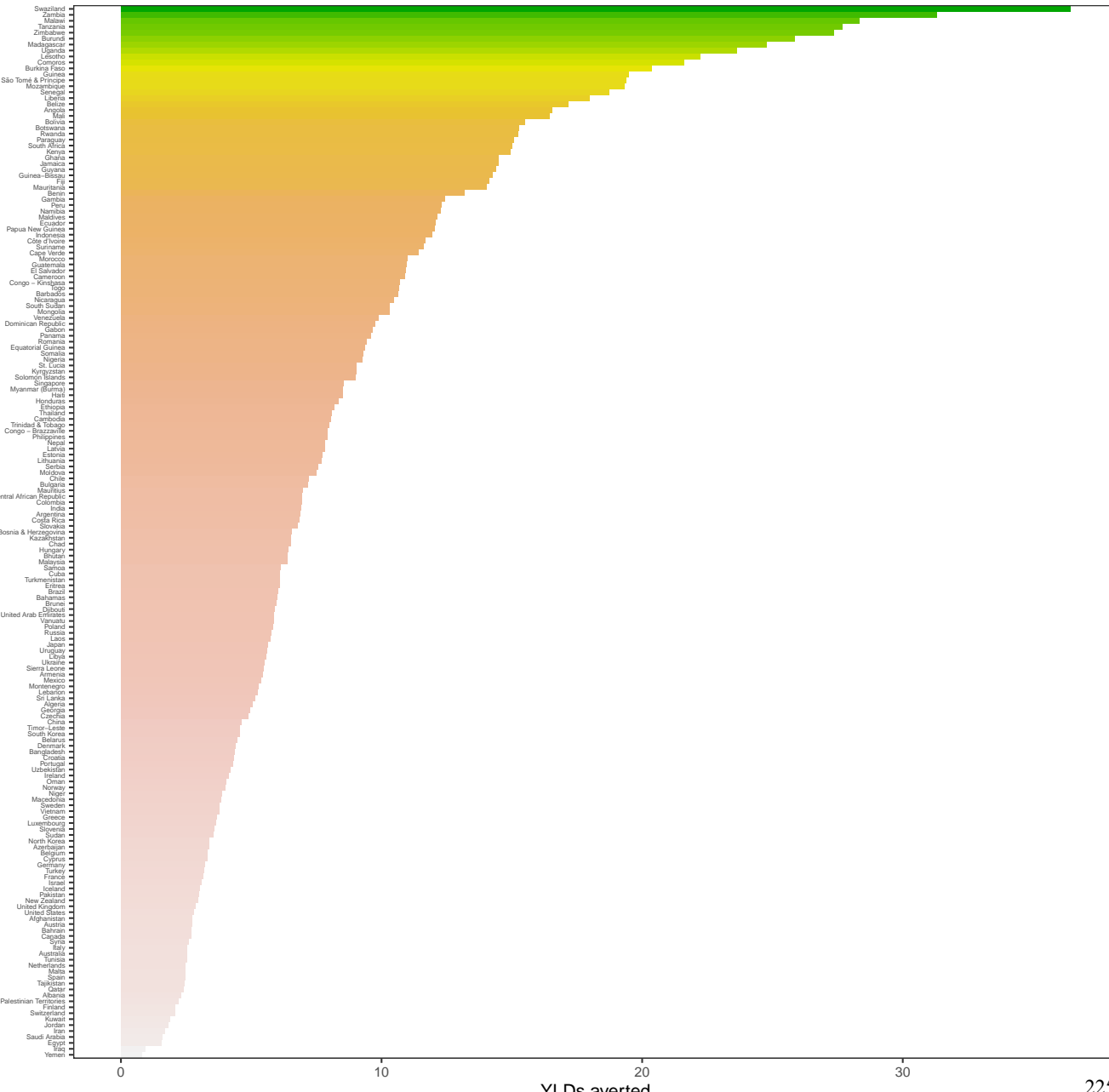
# Cases averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)



# Deaths averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

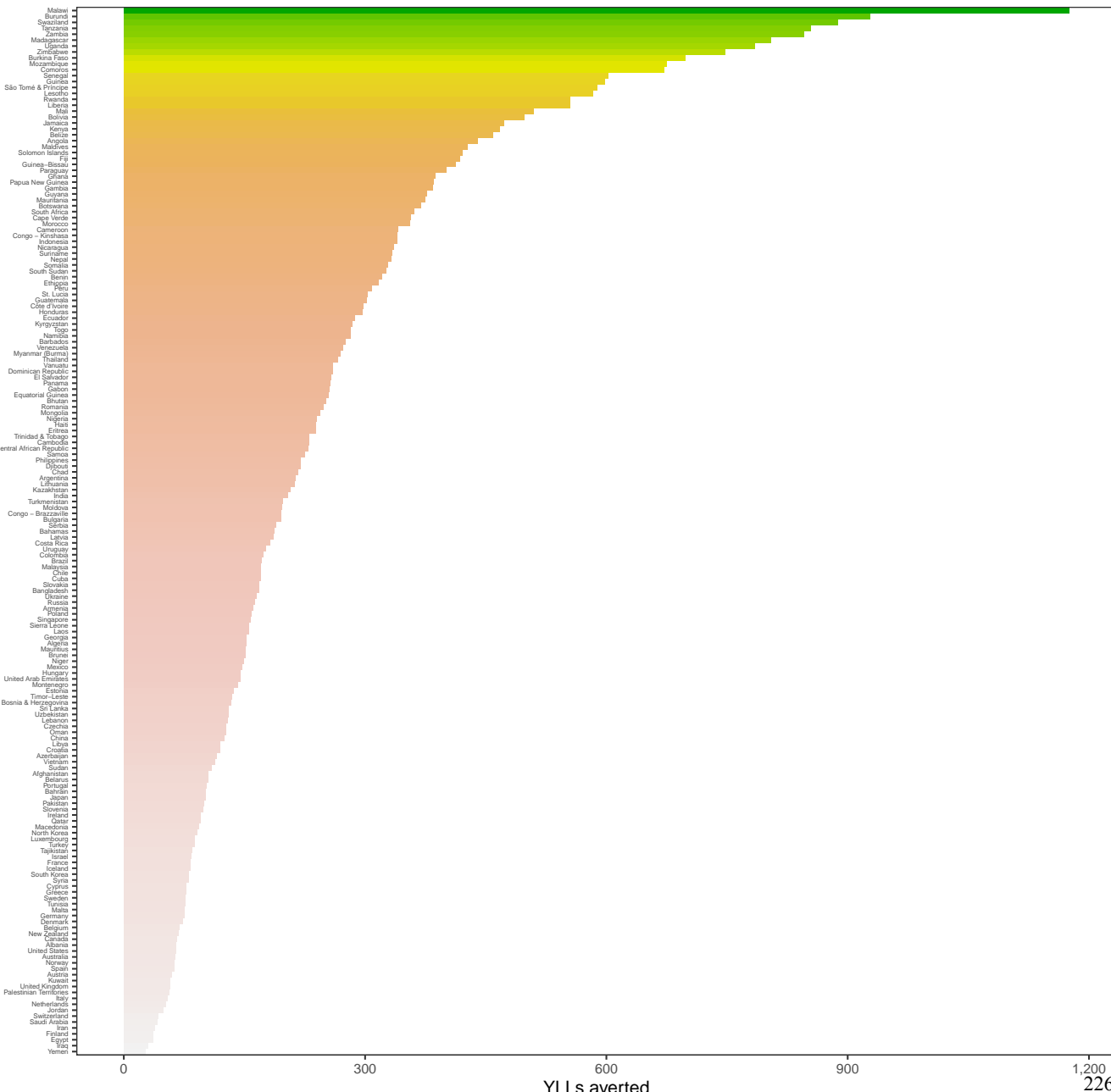


# YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

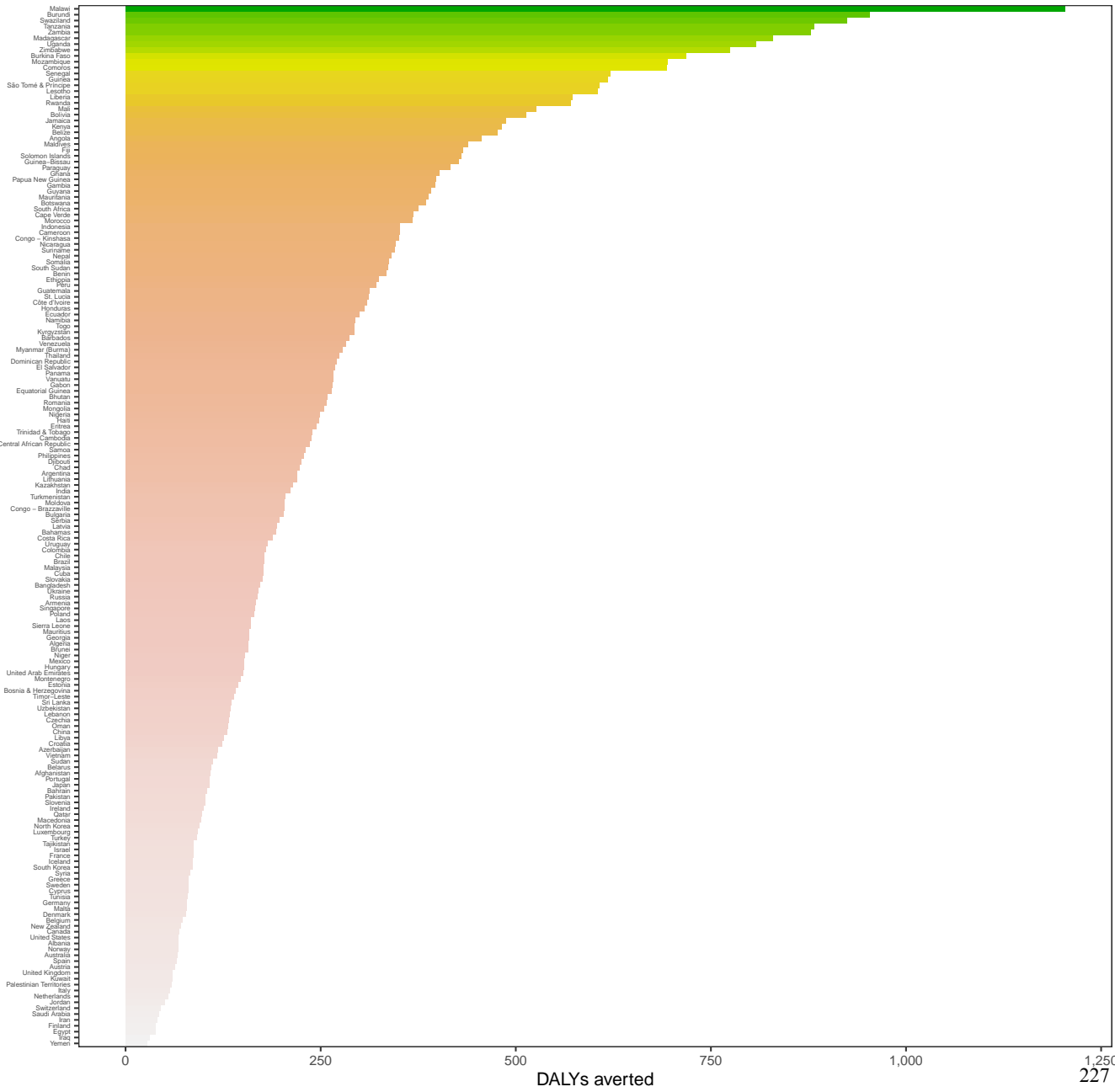




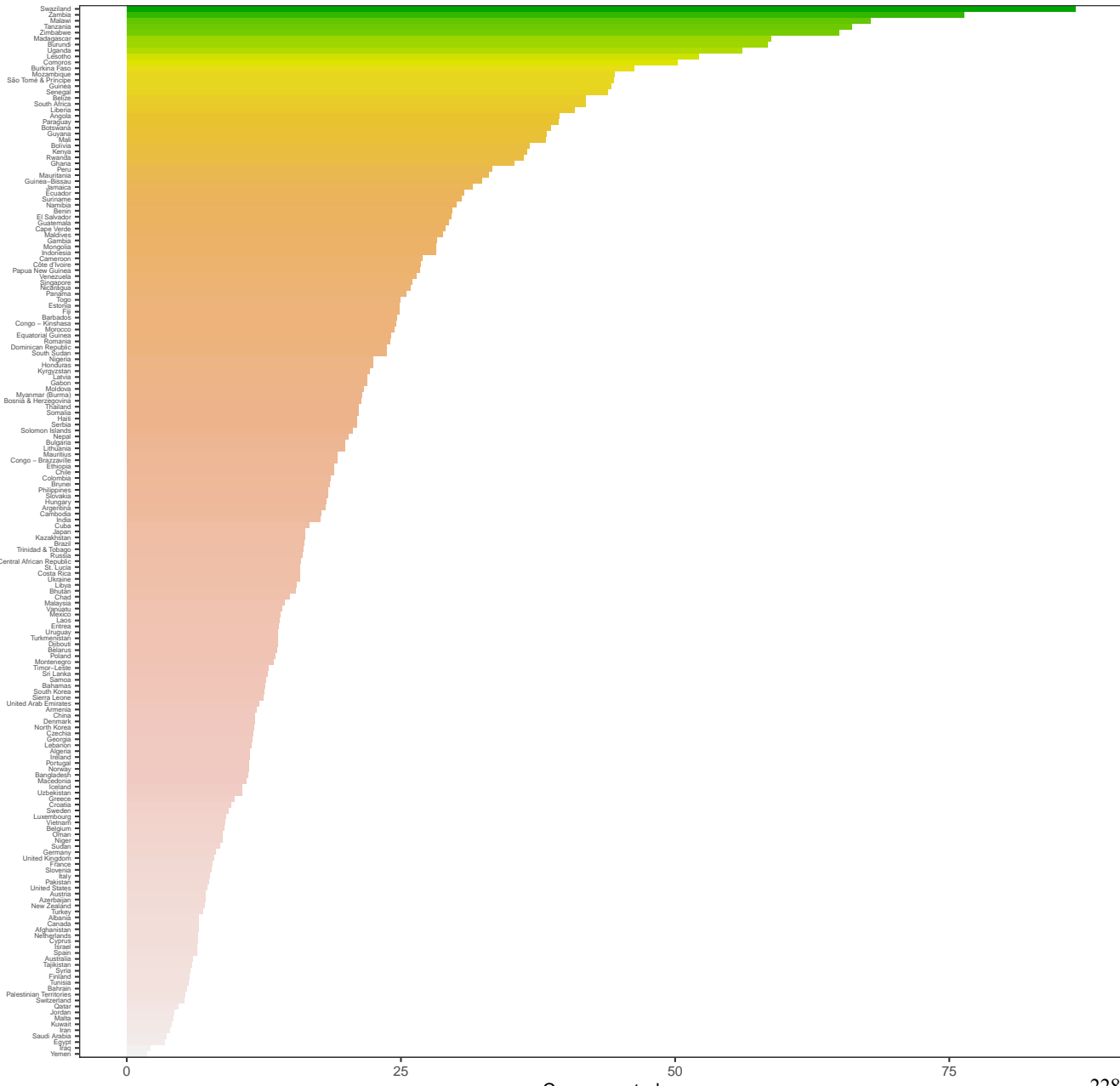
# YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)



# DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)



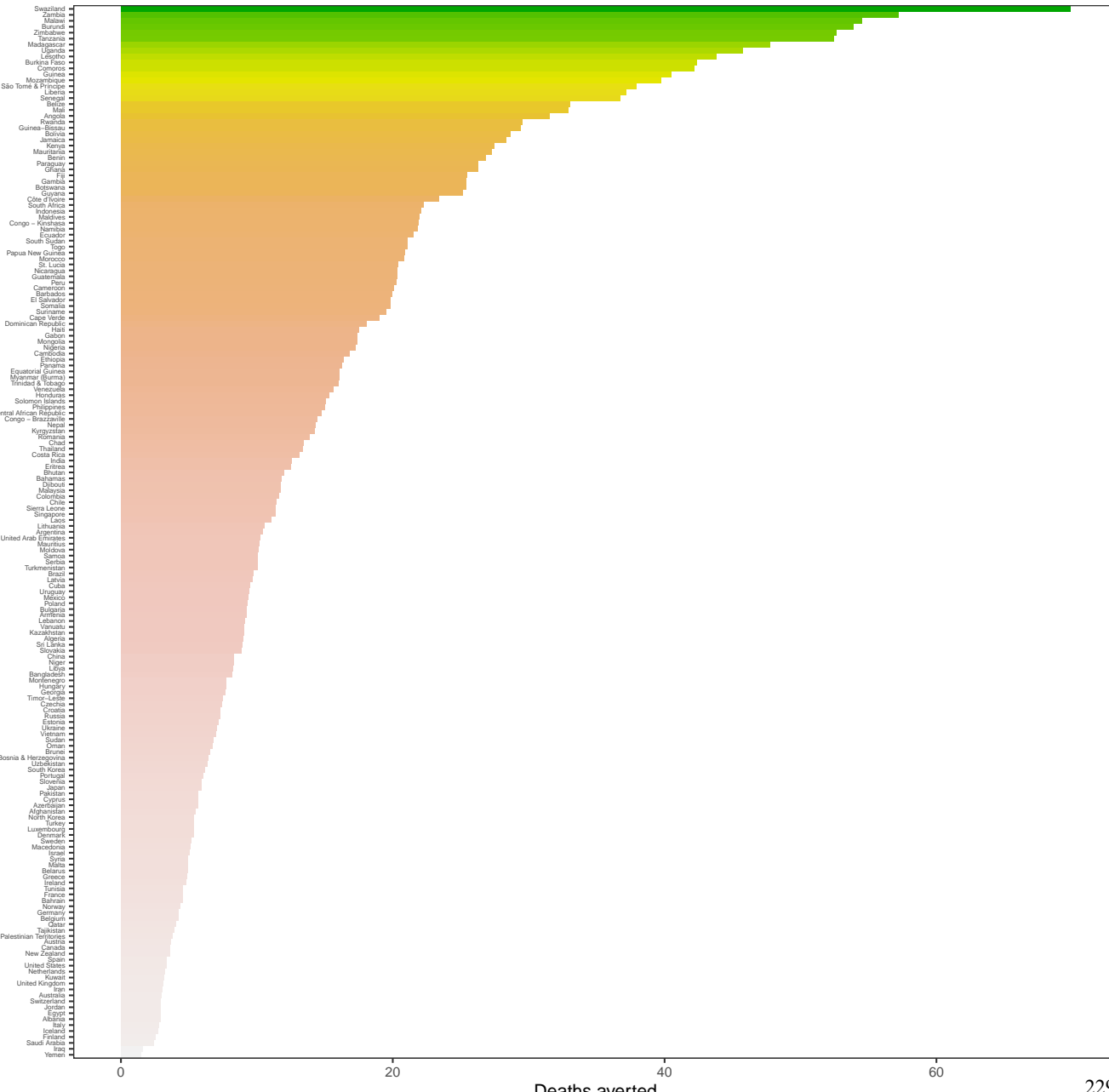
# Cases averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)



Cases averted

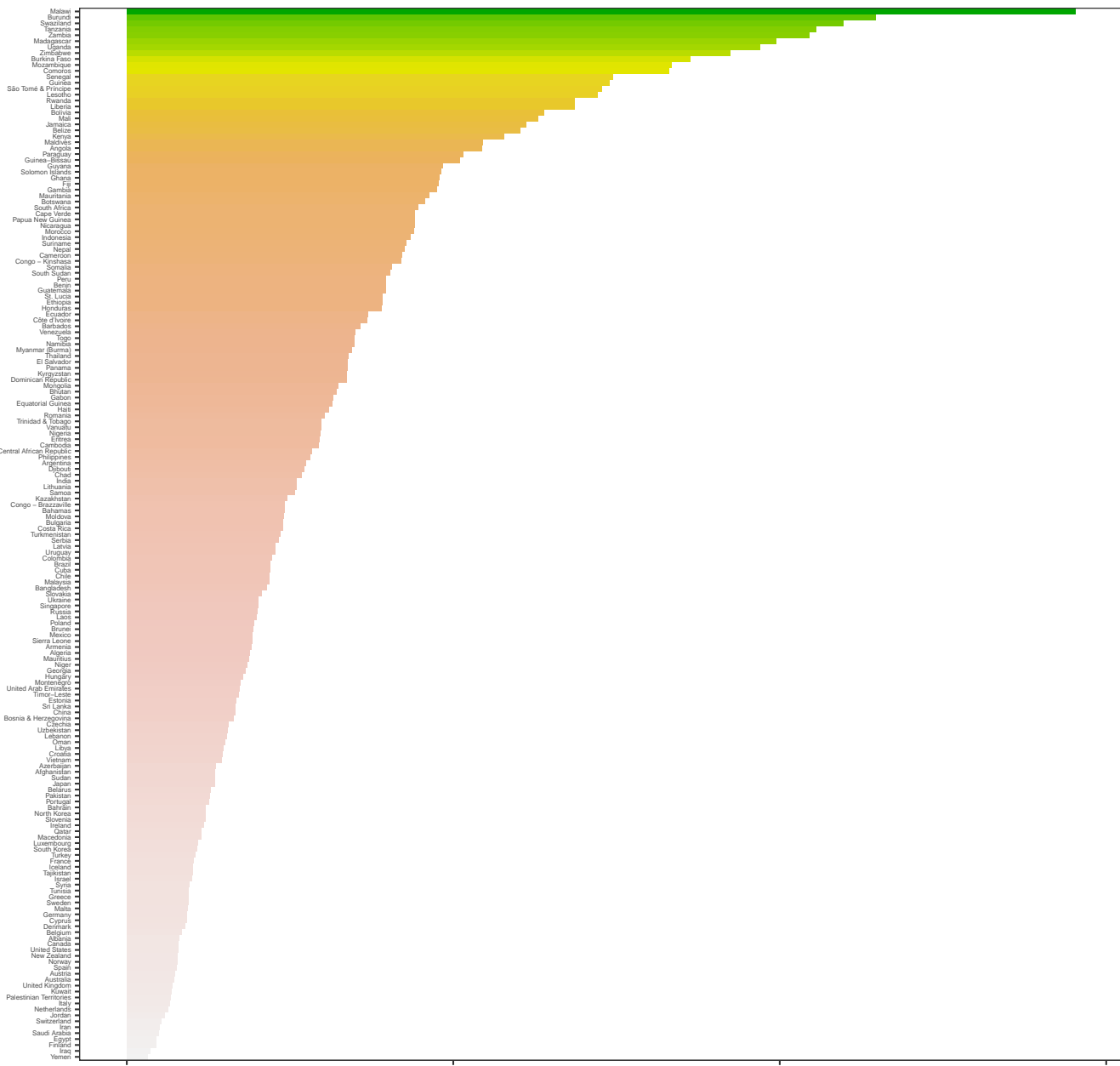
228

# Deaths averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)





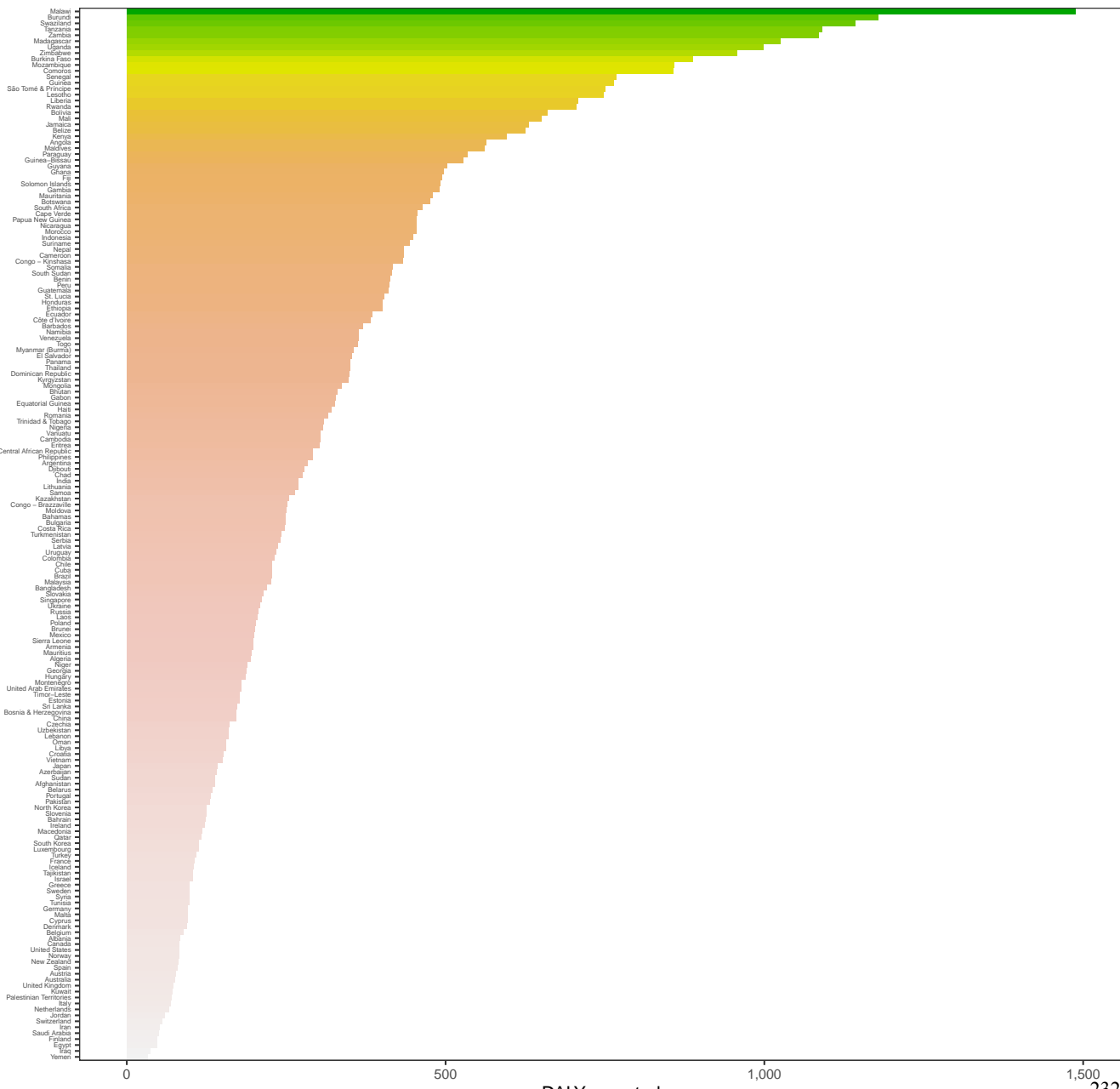
# YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)



YLLs averted

1,500  
231

# DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)



DALYs averted

## A18. National estimates of HPV vaccination impact

Lifetime health impact of HPV vaccination at 90% coverage during 2020-2029 on cases, deaths, YLLs, YLDs and DALYs averted per 1000 vaccinated girls in 177 countries for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls (estimates after the combined PRIME updates for demography, disability weights and cervical cancer burden).

	Cervical cancer burden averted per 1000 vaccinated girls																			
	HPV vaccination of 9-year-old girls										HPV vaccination of 12-year-old girls									
	Bivalent / quadrivalent vaccine					Nonavalent vaccine					Bivalent / quadrivalent vaccine					Nonavalent vaccine				
	Cases	Deaths	YLLs	YLDs	DALYs	Cases	Deaths	YLLs	YLDs	DALYs	Cases	Deaths	YLLs	YLDs	DALYs	Cases	Deaths	YLLs	YLDs	DALYs
Country	averted per 1000 vaccinated girls																			
Afghanistan	5	4	3	106	109	7	6	3	136	140	5	4	3	105	108	7	6	3	135	138
Albania	5	2	2	66	68	7	3	3	80	83	5	2	2	65	68	7	3	3	80	83
Algeria	9	7	5	154	159	11	9	6	190	196	9	7	5	152	157	11	9	6	188	195
Angola	33	26	17	455	473	41	33	21	563	584	32	26	17	440	456	39	32	20	544	564
Argentina	14	8	7	214	221	18	10	9	276	285	14	8	7	213	220	18	10	9	274	283
Armenia	10	8	5	162	168	12	9	6	193	199	10	8	5	161	166	12	9	6	191	198
Australia	5	3	3	64	66	6	3	3	73	76	5	3	3	64	66	6	3	3	73	76
Austria	6	3	3	60	63	7	4	3	74	77	6	3	3	60	63	7	4	3	73	77
Azerbaijan	6	5	3	116	119	7	6	4	138	142	6	5	3	115	118	7	6	4	137	141
Bahamas	10	9	6	188	194	13	12	8	244	251	10	9	6	186	192	13	12	8	241	249
Bahrain	5	4	3	102	105	6	5	3	121	125	5	4	3	101	104	6	5	3	120	124
Bangladesh	9	7	5	184	189	12	9	6	235	241	9	6	4	168	172	11	8	6	214	220
Barbados	19	16	11	278	289	25	20	14	360	374	19	15	11	276	287	25	20	14	357	371
Belarus	11	4	4	106	110	14	5	5	130	135	11	4	4	105	110	14	5	5	129	134
Belgium	7	3	3	69	73	9	4	4	85	89	7	3	3	69	72	9	4	4	84	89
Belize	32	25	17	463	480	42	33	23	608	631	32	25	17	459	476	42	33	23	603	625



Benin	25	22	13	329	343	30	28	17	407	424	24	22	13	320	334	30	27	16	396	412
Bhutan	12	9	6	254	260	15	12	8	325	333	12	9	6	252	258	15	12	8	322	330
Bolivia	29	23	16	505	520	37	29	20	649	669	29	22	16	497	513	37	29	20	639	659
Bosnia & Herzegovina	17	5	7	135	141	21	6	8	165	173	17	5	7	134	140	21	6	8	164	172
Botswana	32	21	15	373	389	39	26	19	462	481	31	21	15	369	385	39	25	19	457	476
Brazil	13	8	6	172	178	16	10	8	222	229	13	8	6	171	177	16	10	8	220	228
Brunei	14	5	6	152	158	18	7	8	194	202	14	5	6	151	157	18	7	8	193	200
Bulgaria	16	8	7	197	204	20	9	9	241	250	16	8	7	196	203	20	9	9	239	248
Burkina Faso	38	35	21	709	730	47	43	25	877	902	37	34	20	698	718	46	42	25	862	888
Burundi	48	44	26	940	966	59	54	32	1161	1194	47	44	26	928	953	58	54	32	1147	1179
Cambodia	14	13	8	232	241	18	17	10	297	307	14	13	8	230	238	18	17	10	294	304
Cameroon	22	17	11	353	364	28	21	14	437	450	22	16	11	340	351	27	20	13	421	434
Canada	5	3	3	66	69	7	4	3	80	83	5	3	3	66	68	7	4	3	79	83
Cape Verde	24	15	11	360	371	29	19	14	445	459	23	15	11	357	368	29	19	14	441	455
Central African Republic	13	12	7	236	243	16	15	9	292	301	13	12	7	229	236	16	15	9	283	292
Chad	13	12	7	234	242	16	15	9	290	299	12	11	7	216	223	15	13	8	267	275
Chile	15	9	7	171	179	19	12	9	220	229	15	9	7	170	177	19	11	9	219	228
China	9	6	5	126	130	12	8	6	167	173	9	6	5	125	129	12	8	6	165	172
Colombia	15	9	7	175	182	19	12	9	225	234	14	9	7	173	180	19	12	9	222	231
Comoros	42	35	22	692	714	51	43	27	855	882	41	34	22	672	693	50	42	27	830	857
Congo - Brazzaville	16	12	8	201	210	20	15	10	249	259	15	12	8	196	204	19	14	10	242	252
Congo - Kinshasa	20	18	11	352	363	25	23	14	436	449	20	18	11	340	350	25	22	13	420	433
Costa Rica	12	10	7	183	190	16	13	9	240	249	12	10	7	182	188	16	13	9	239	248
Croatia	8	6	4	120	125	10	7	5	147	152	8	6	4	119	124	9	7	5	146	151
Cuba	13	7	6	171	177	17	10	8	221	229	13	7	6	170	176	17	9	8	220	228
Cyprus	5	5	3	78	81	7	6	4	92	96	5	5	3	77	80	6	6	4	92	95
Czechia	9	6	5	128	133	12	7	6	156	162	9	6	5	127	132	11	7	6	155	161

Cote d'Ivoire	22	19	12	308	320	28	24	15	380	395	22	19	12	298	309	27	23	14	368	382
Denmark	10	4	4	73	78	12	5	5	90	95	10	4	4	73	77	12	5	5	89	94
Djibouti	11	10	6	222	227	14	12	7	274	281	11	9	6	219	225	14	12	7	271	279
Dominican Republic	19	14	10	267	277	24	19	13	345	358	18	14	10	260	270	24	18	13	336	349
Ecuador	24	17	12	289	301	31	22	16	372	387	24	17	12	287	299	31	21	16	369	384
Egypt	3	2	2	37	38	4	3	2	45	47	3	2	2	36	38	3	3	2	45	47
El Salvador	23	15	11	260	271	30	20	14	341	356	23	15	11	257	268	30	20	14	338	352
Equatorial Guinea	20	13	9	258	267	24	16	12	319	330	19	13	9	255	264	24	16	12	315	327
Eritrea	12	11	6	252	258	15	13	8	311	319	11	10	6	238	244	14	13	8	294	302
Estonia	20	6	8	137	145	25	7	9	168	177	20	6	8	136	144	25	7	9	167	176
Ethiopia	16	14	9	333	342	20	17	11	412	423	15	13	8	316	325	19	16	10	391	401
Fiji	22	23	14	424	438	25	26	16	485	501	22	22	14	418	432	25	25	16	478	494
Finland	5	2	2	37	39	6	3	3	45	48	5	2	2	37	39	6	3	3	45	47
France	6	4	3	84	87	8	5	4	102	106	6	4	3	83	86	8	5	4	102	106
Gabon	18	14	10	259	269	22	18	12	320	332	18	14	10	256	265	22	17	12	316	328
Gambia	24	21	13	400	413	29	26	16	495	511	23	21	12	384	397	28	25	15	475	490
Georgia	10	7	5	154	159	11	8	6	183	188	10	6	5	153	158	11	8	6	181	187
Germany	7	3	3	75	79	8	4	4	92	96	7	3	3	75	78	8	4	4	92	96
Ghana	29	22	15	395	410	36	27	18	489	507	29	21	14	388	402	35	26	18	479	497
Greece	8	4	4	77	81	10	5	5	95	99	8	4	4	77	81	10	5	4	94	99
Guatemala	23	16	11	307	318	30	21	15	403	418	22	15	11	301	312	29	20	14	396	410
Guinea	38	35	21	639	660	47	43	26	791	816	36	33	19	598	618	44	40	24	740	764
Guinea-Bissau	26	24	14	419	433	33	30	18	518	536	26	24	14	413	427	32	29	18	510	528
Guyana	30	20	15	382	396	39	25	19	490	509	30	20	14	377	391	38	25	18	484	503
Haiti	16	14	9	242	250	21	18	11	313	324	16	14	9	239	248	21	18	11	309	320
Honduras	17	12	8	302	310	23	16	11	397	408	17	12	8	297	305	22	15	11	390	401
Hungary	15	6	6	146	153	18	8	8	179	187	15	6	6	145	152	18	8	8	178	186

Iceland	9	2	3	83	86	11	3	4	101	105	9	2	3	82	85	10	3	4	101	105
India	14	10	7	208	215	18	13	9	265	274	14	10	7	204	211	18	13	9	260	269
Indonesia	22	18	12	345	357	28	22	15	441	456	22	17	12	340	351	28	22	15	434	449
Iran	3	2	2	39	41	4	3	2	50	52	3	2	2	39	41	4	3	2	50	52
Iraq	2	1	1	30	31	2	2	1	36	37	2	1	1	30	31	2	2	1	36	37
Ireland	9	4	4	96	101	11	5	5	118	123	9	4	4	96	100	11	5	5	117	122
Israel	5	4	3	84	87	6	5	4	100	104	5	4	3	84	87	6	5	4	99	103
Italy	6	2	3	54	57	8	3	3	66	69	6	2	3	54	56	8	3	3	66	69
Jamaica	24	22	15	477	491	32	28	19	616	635	24	22	14	473	487	31	28	19	611	630
Japan	12	4	6	102	107	16	6	8	135	142	12	4	6	101	107	16	6	7	134	142
Jordan	4	2	2	49	51	4	3	2	58	60	4	2	2	49	50	4	3	2	58	60
Kazakhstan	14	8	7	209	215	16	9	8	248	256	14	8	7	207	214	16	9	8	246	254
Kenya	30	23	15	479	495	37	28	19	593	611	29	22	15	467	482	36	27	18	577	596
Kuwait	3	3	2	58	60	4	3	2	69	72	3	3	2	58	60	4	3	2	69	71
Kyrgyzstan	19	12	9	286	295	22	14	11	340	350	19	12	9	284	293	22	14	11	337	347
Laos	11	9	6	157	163	14	11	7	200	208	11	9	6	155	161	14	11	7	198	205
Latvia	18	8	8	187	195	22	10	10	229	238	18	8	8	186	193	22	10	10	227	237
Lebanon	10	8	5	130	135	11	9	6	154	160	10	8	5	129	134	11	9	6	153	159
Lesotho	43	36	23	596	619	53	45	28	737	765	42	35	22	583	605	52	44	27	720	748
Liberia	34	31	18	567	586	42	38	23	701	724	33	30	18	555	573	41	37	22	686	708
Libya	13	7	6	121	127	16	8	7	150	157	13	7	6	120	125	15	8	7	148	155
Lithuania	16	9	8	213	221	20	11	9	261	271	16	9	8	212	220	20	11	9	260	269
Luxembourg	7	4	4	89	93	9	5	4	109	113	7	4	4	88	92	9	5	4	108	113
Macedonia	9	4	4	94	97	11	5	5	114	119	9	4	4	93	97	11	5	5	114	118
Madagascar	48	39	25	819	844	60	48	31	1013	1044	48	39	25	805	829	59	48	31	995	1025
Malawi	56	45	29	1199	1228	69	55	36	1482	1517	55	44	28	1175	1204	68	55	35	1453	1488
Malaysia	11	9	6	172	178	14	12	8	220	228	11	9	6	170	177	14	12	8	218	226

Maldives	23	17	12	429	442	29	22	16	549	564	23	17	12	427	439	29	22	16	545	561
Mali	33	28	17	540	557	40	35	21	668	689	31	27	16	509	526	38	33	20	629	650
Malta	3	4	2	76	79	4	5	3	93	96	3	4	2	76	78	4	5	3	93	96
Mauritania	30	25	16	429	445	38	31	20	530	550	27	22	14	374	388	33	27	17	462	480
Mauritius	16	8	7	152	159	19	10	9	188	197	16	8	7	151	158	19	10	9	187	195
Mexico	11	7	5	148	153	14	9	7	194	201	11	7	5	146	152	14	9	7	192	199
Moldova	18	8	8	198	206	22	10	9	242	252	18	8	7	196	204	22	10	9	240	249
Mongolia	21	13	10	247	257	28	18	14	327	340	21	13	10	244	254	28	17	14	323	337
Montenegro	11	6	5	143	148	13	8	6	175	181	11	6	5	142	147	13	8	6	173	180
Morocco	20	17	11	358	369	24	21	14	443	457	20	17	11	356	367	24	21	14	440	454
Mozambique	37	33	20	698	718	46	41	25	863	888	36	32	19	675	694	44	40	24	834	858
Myanmar	17	13	9	273	282	22	16	11	349	360	17	13	9	269	278	21	16	11	344	355
Namibia	25	18	12	287	299	30	22	15	355	370	24	18	12	281	294	30	22	15	348	363
Nepal	16	11	8	337	345	20	14	10	431	441	16	11	8	332	340	20	14	10	425	435
Netherlands	5	3	2	52	54	7	3	3	64	67	5	3	2	52	54	7	3	3	63	66
New Zealand	6	3	3	68	71	7	4	3	78	81	6	3	3	68	71	7	4	3	77	81
Nicaragua	20	16	11	345	356	27	21	14	453	467	20	15	10	335	346	26	20	14	441	454
Niger	7	7	4	158	162	9	9	5	196	201	7	7	4	149	153	9	8	5	184	189
Nigeria	19	15	10	255	264	24	18	12	315	327	18	14	9	240	249	22	17	11	297	308
North Korea	9	4	3	91	95	12	5	4	121	125	9	4	3	91	94	12	5	4	120	125
Norway	9	4	4	63	67	11	4	5	78	82	9	4	4	63	67	11	4	5	77	82
Oman	7	6	4	128	132	9	7	5	152	156	7	6	4	127	131	9	7	5	150	155
Pakistan	6	4	3	101	104	8	6	4	128	132	6	4	3	99	102	7	6	4	127	131
Palestinian Territories	4	3	2	57	60	5	4	3	68	71	4	3	2	57	59	5	4	3	67	70
Panama	20	12	10	259	268	26	16	13	340	352	19	12	10	257	267	26	16	13	338	350
Papua New Guinea	24	18	12	391	403	27	21	14	447	461	23	18	12	386	398	27	21	14	441	455
Paraguay	31	21	15	406	421	40	27	20	522	541	31	20	15	401	416	39	26	19	515	534

Peru	26	16	12	312	324	34	20	16	401	417	26	16	12	308	321	33	20	16	396	412
Philippines	14	12	8	222	230	18	15	10	284	294	14	12	8	220	228	18	15	10	281	291
Poland	11	8	6	160	166	14	9	7	196	203	11	8	6	159	165	14	9	7	195	202
Portugal	9	5	4	103	108	11	6	5	126	132	9	5	4	103	107	11	6	5	126	131
Qatar	4	3	2	96	99	5	4	3	114	117	4	3	2	96	98	5	4	3	114	117
Romania	20	11	9	250	259	24	14	12	306	317	20	11	9	248	257	24	14	12	303	315
Russia	13	6	6	164	170	16	7	7	201	208	13	6	6	163	169	16	7	7	200	207
Rwanda	29	24	15	561	576	36	30	19	693	712	29	24	15	555	570	36	30	19	686	705
Samoa	11	9	6	227	233	13	10	7	259	266	11	9	6	225	231	13	10	7	257	264
Saudi Arabia	3	2	2	41	43	4	2	2	49	51	3	2	2	41	43	4	2	2	49	51
Senegal	36	30	19	617	636	45	37	24	763	786	35	30	19	603	621	44	37	23	745	768
Serbia	17	8	8	191	199	21	10	9	234	243	17	8	8	189	197	21	10	9	232	241
Sierra Leone	10	10	6	162	168	13	12	7	200	207	10	9	5	155	161	12	11	7	192	198
Singapore	20	9	9	158	167	26	11	11	202	213	20	9	9	157	166	26	11	11	201	212
Slovakia	15	7	7	169	176	18	9	8	207	215	15	7	7	168	175	18	9	8	206	214
Slovenia	6	5	4	99	102	8	6	4	121	125	6	5	4	98	102	8	6	4	120	124
Solomon Islands	18	13	9	424	433	21	15	10	485	495	18	13	9	421	430	21	15	10	481	492
Somalia	17	16	9	330	339	21	20	12	408	419	17	16	9	328	337	21	20	11	405	417
South Africa	34	18	15	366	381	42	23	19	452	471	34	18	15	360	375	42	22	19	446	464
South Korea	9	5	5	81	86	13	6	6	108	114	9	5	5	81	85	13	6	6	107	113
South Sudan	19	17	10	328	339	24	21	13	406	419	19	17	10	326	337	24	21	13	403	416
Spain	5	3	2	63	66	6	3	3	77	80	5	3	2	63	65	6	3	3	77	80
Sri Lanka	10	7	5	131	136	13	9	7	168	174	10	7	5	130	135	13	9	7	167	173
St. Lucia	12	16	9	305	314	16	21	12	395	407	12	16	9	303	312	16	20	12	391	403
Sudan	7	6	4	110	113	9	7	4	136	140	7	6	4	109	112	8	7	4	134	139
Suriname	24	15	12	336	348	31	20	15	432	447	24	15	12	333	345	31	20	15	428	443
Swaziland	72	58	37	910	947	88	72	46	1125	1171	70	57	36	888	924	87	70	45	1097	1142

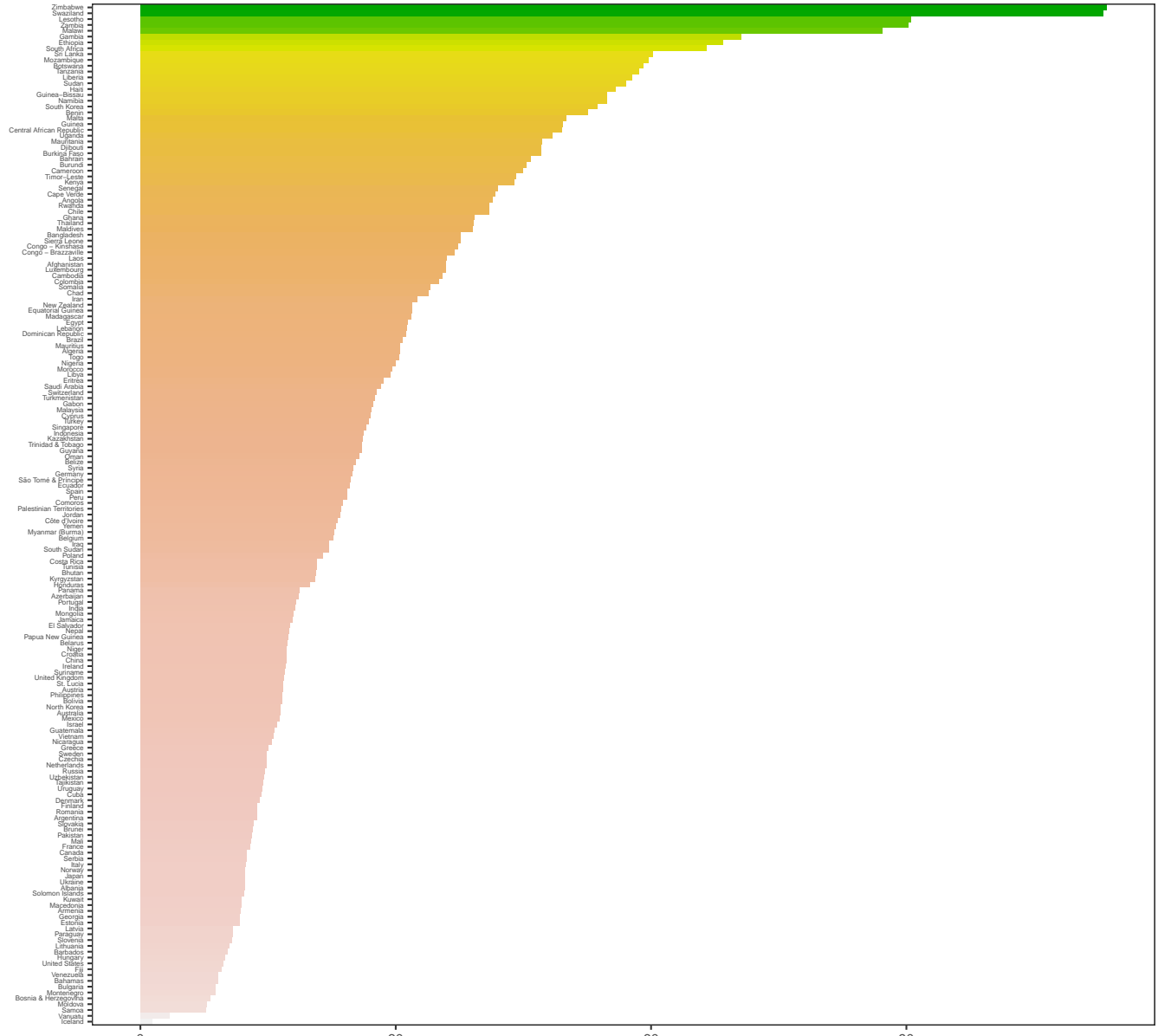
Sweden	8	4	4	77	81	9	5	5	94	99	8	4	4	77	80	9	5	5	94	98
Switzerland	4	2	2	43	45	5	3	3	53	55	4	2	2	43	45	5	3	3	52	55
Syria	5	4	3	81	84	6	5	3	96	99	5	4	3	80	83	6	5	3	95	98
São Tomé and Príncipe	36	31	20	597	617	45	38	24	738	763	36	31	19	588	607	44	38	24	727	751
Tajikistan	5	3	2	85	88	6	4	3	101	104	5	3	2	85	87	6	4	3	100	103
Tanzania	54	43	28	869	897	67	53	35	1074	1108	53	42	28	854	882	66	52	34	1056	1090
Thailand	17	10	8	267	276	21	13	10	342	352	17	10	8	266	274	21	13	10	340	350
Timor-Leste	10	6	5	136	141	13	8	6	174	180	10	6	5	134	139	13	8	6	171	177
Togo	20	17	11	288	299	25	21	13	356	369	20	17	11	282	293	25	21	13	349	362
Trinidad & Tobago	12	12	8	233	241	16	16	10	301	311	12	12	8	231	239	16	16	10	298	308
Tunisia	5	4	3	77	79	6	5	3	95	98	5	4	3	76	79	6	5	3	94	97
Turkey	6	5	3	89	92	7	5	4	105	109	6	5	3	88	91	7	5	4	105	108
Turkmenistan	12	9	6	200	206	14	10	7	237	244	12	8	6	198	204	14	10	7	235	242
Uganda	46	38	24	806	830	57	47	30	996	1026	45	37	24	785	808	56	46	29	970	999
Ukraine	13	6	6	166	171	16	7	7	203	209	13	6	5	165	170	16	7	7	201	208
United Arab Emirates	10	9	6	146	152	12	10	7	174	181	10	9	6	145	151	12	10	7	172	179
United Kingdom	6	3	3	57	60	8	3	4	70	74	6	3	3	57	60	8	3	4	70	73
United States	6	3	3	65	68	7	3	3	79	83	6	3	3	65	68	7	3	3	79	82
Uruguay	11	7	6	178	183	14	9	7	228	236	11	7	6	176	182	14	9	7	227	234
Uzbekistan	9	5	4	131	135	11	6	5	155	160	9	5	4	130	134	10	6	5	154	159
Vanuatu	12	8	6	262	268	14	9	7	300	306	12	8	6	260	266	14	9	7	297	304
Venezuela	21	12	10	275	285	26	16	13	353	366	21	12	10	273	282	26	16	13	350	363
Vietnam	7	5	4	114	118	9	7	5	146	151	7	5	4	113	117	9	7	5	145	150
Yemen	2	1	1	27	28	2	1	1	33	34	2	1	1	27	28	2	1	1	32	33
Zambia	63	47	32	871	903	78	59	40	1077	1117	62	46	31	846	877	76	57	39	1046	1084
Zimbabwe	53	43	28	762	790	66	54	34	943	977	53	43	27	747	775	65	53	34	924	957

### **A19. Vaccination impact in comparative scenarios**

Percentage changes in the lifetime impact of HPV vaccination on cases, deaths, YLLs, YLDs and DALYs averted per 1000 vaccinated girls in each of the 177 countries for the different comparative scenarios (s2, s3, s4, s5) in comparison to the base scenario (s1) for bivalent/quadrivalent and nonavalent vaccination of 9-year-old and 12-year-old girls.

# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s2 in comparison to scenario s1

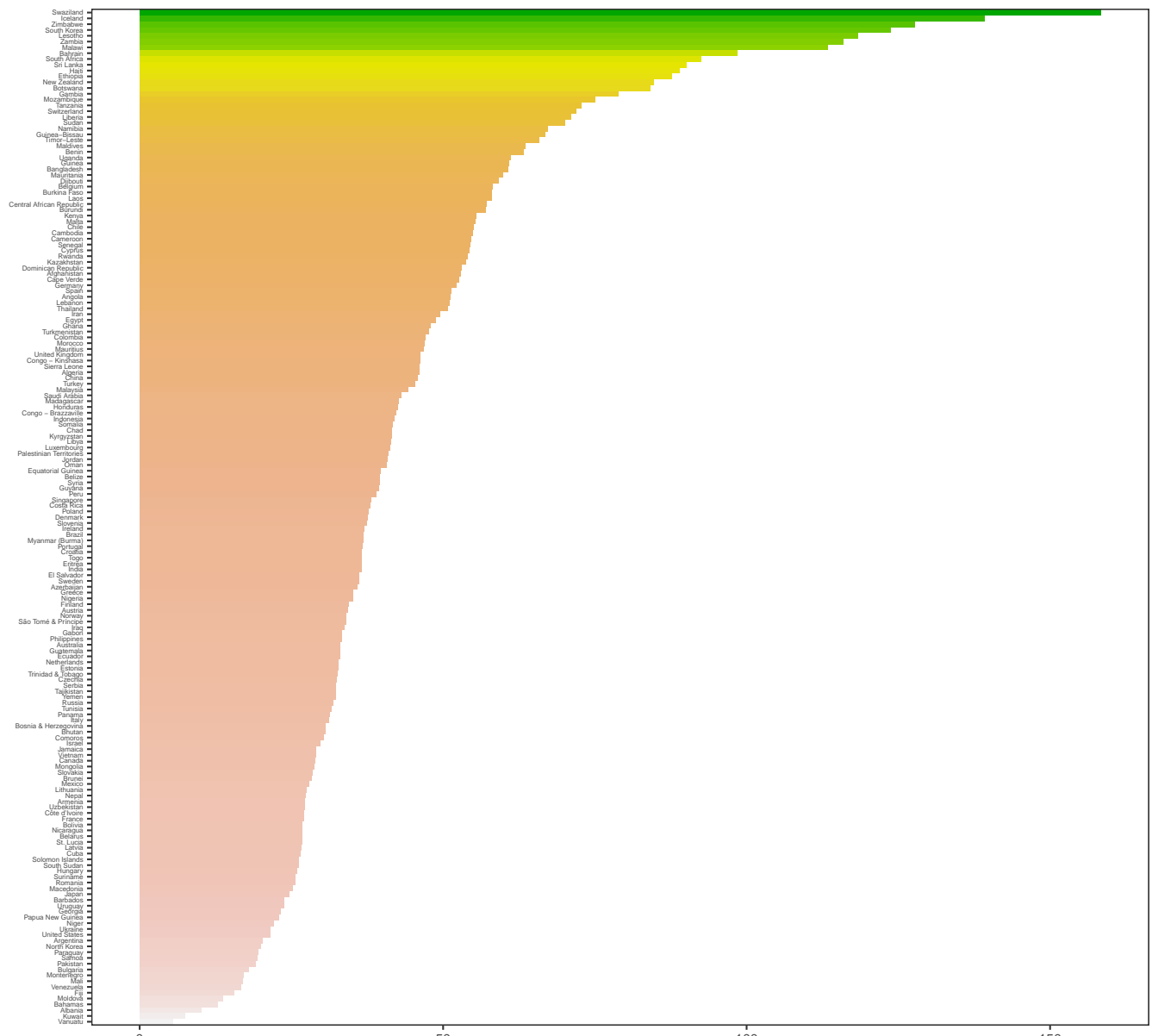


Percentage change in cases averted per 1000 vaccinated girls



# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

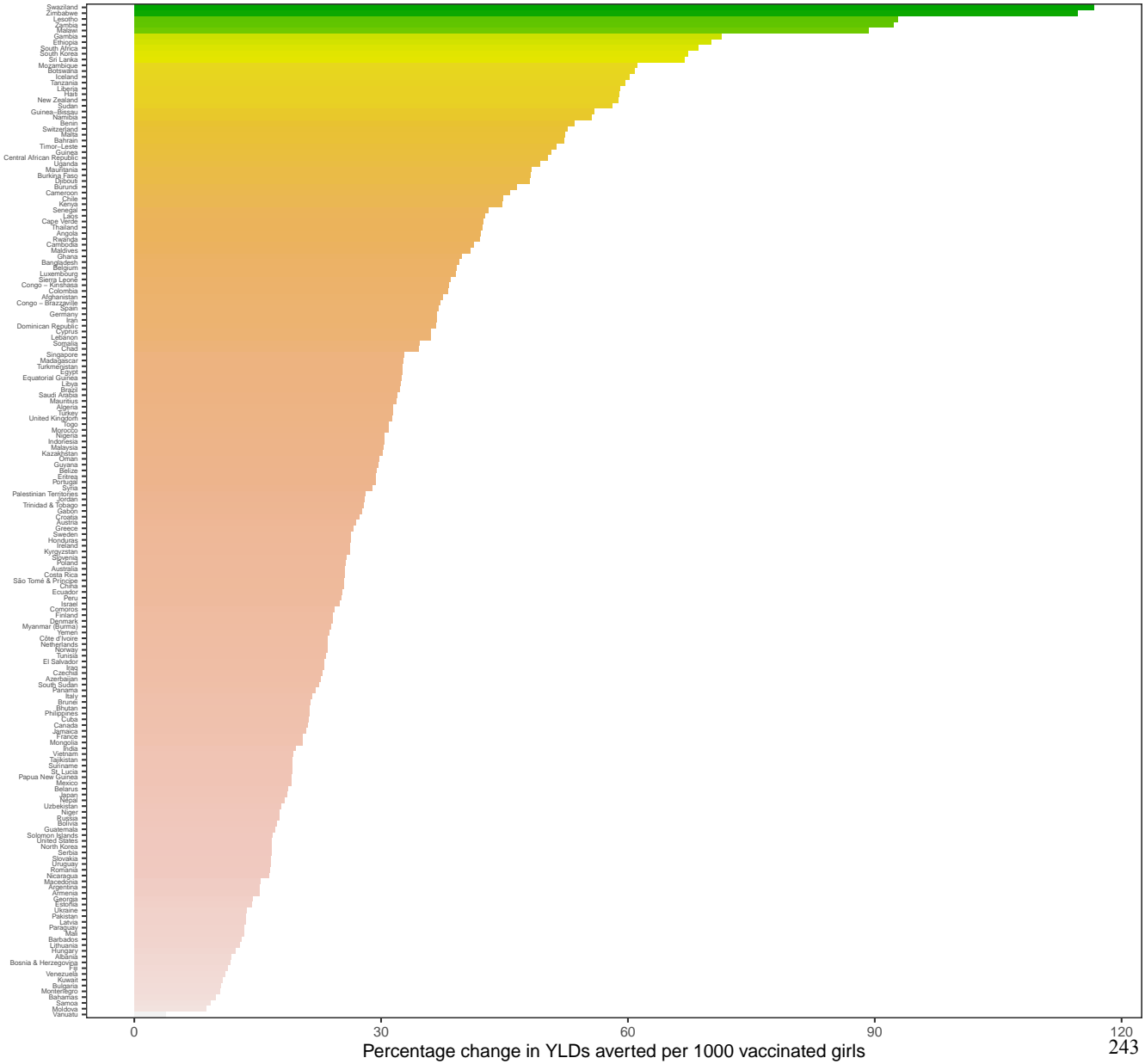
Comparison of scenario s2 in comparison to scenario s1



Percentage change in deaths averted per 1000 vaccinated girls

# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

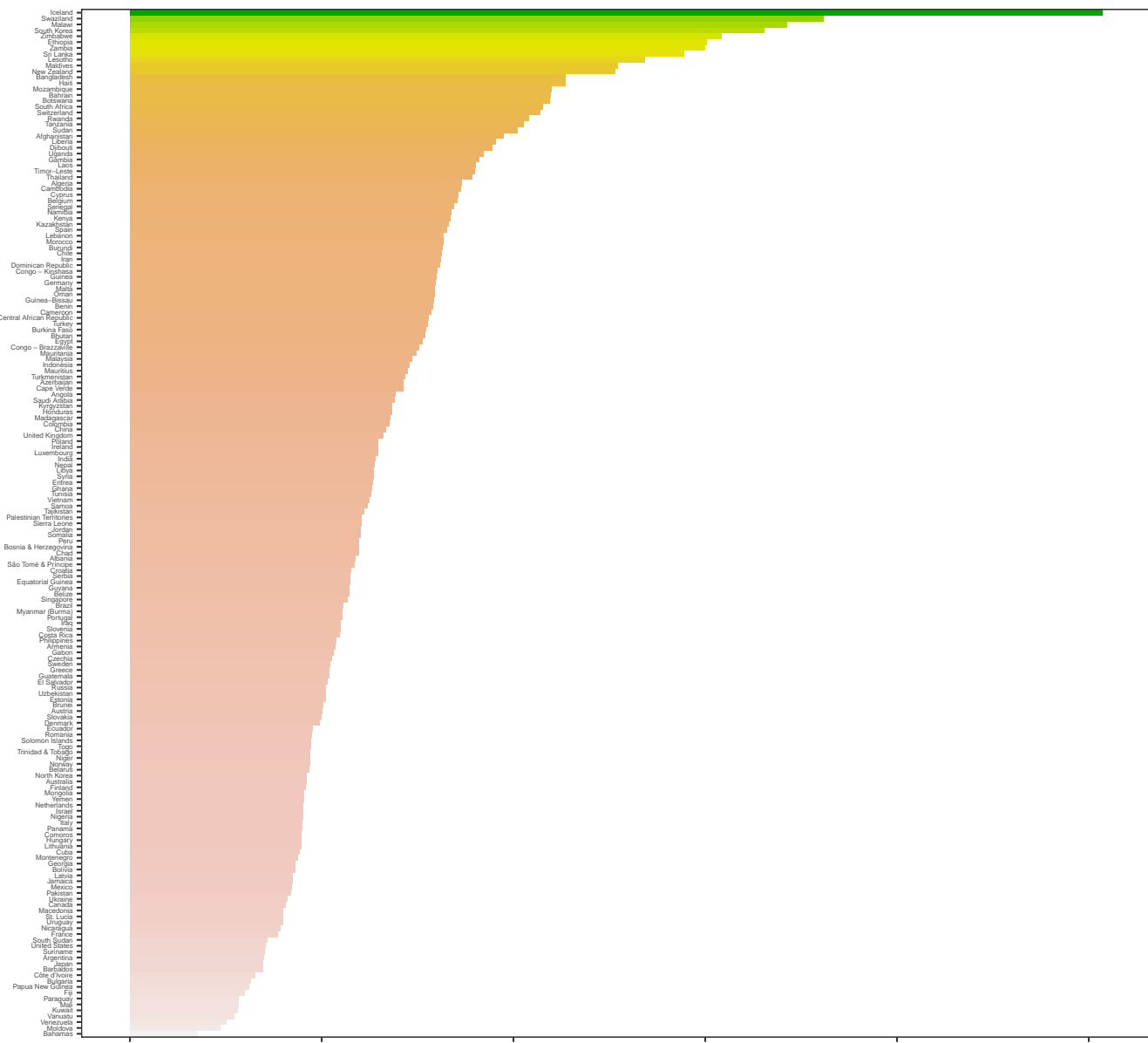
Comparison of scenario s2 in comparison to scenario s1



Percentage change in YLDs averted per 1000 vaccinated girls

# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

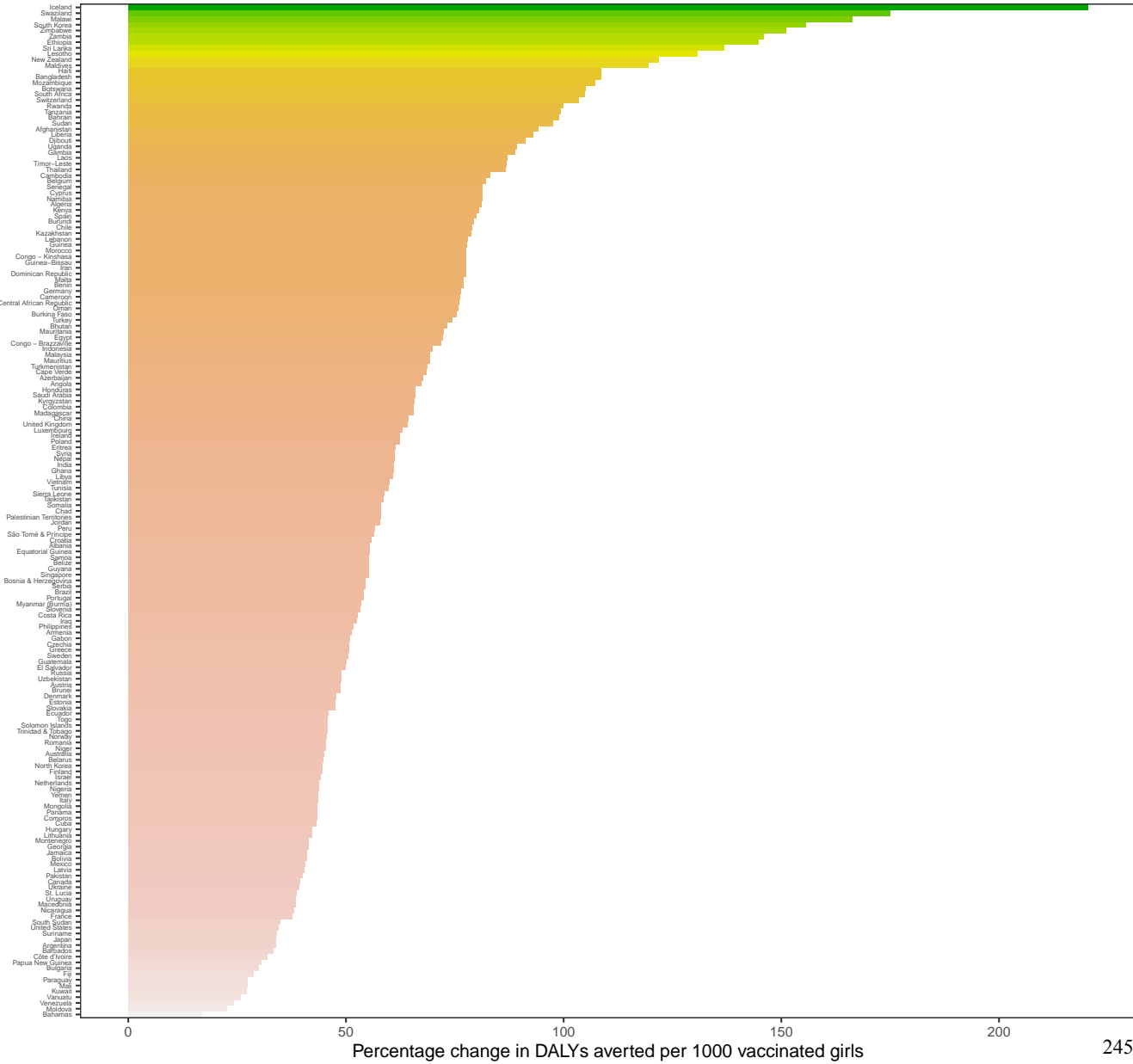
Comparison of scenario s2 in comparison to scenario s1



Percentage change in YLLs averted per 1000 vaccinated girls

# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s2 in comparison to scenario s1

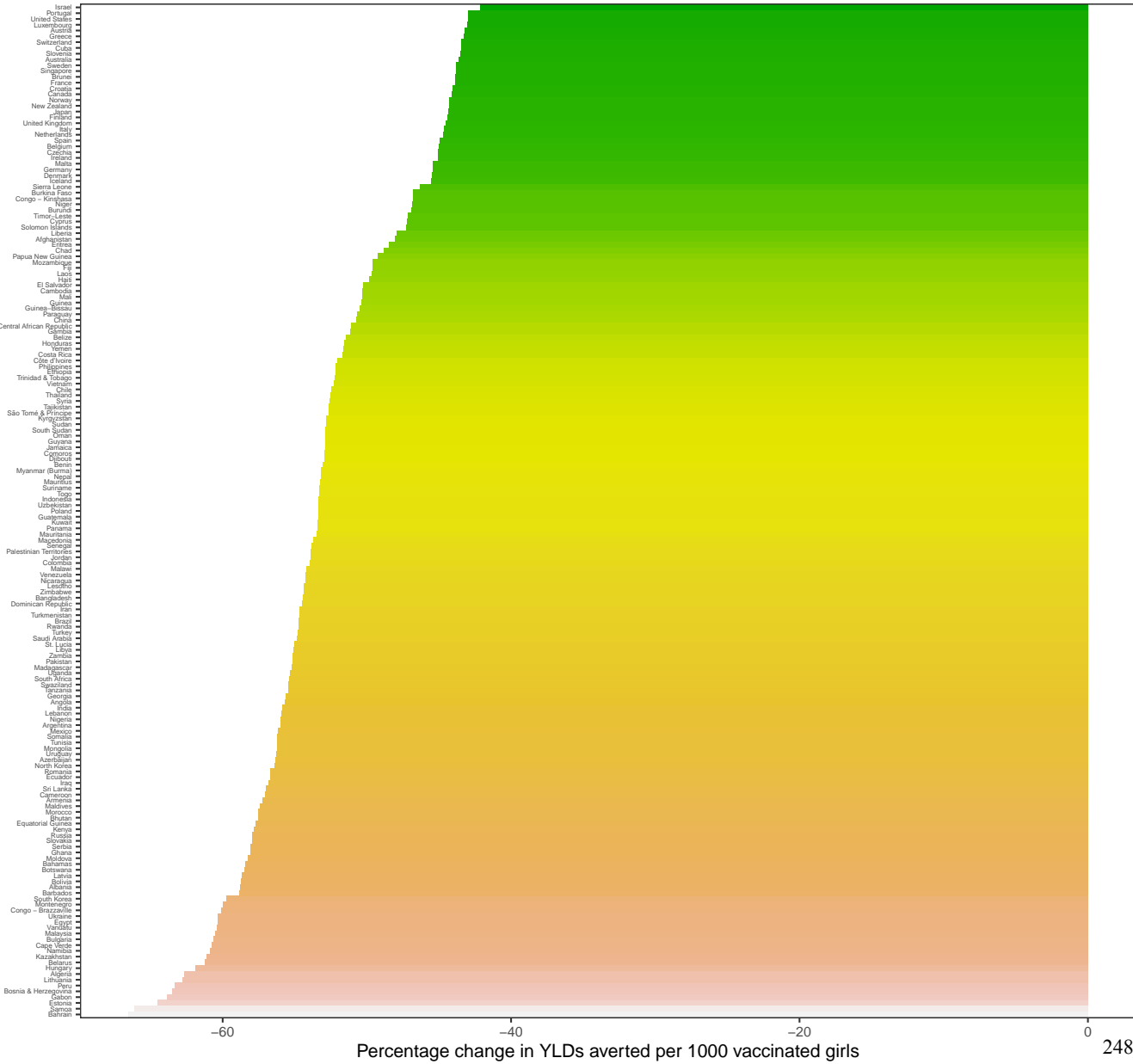






# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s3 in comparison to scenario s1

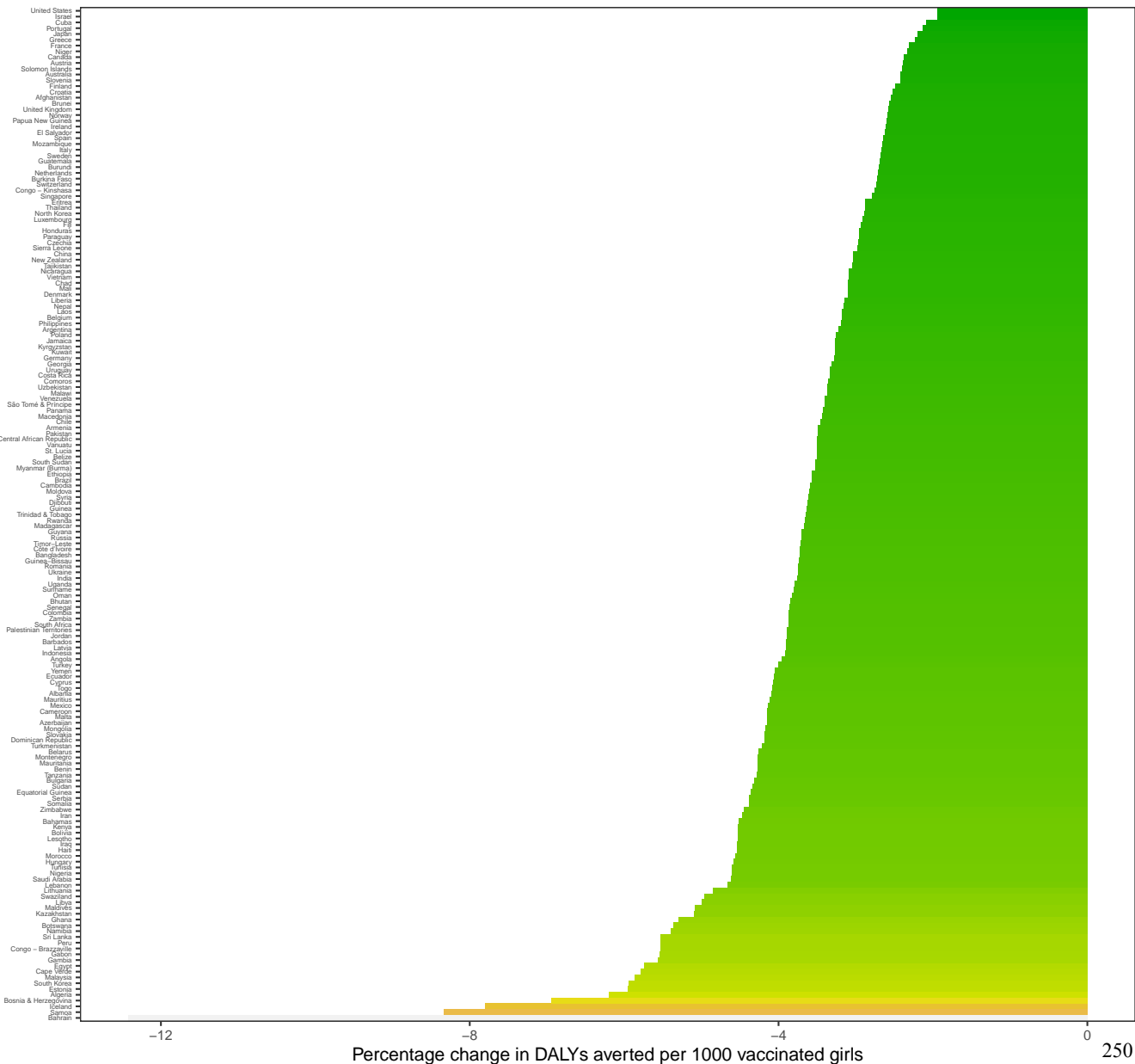






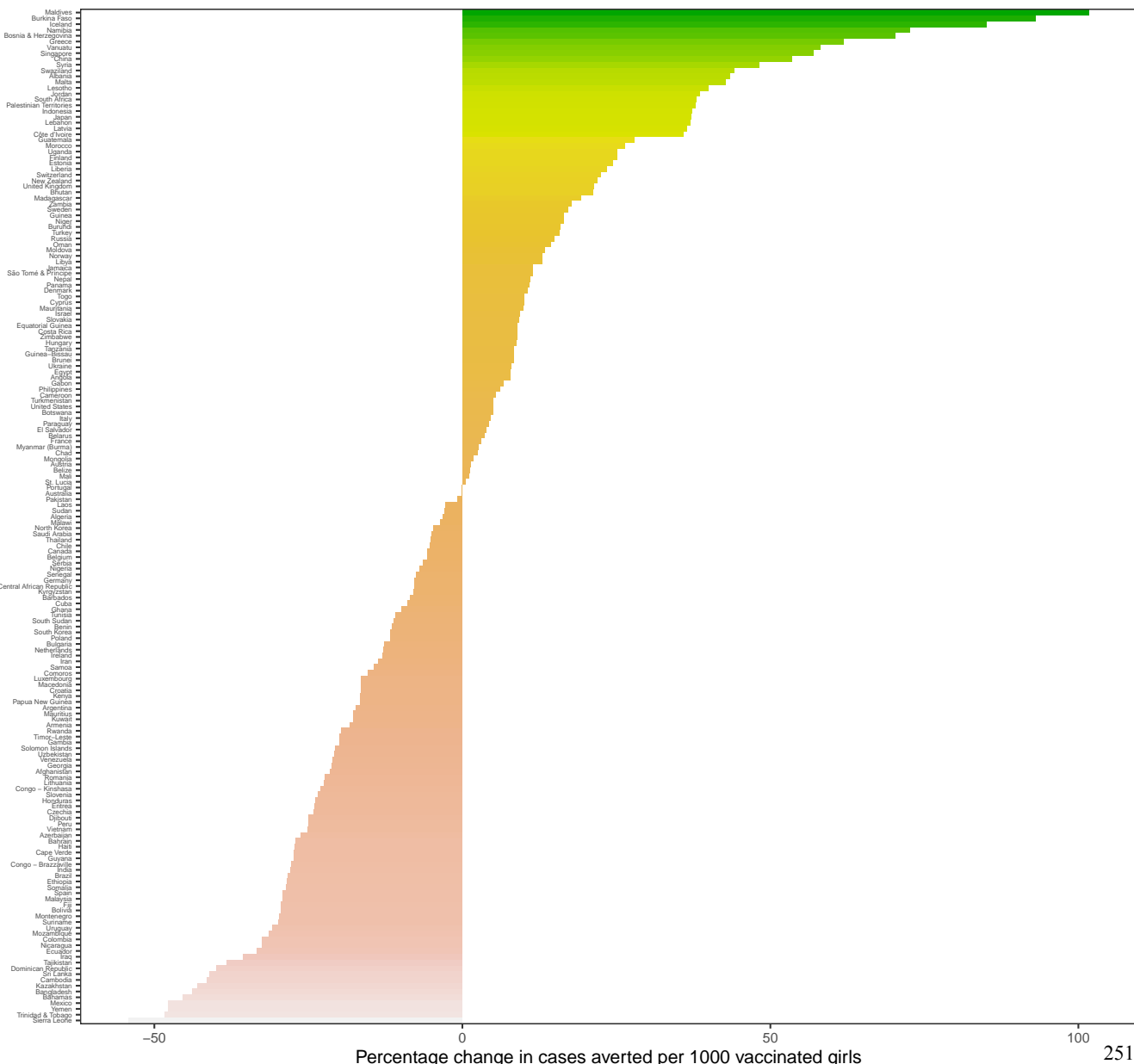
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s3 in comparison to scenario s1



# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s4 in comparison to scenario s1

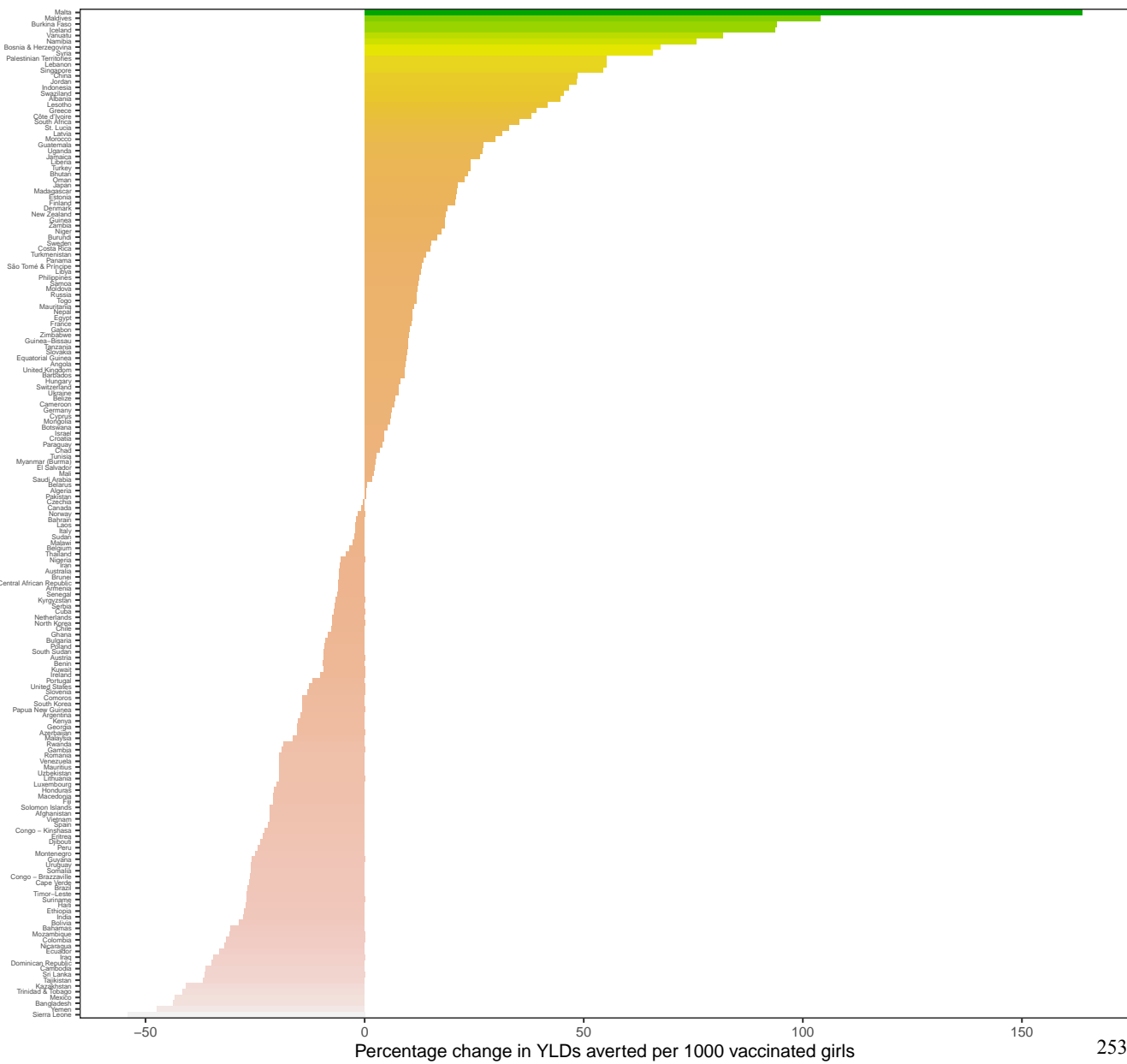


Percentage change in cases averted per 1000 vaccinated girls



# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s4 in comparison to scenario s1

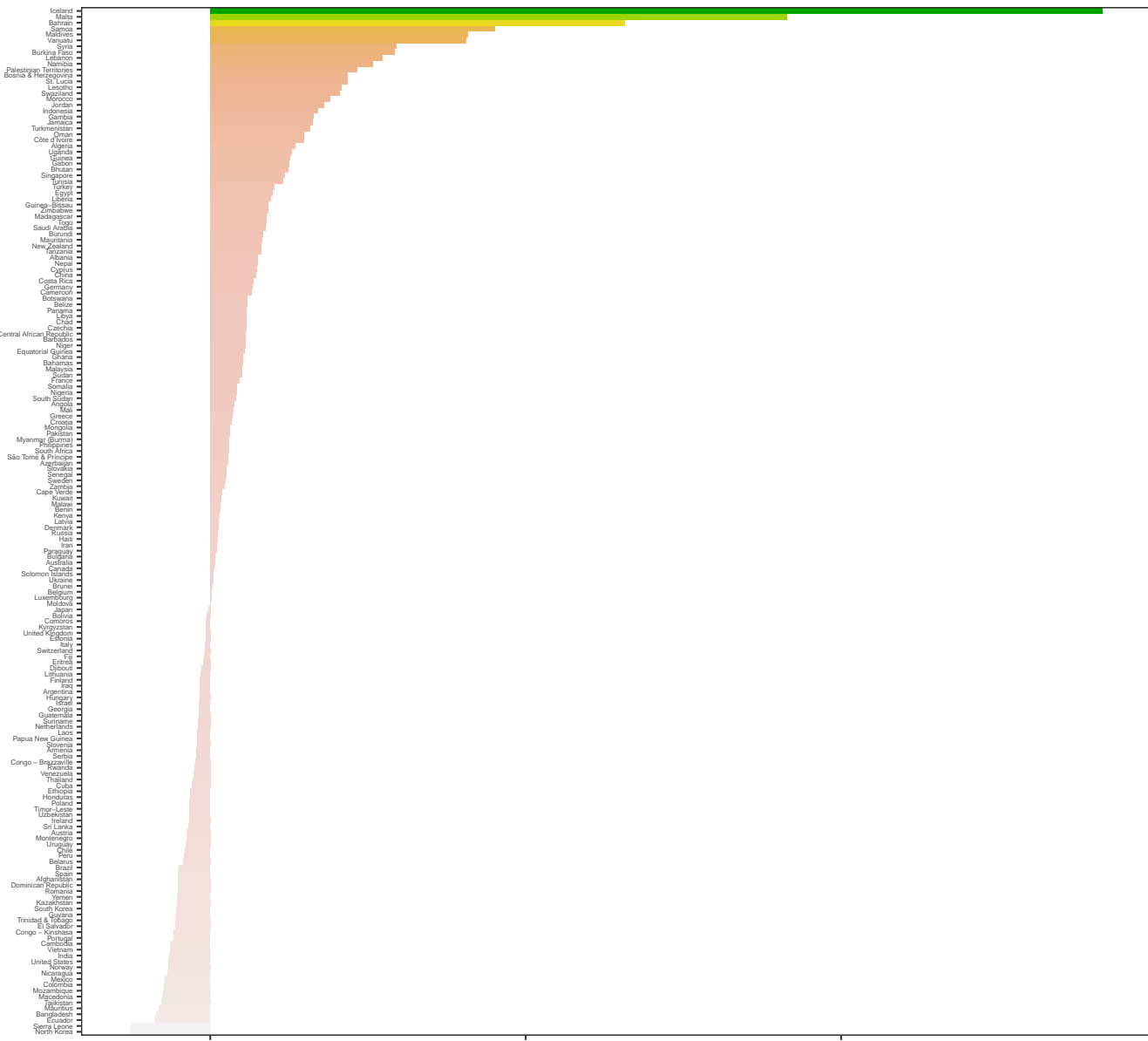


Percentage change in YLDs averted per 1000 vaccinated girls



# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

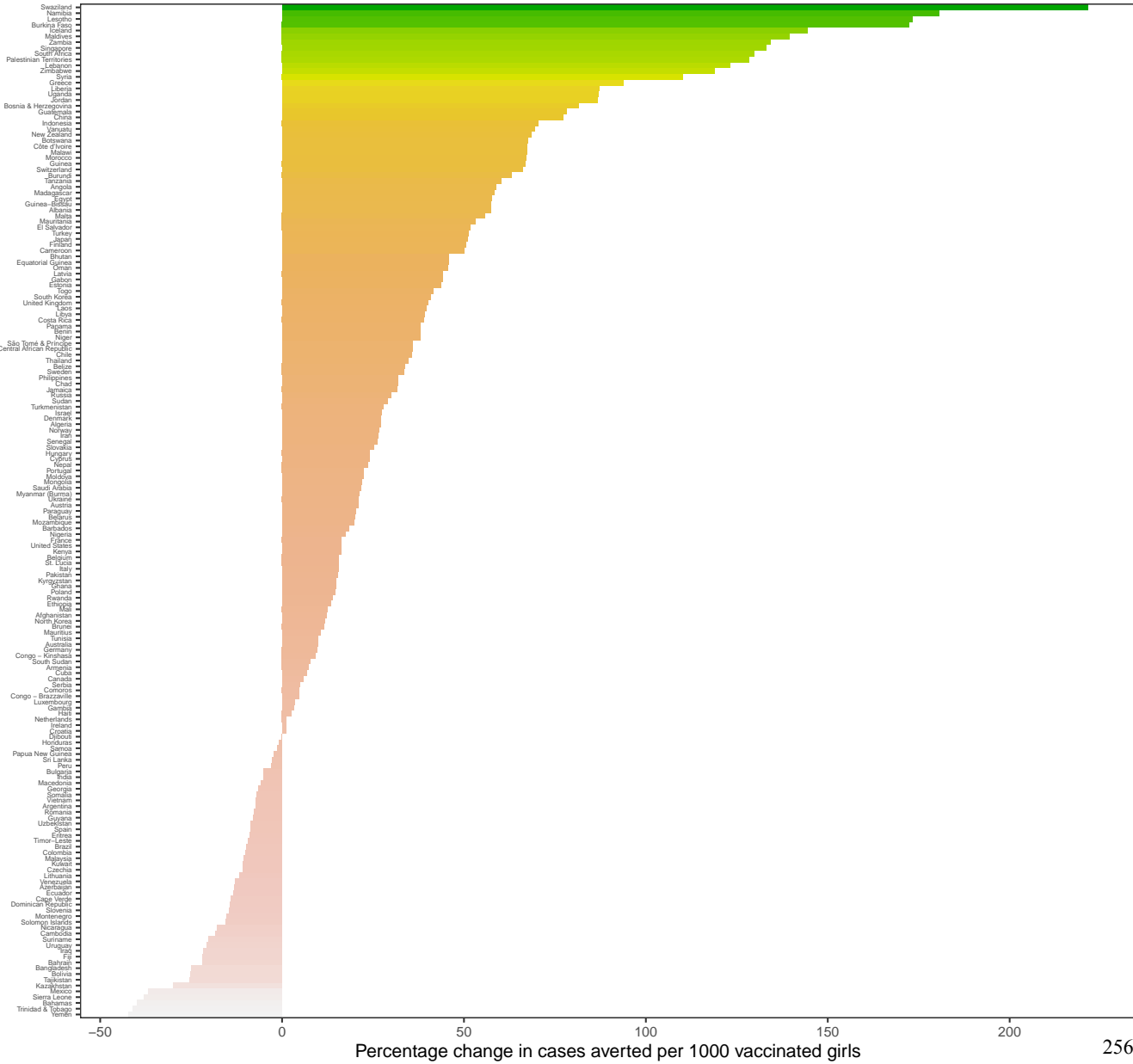
Comparison of scenario s4 in comparison to scenario s1



Percentage change in DALYs averted per 1000 vaccinated girls

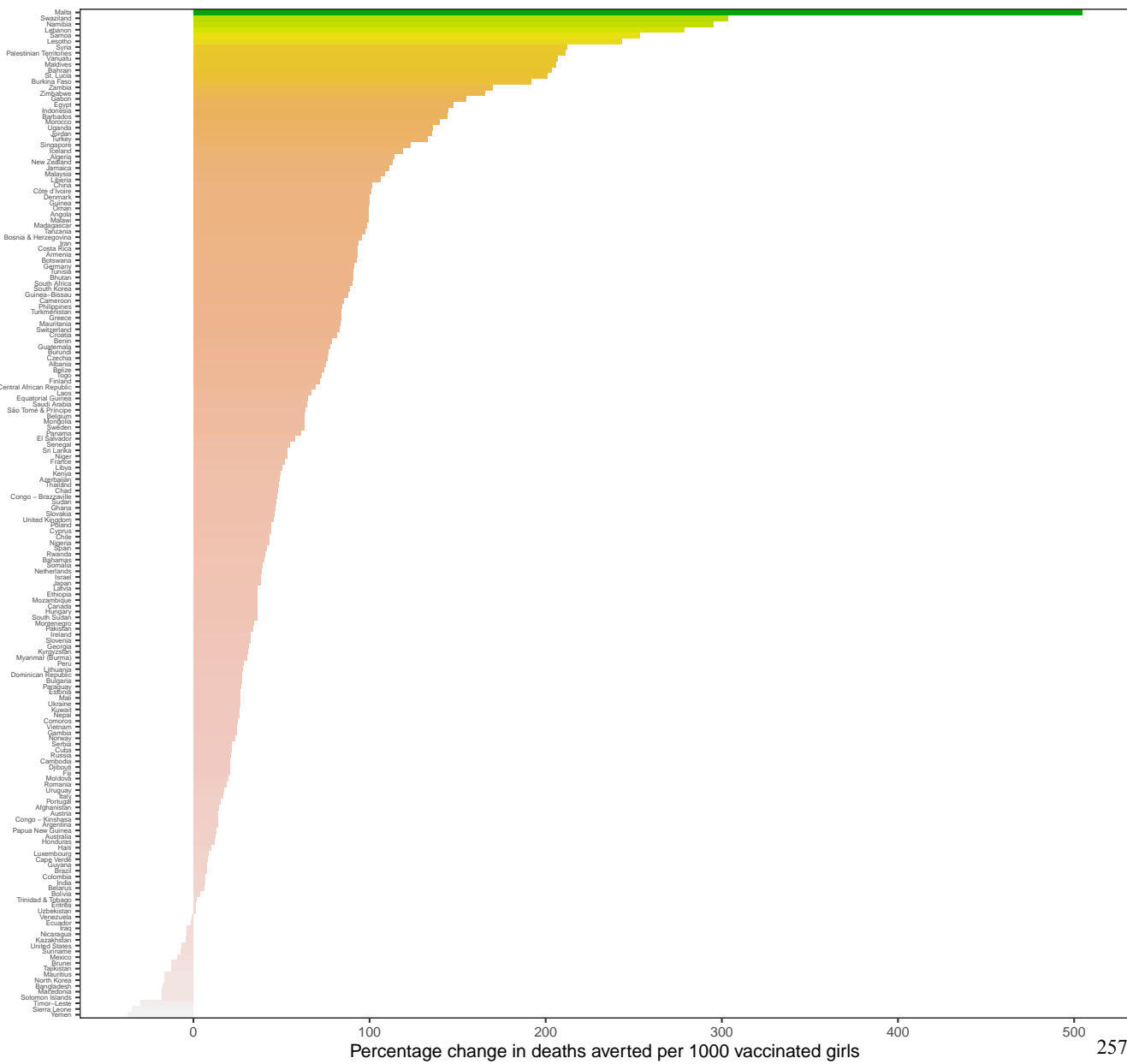
# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s5 in comparison to scenario s1

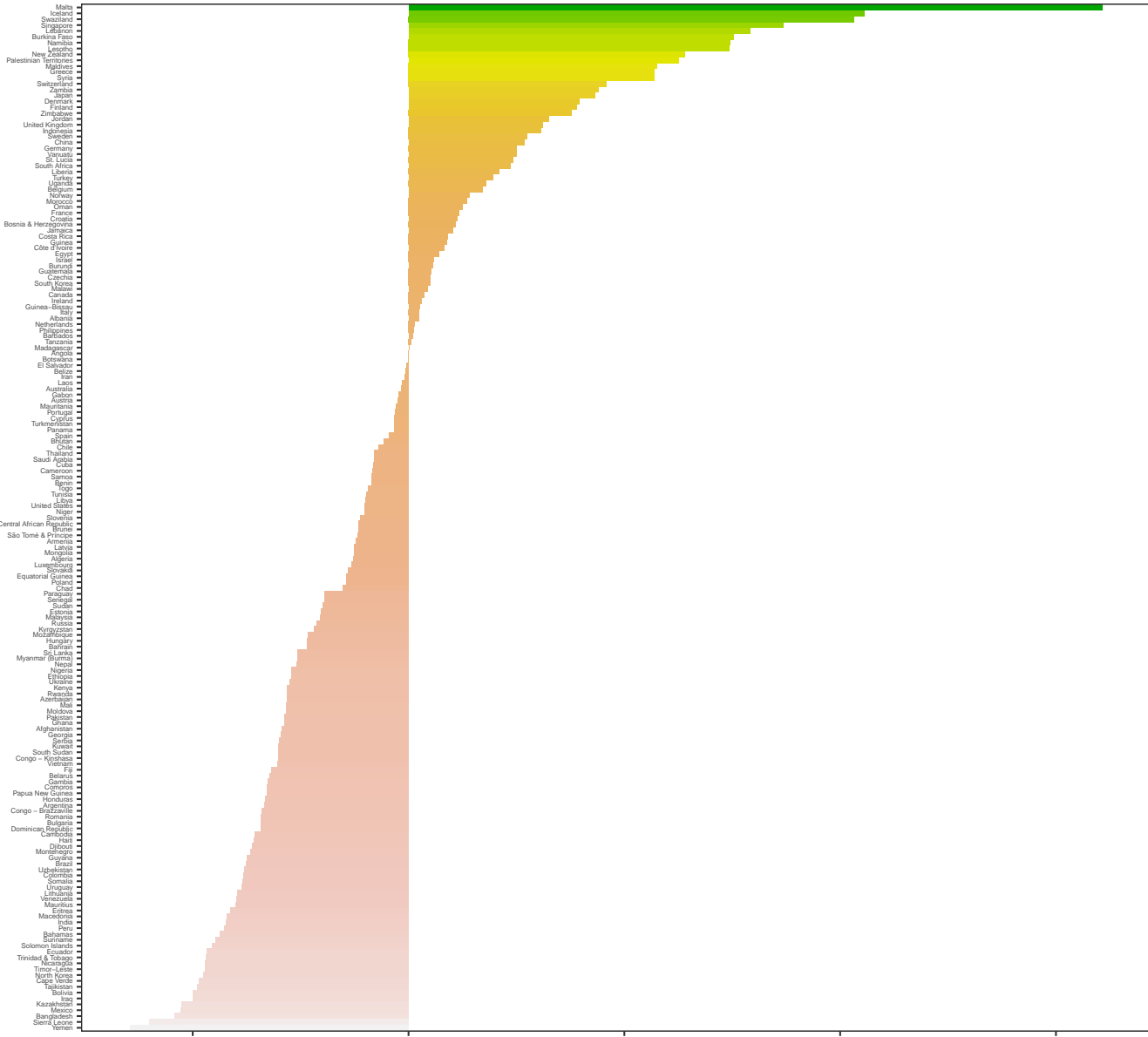


Percentage change in deaths averted per 1000 vaccinated girls



# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / bivalent/quadrivalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



Percentage change in YLDs averted per 1000 vaccinated girls

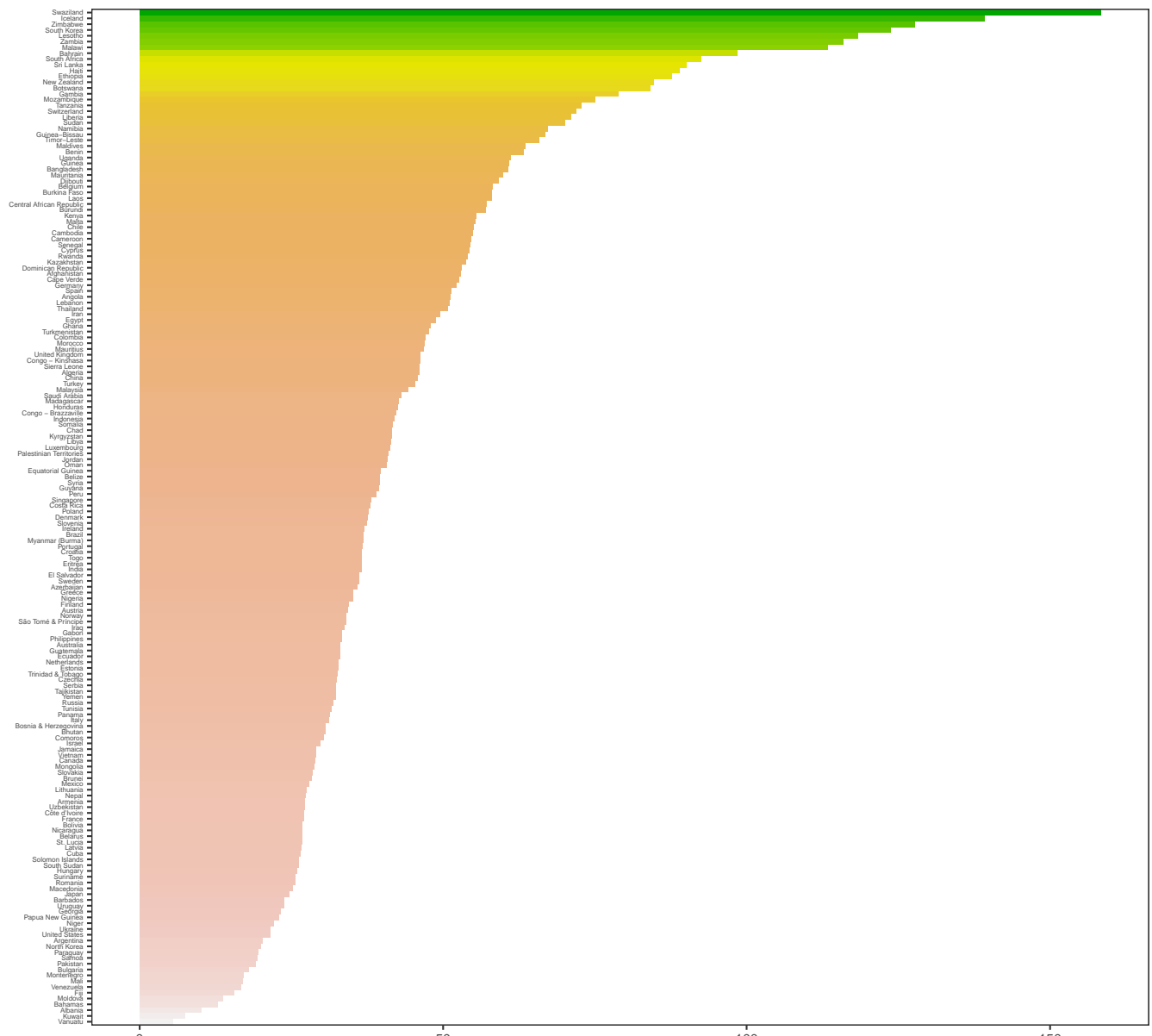






# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s2 in comparison to scenario s1



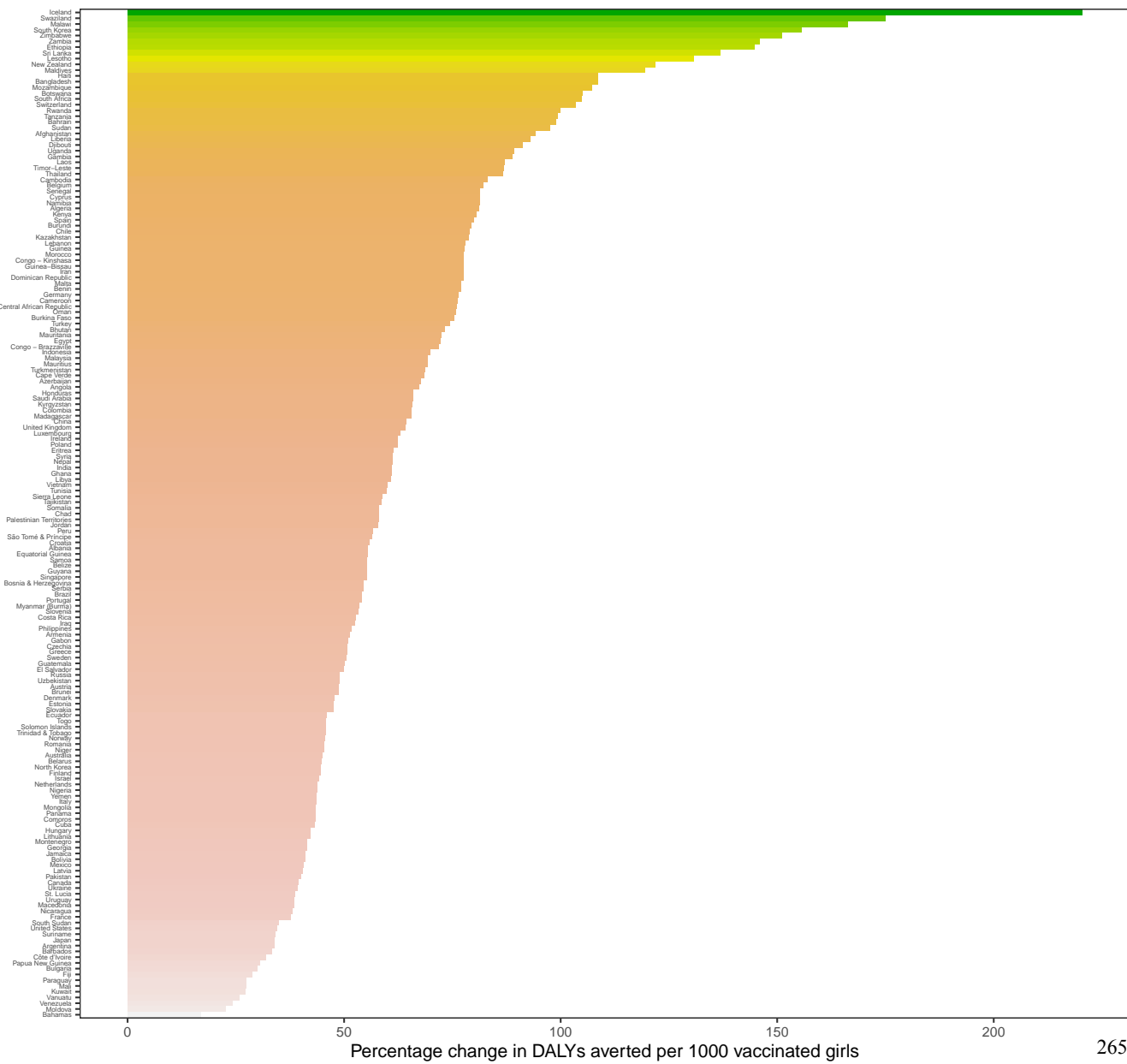
Percentage change in deaths averted per 1000 vaccinated girls





# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s2 in comparison to scenario s1



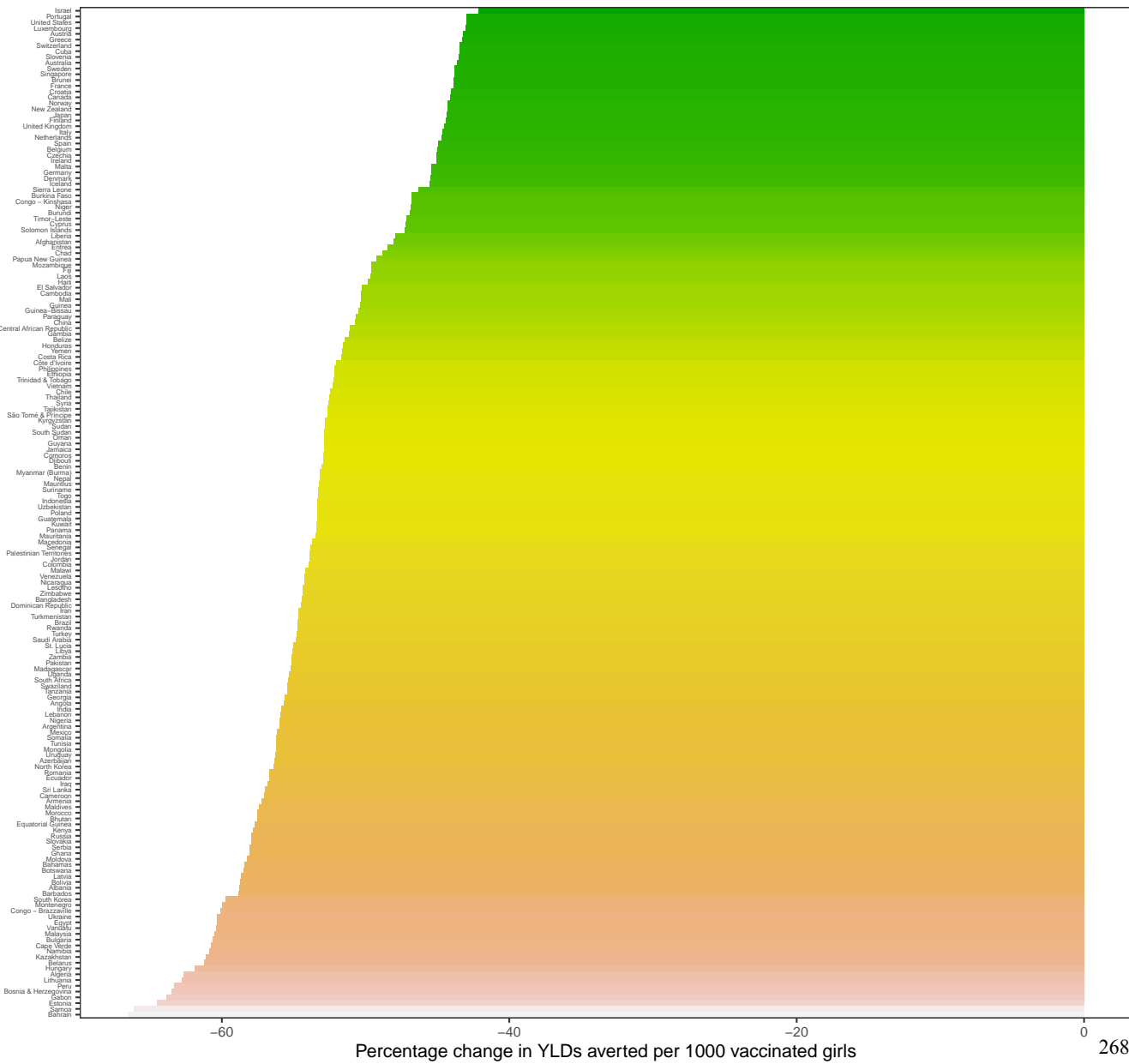






# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

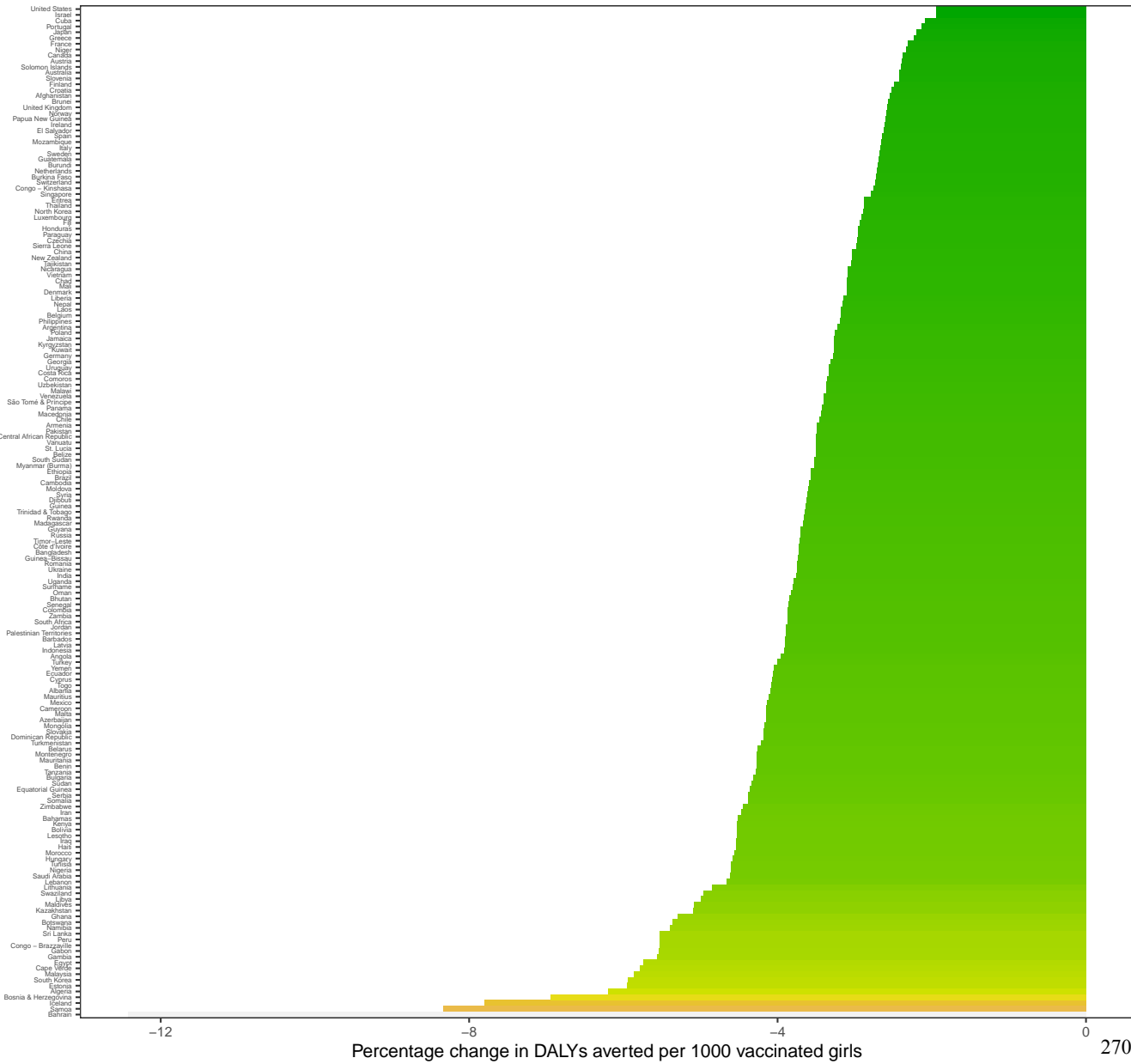
Comparison of scenario s3 in comparison to scenario s1





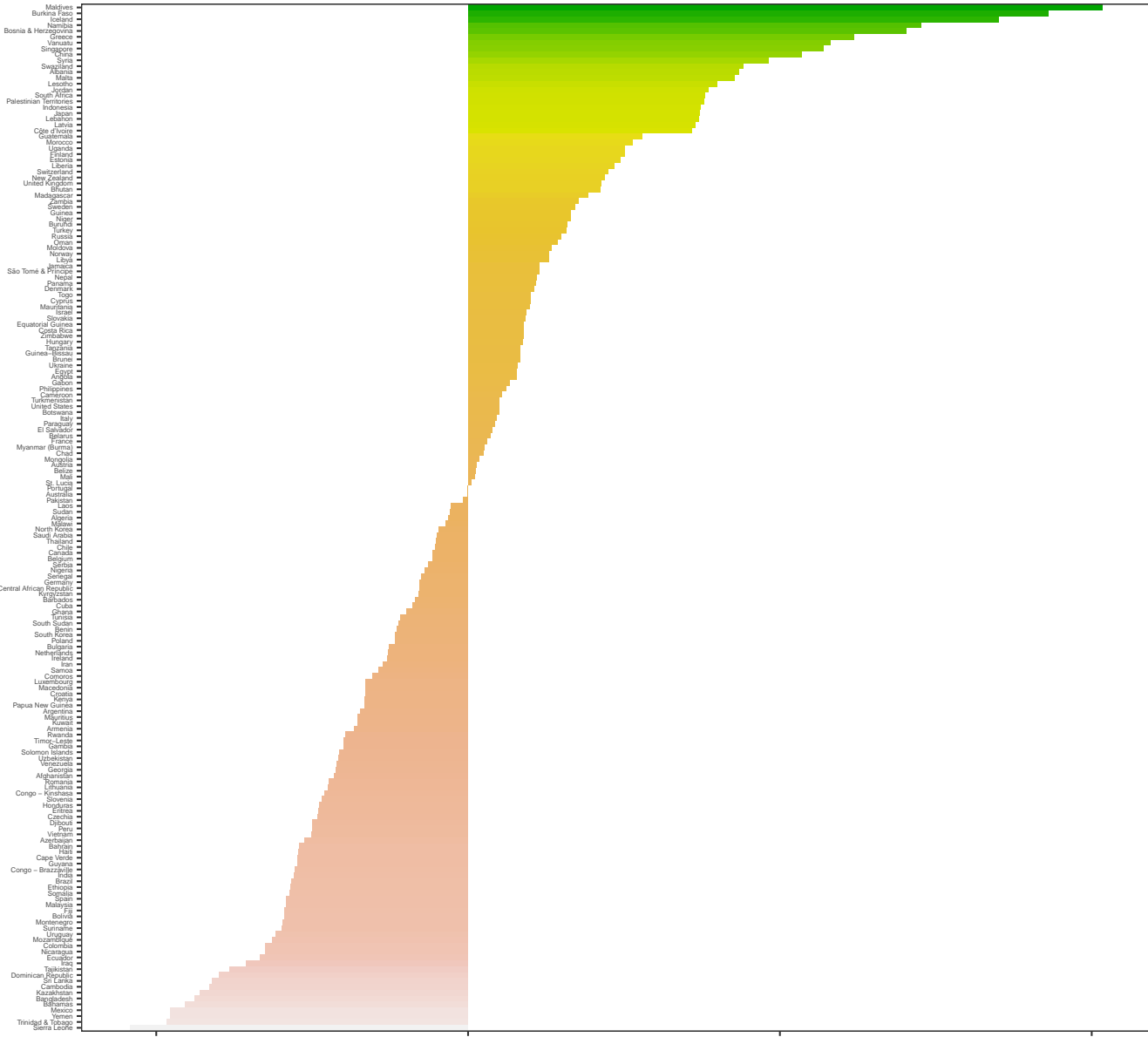
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s3 in comparison to scenario s1



# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

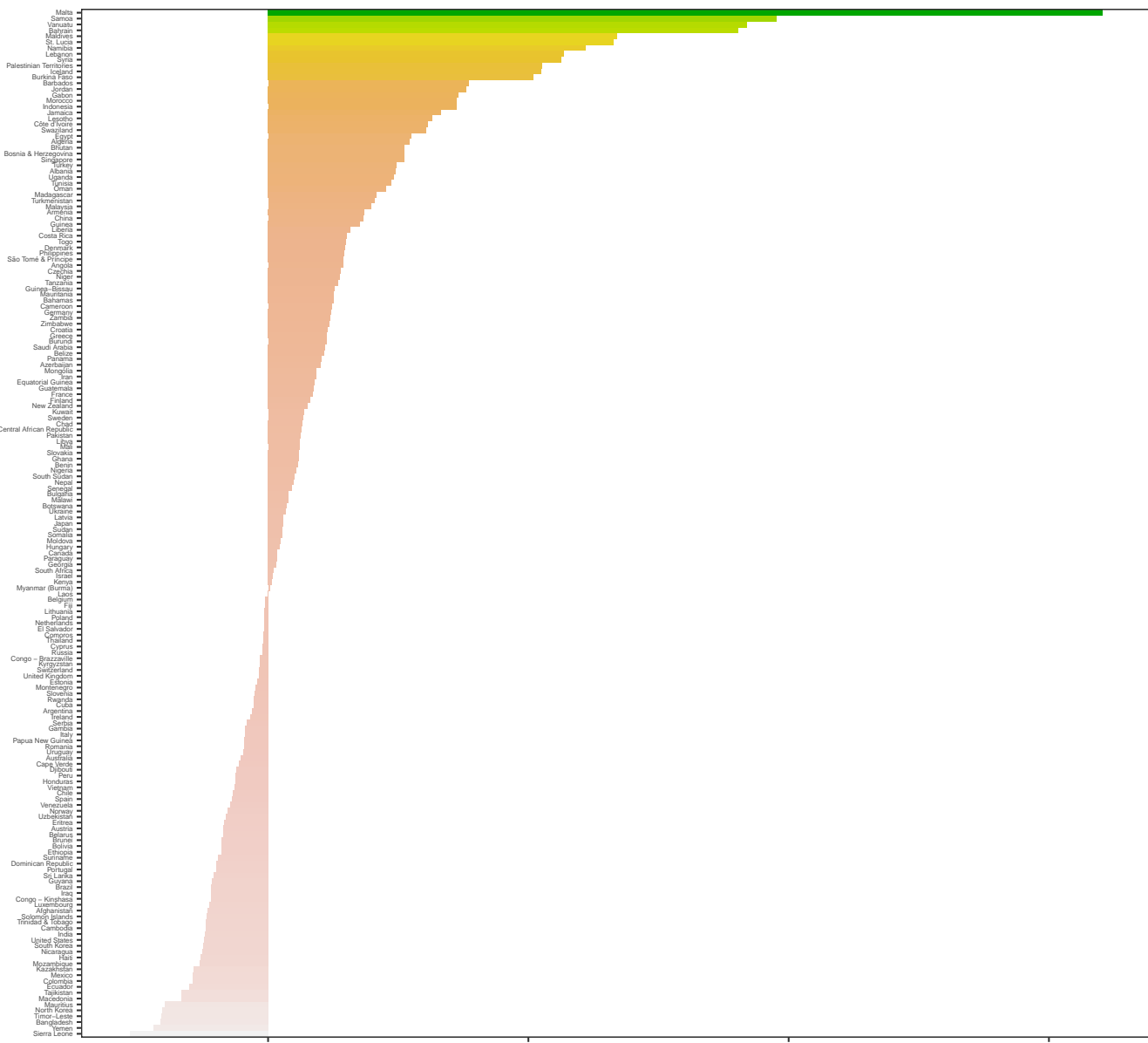
Comparison of scenario s4 in comparison to scenario s1



Percentage change in cases averted per 1000 vaccinated girls

# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

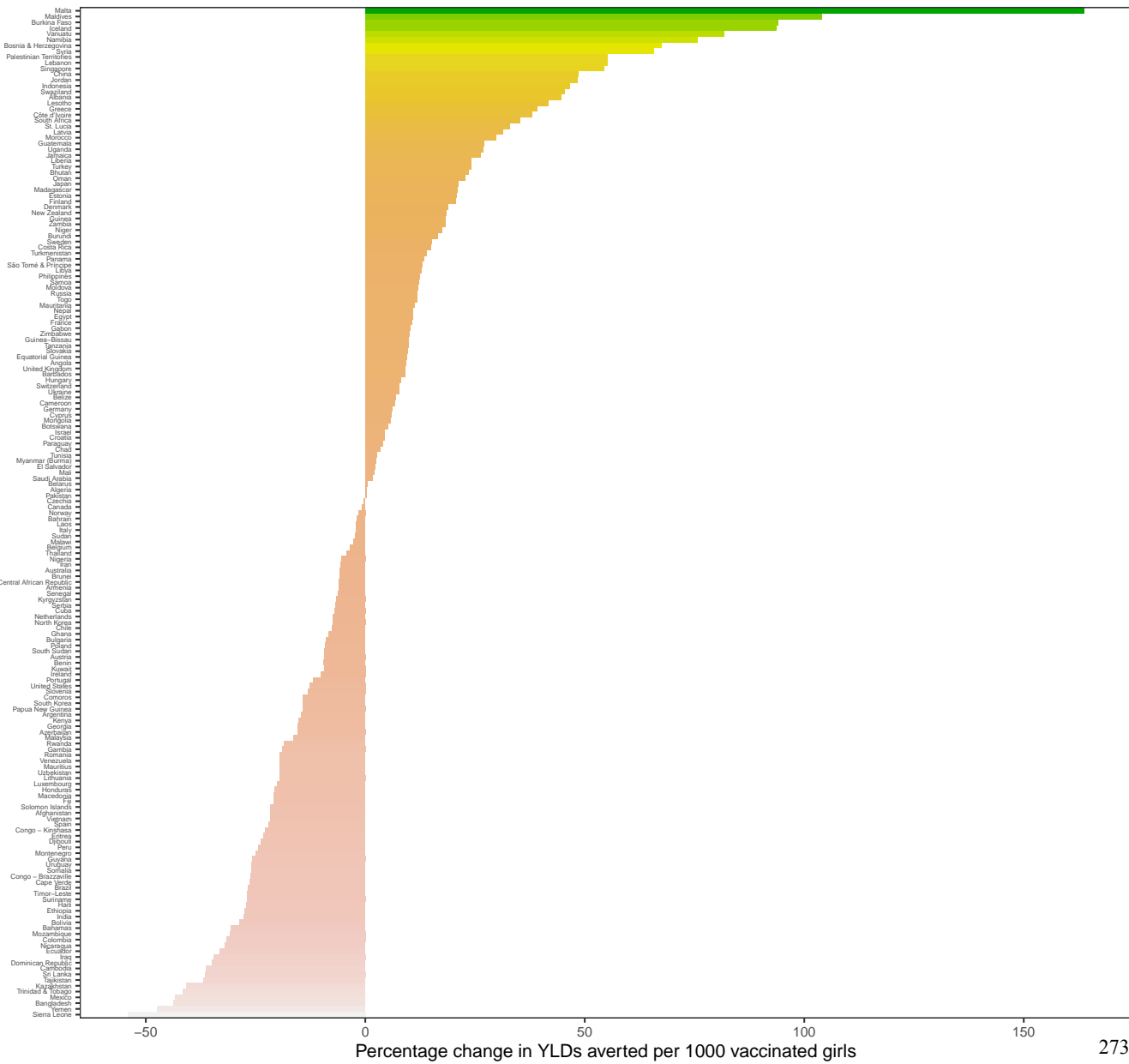
Comparison of scenario s4 in comparison to scenario s1



Percentage change in deaths averted per 1000 vaccinated girls

# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s4 in comparison to scenario s1



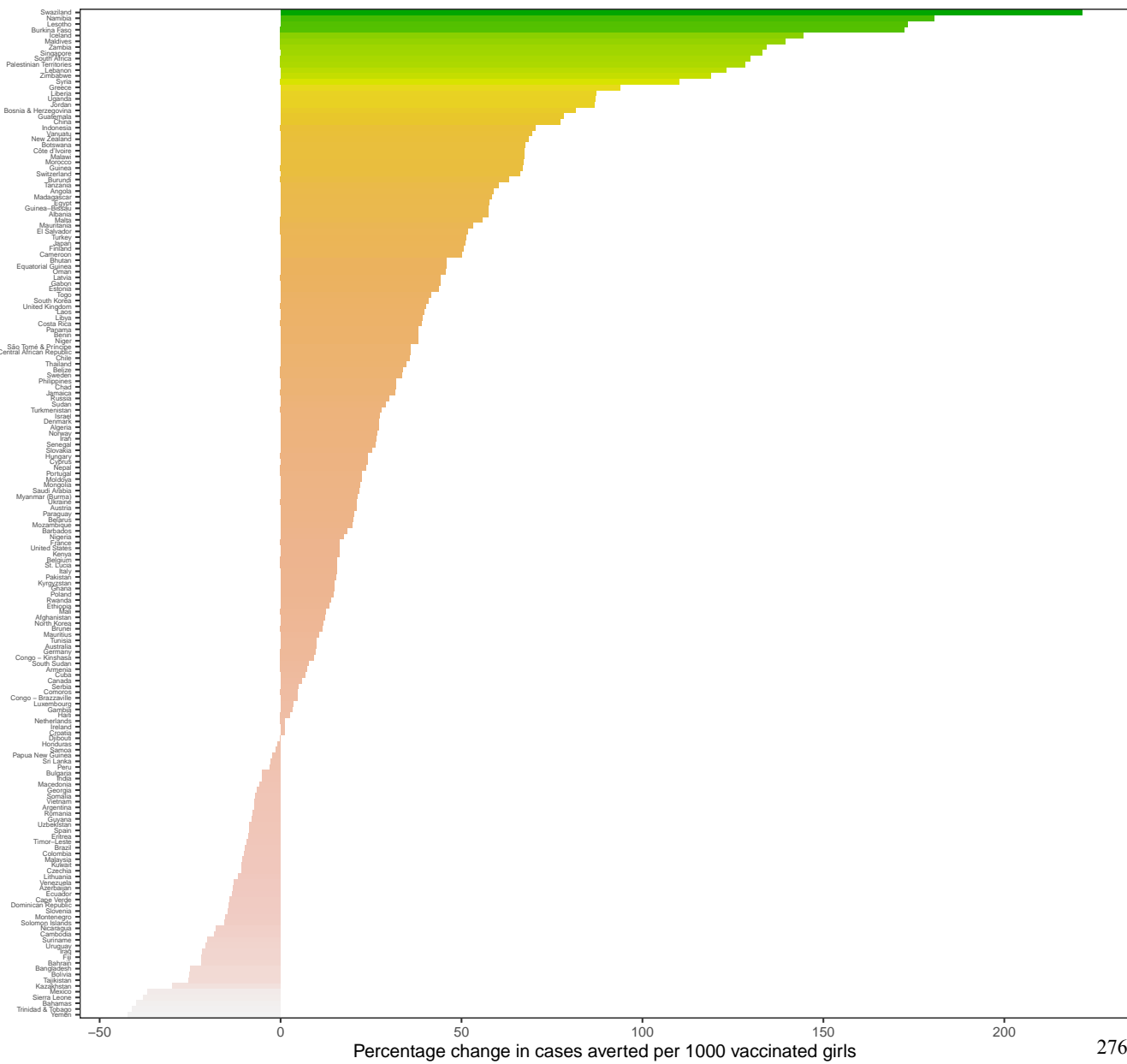






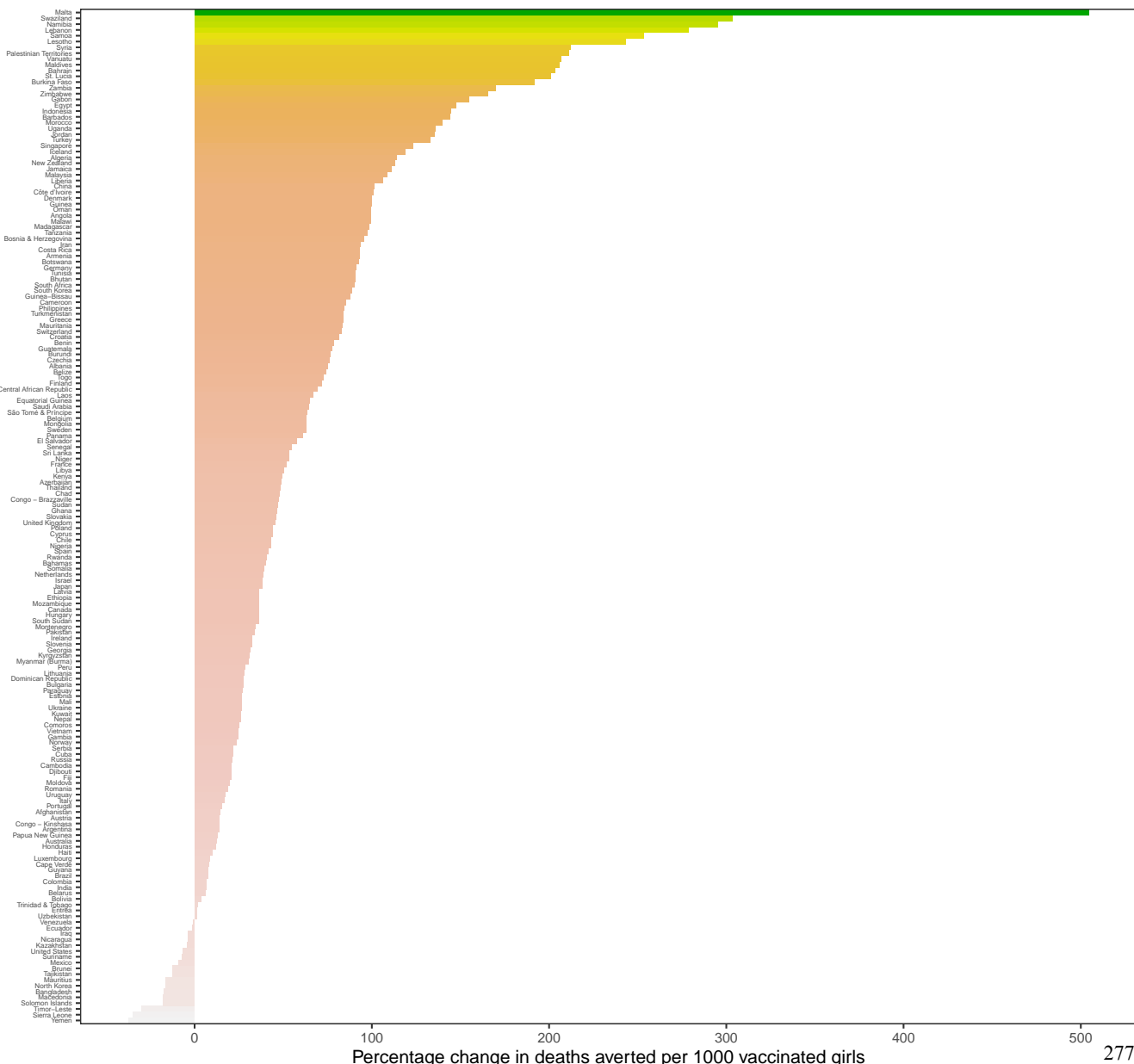
# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

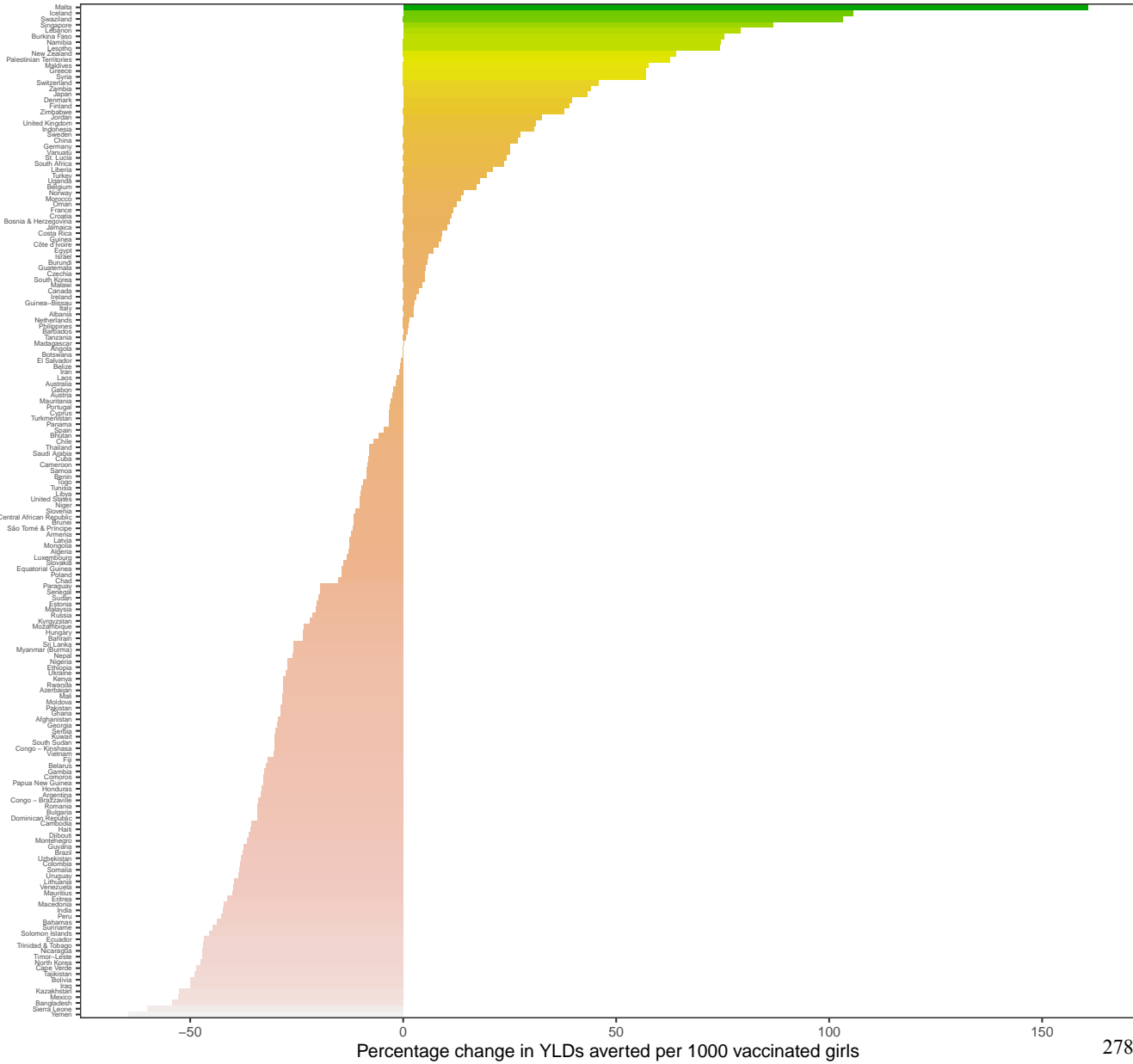
Comparison of scenario s5 in comparison to scenario s1



Percentage change in deaths averted per 1000 vaccinated girls

# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s5 in comparison to scenario s1

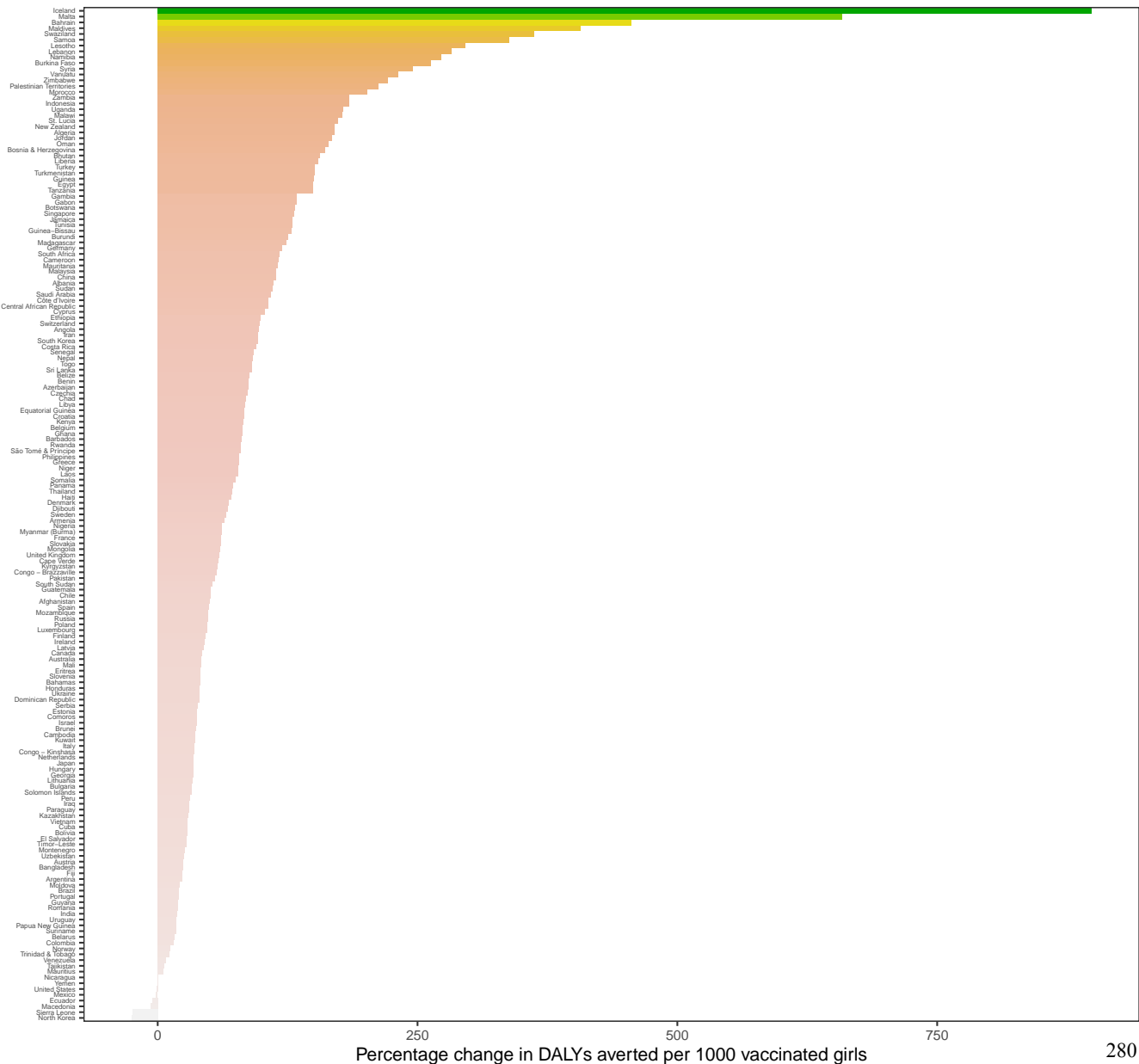


Percentage change in YLDs averted per 1000 vaccinated girls



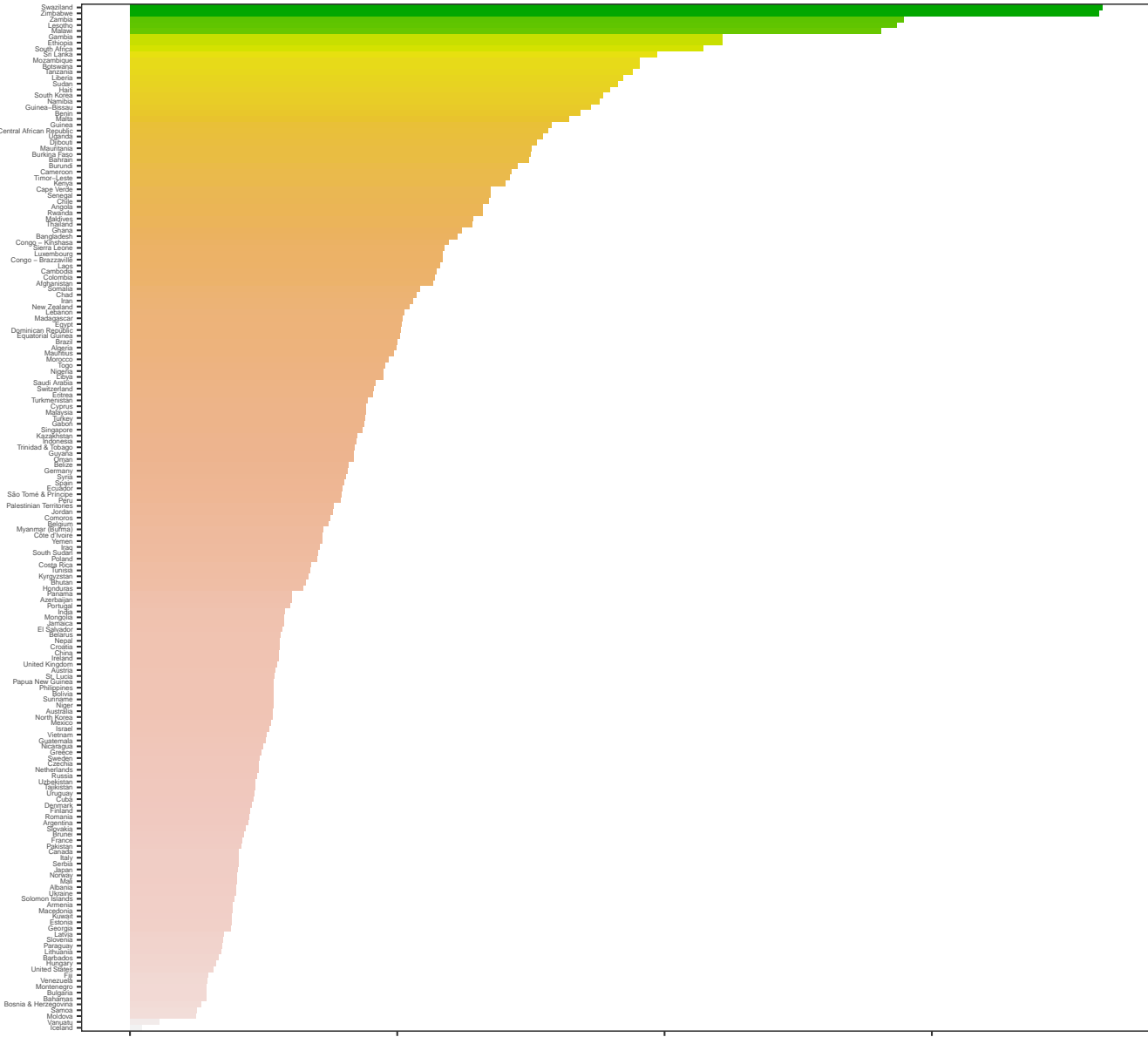
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 9 years / nonavalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s2 in comparison to scenario s1

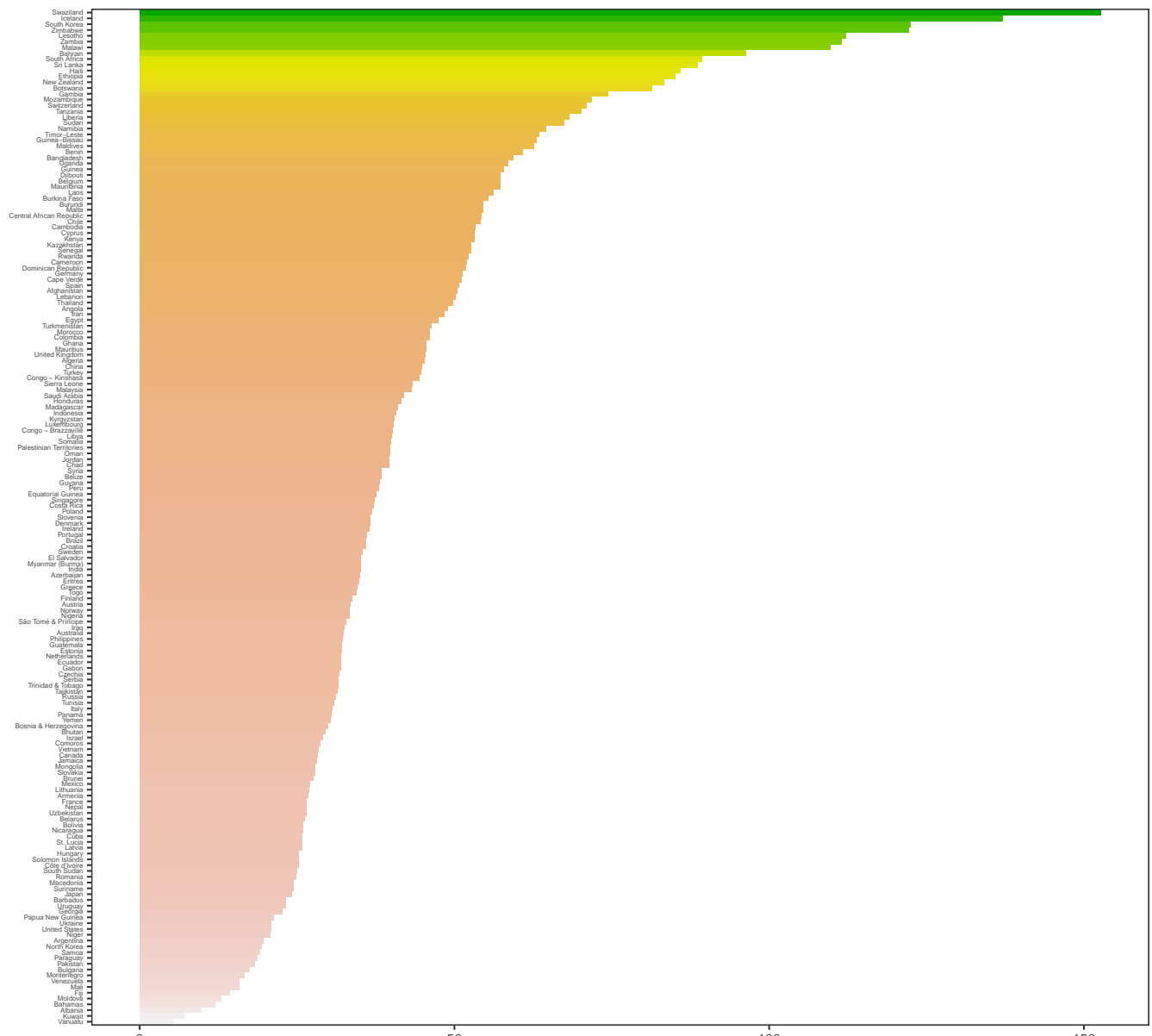


Percentage change in cases averted per 1000 vaccinated girls



# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s2 in comparison to scenario s1

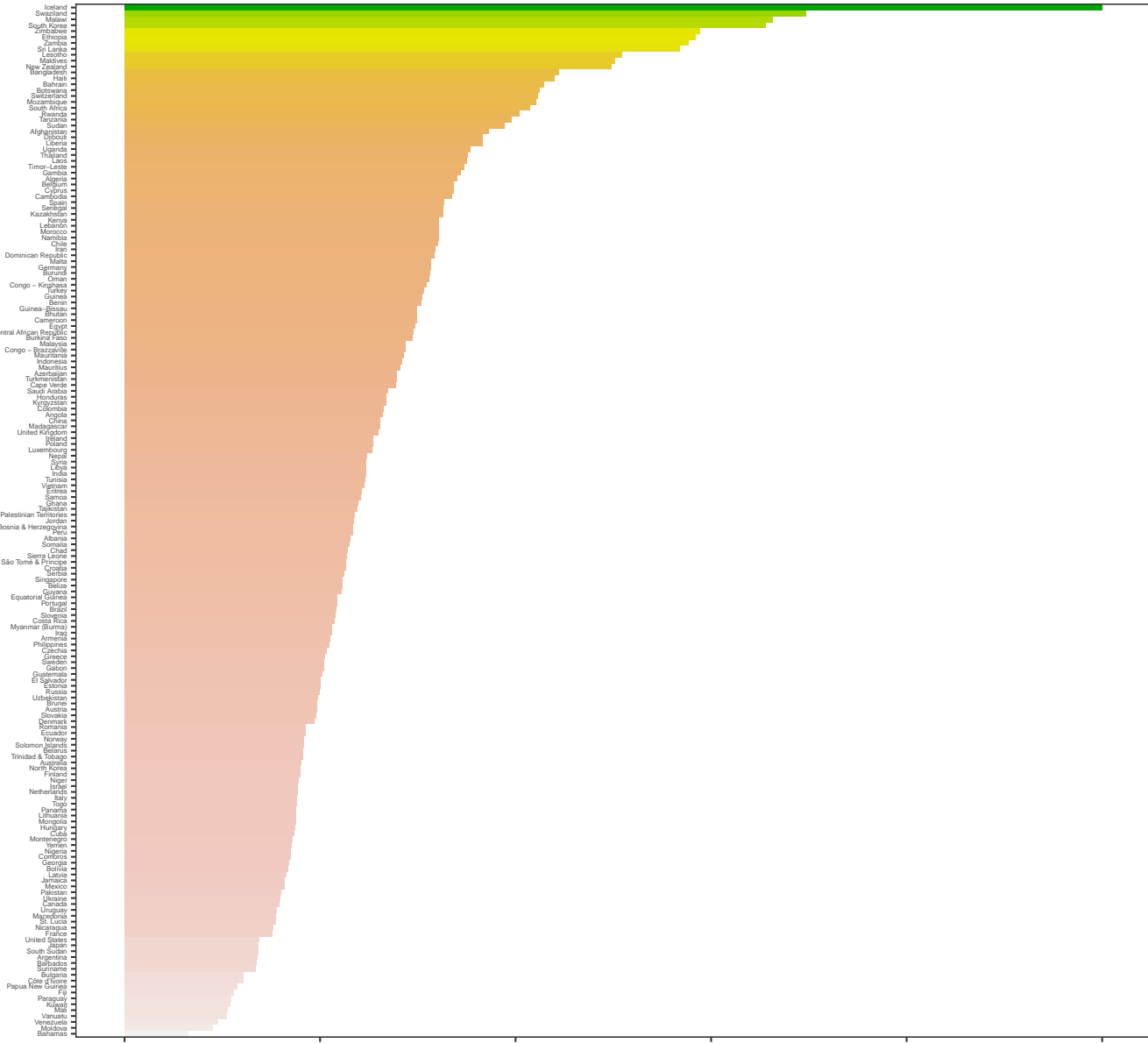


Percentage change in deaths averted per 1000 vaccinated girls



# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

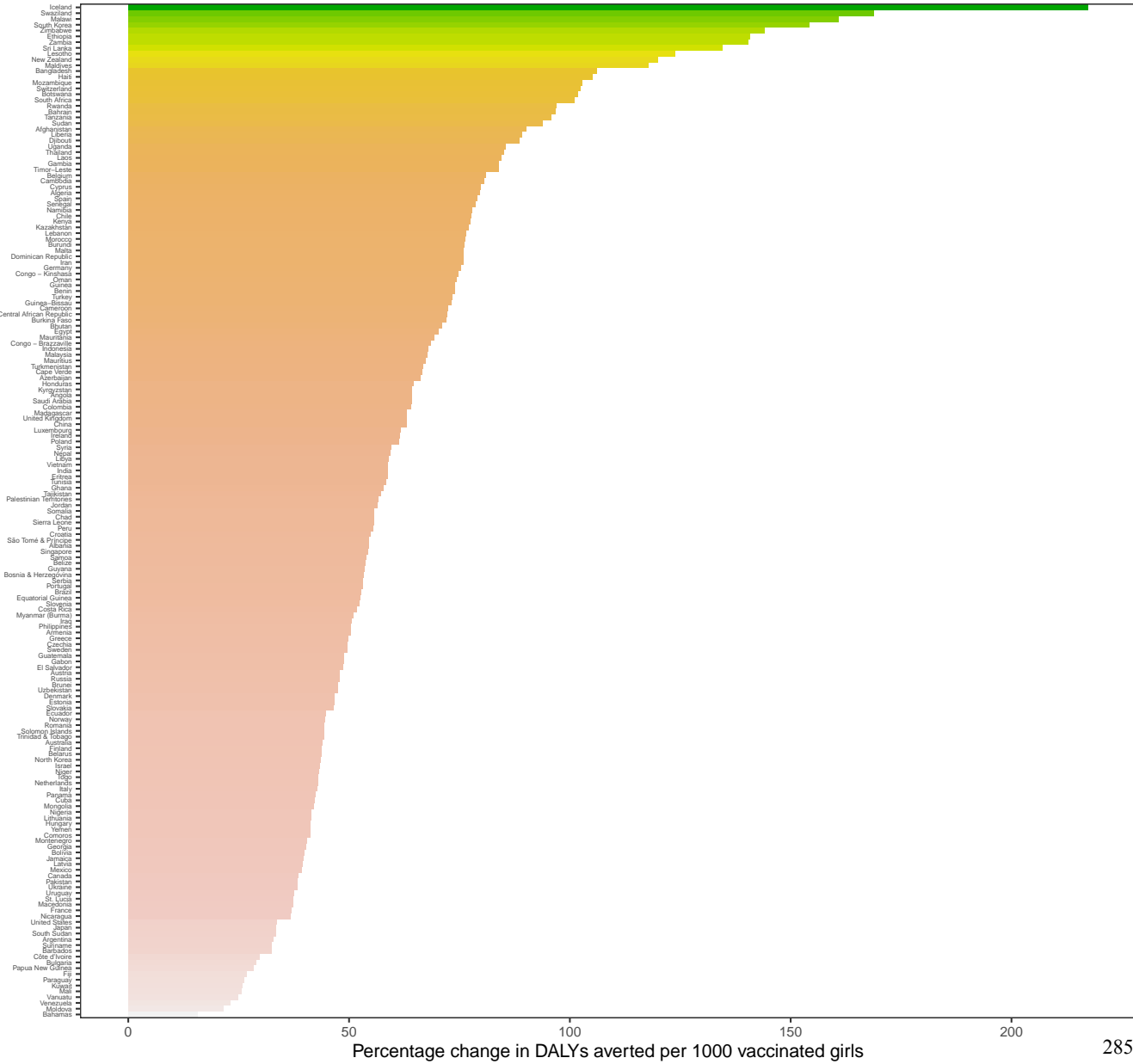
Comparison of scenario s2 in comparison to scenario s1



Percentage change in YLLs averted per 1000 vaccinated girls

# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s2 in comparison to scenario s1

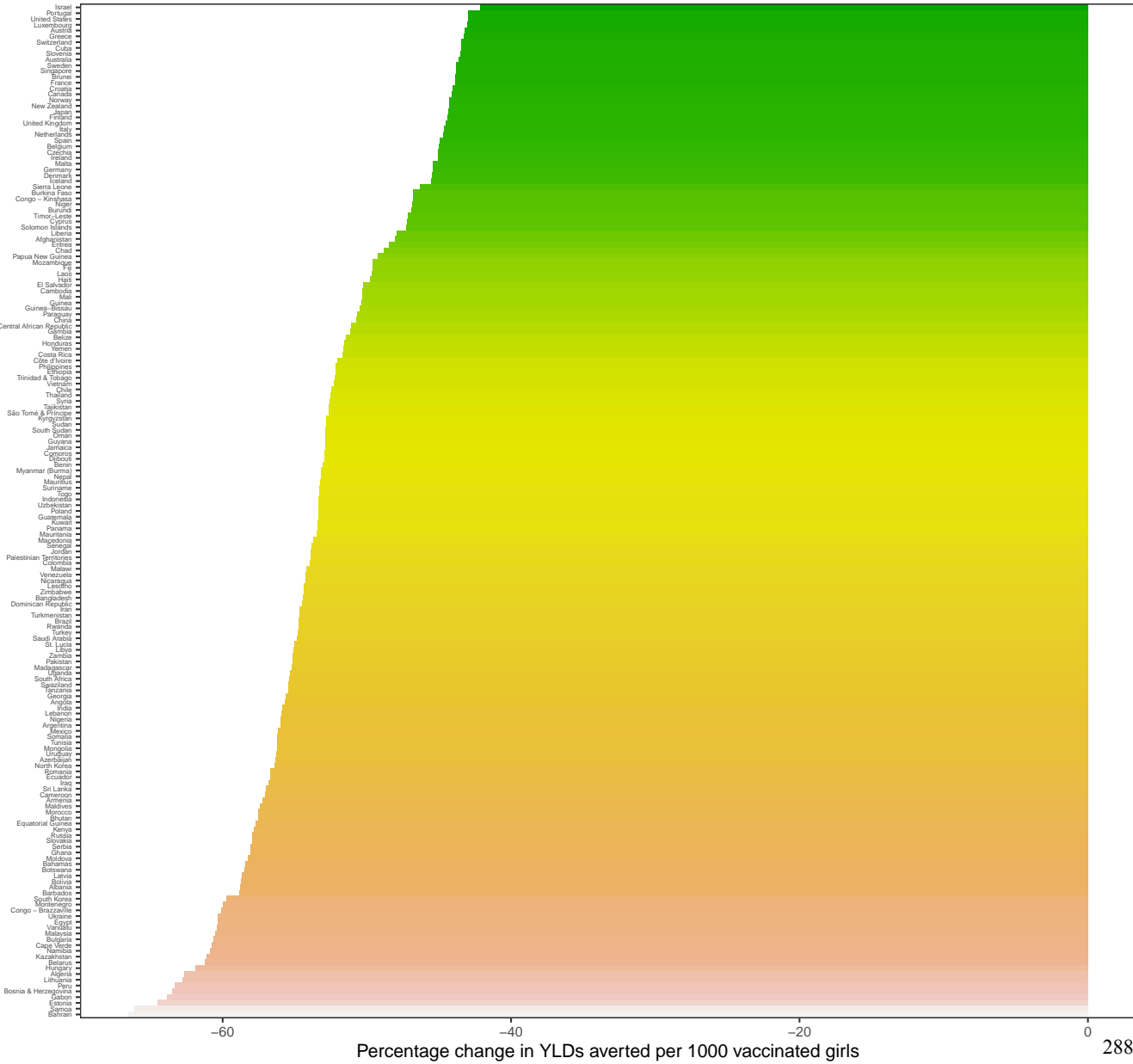






# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s3 in comparison to scenario s1



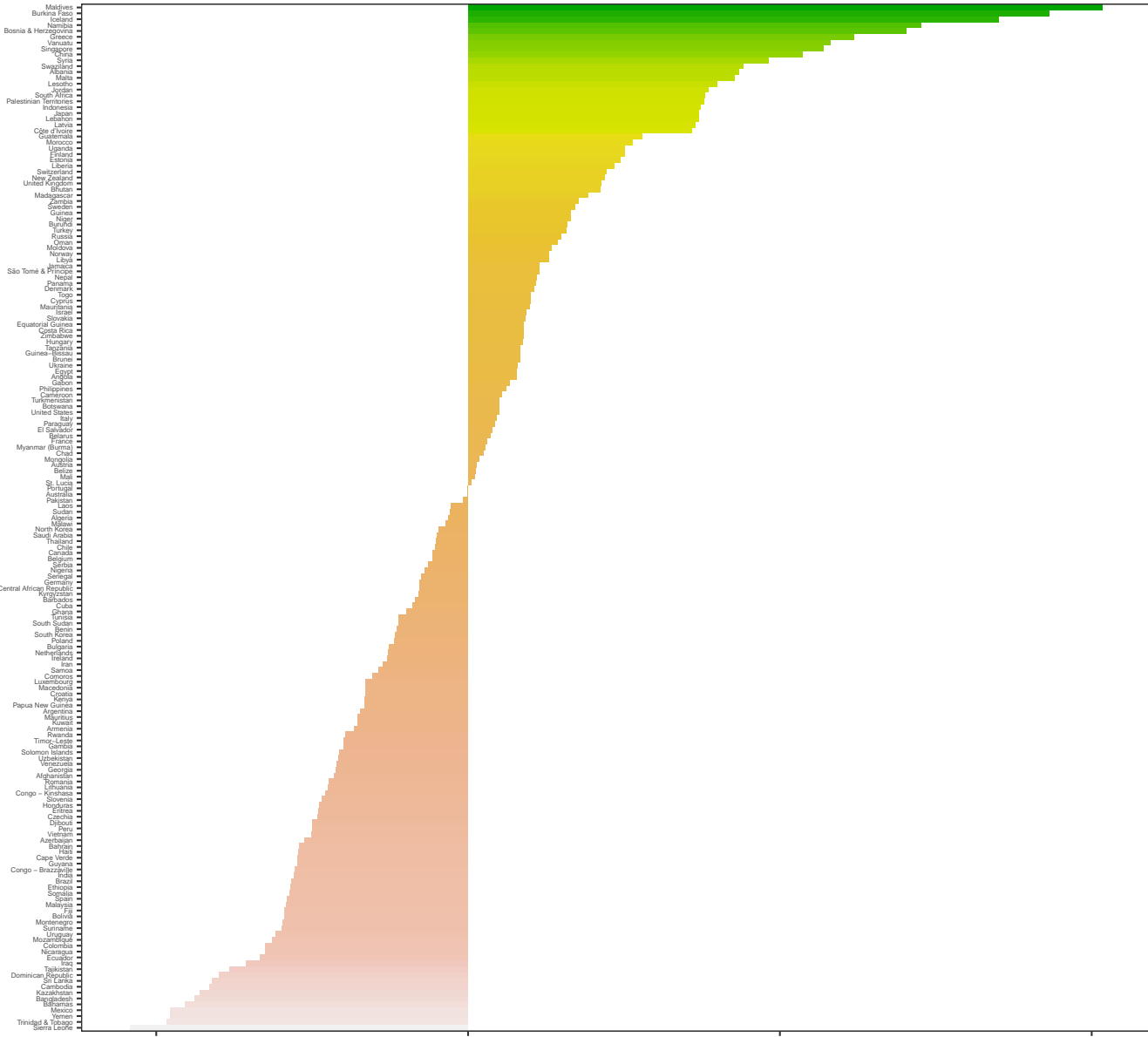






# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

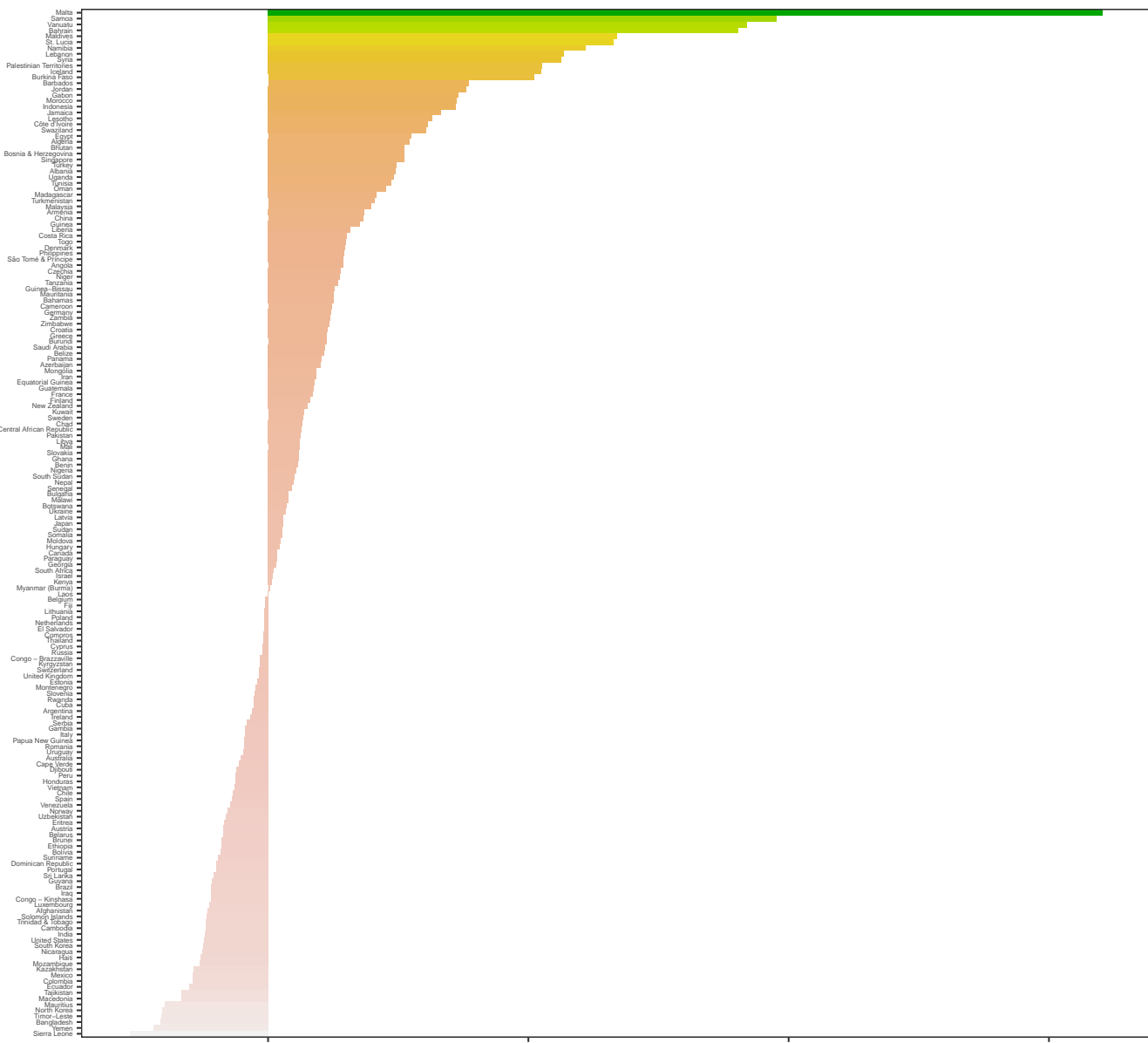
Comparison of scenario s4 in comparison to scenario s1



Percentage change in cases averted per 1000 vaccinated girls

# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

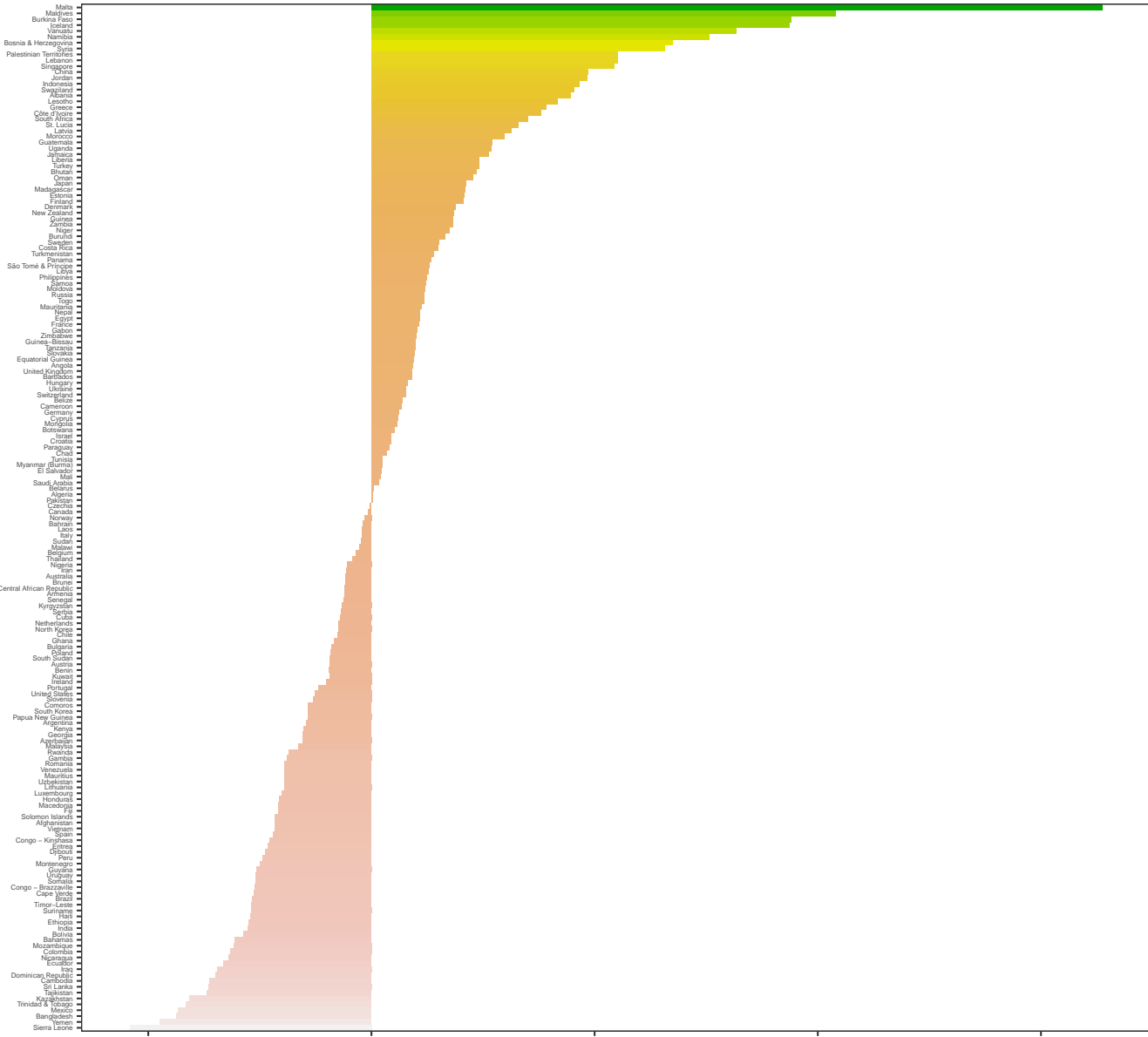
Comparison of scenario s4 in comparison to scenario s1



Percentage change in deaths averted per 1000 vaccinated girls

# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

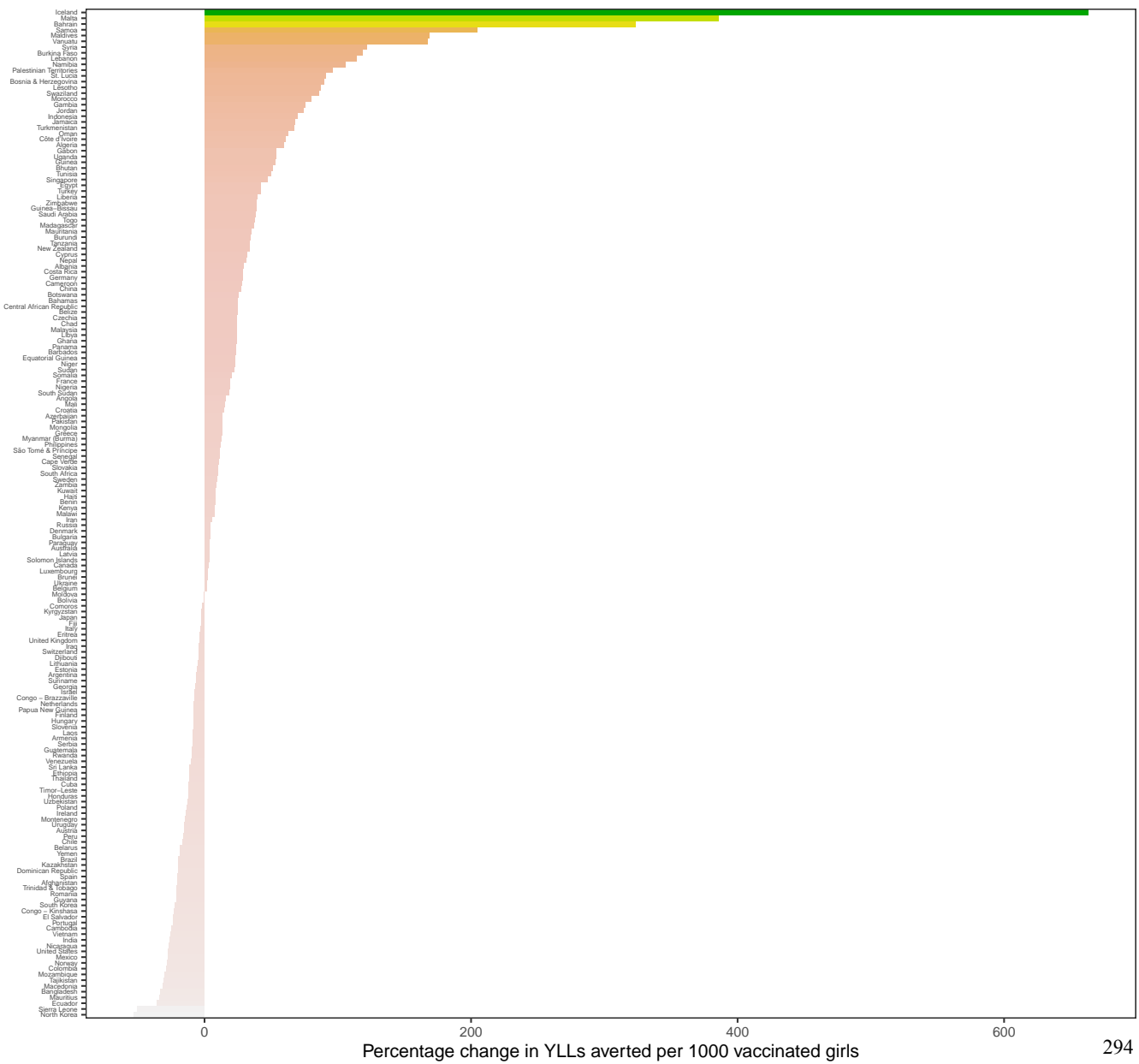
Comparison of scenario s4 in comparison to scenario s1



Percentage change in YLDs averted per 1000 vaccinated girls

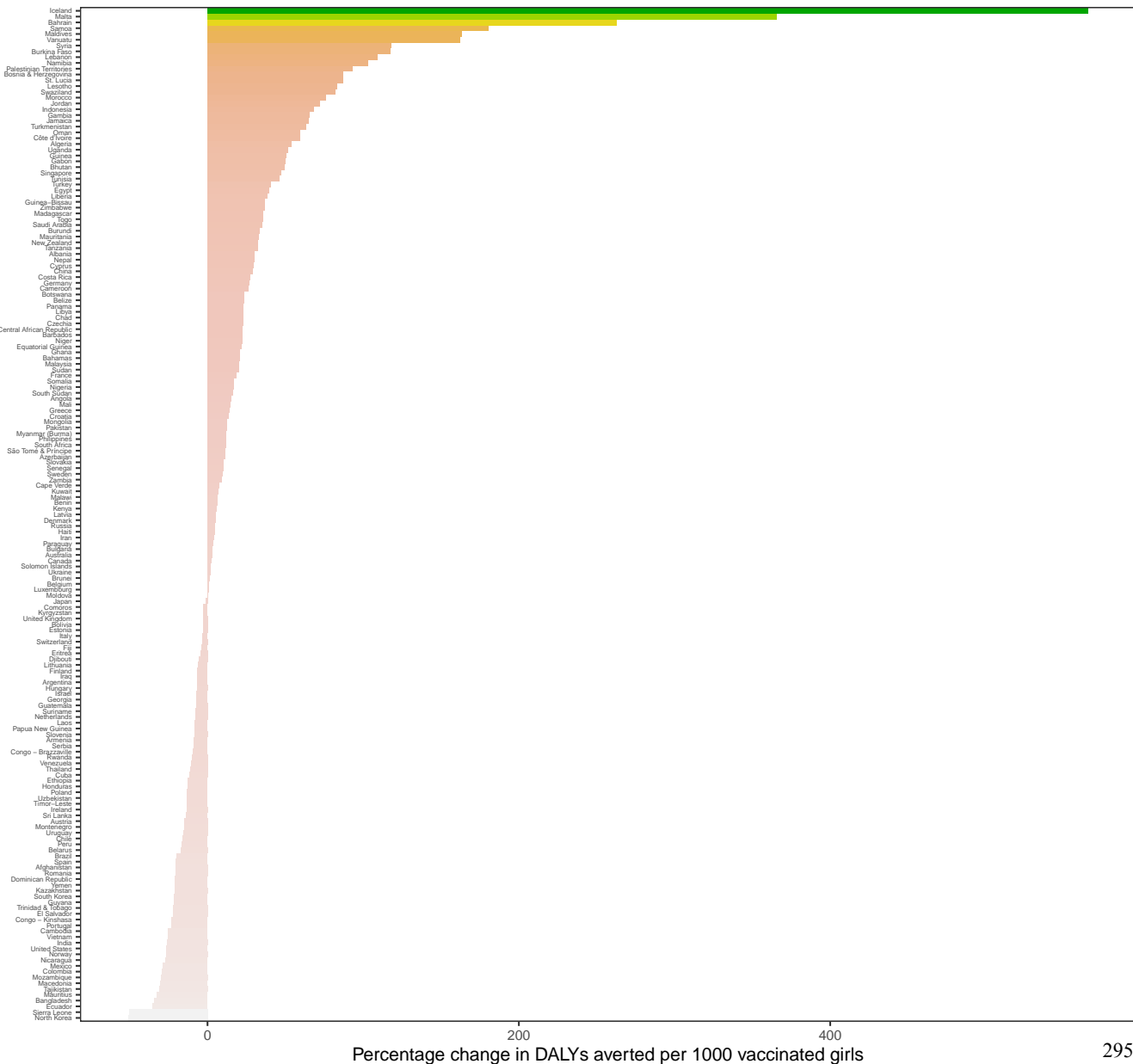
# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s4 in comparison to scenario s1



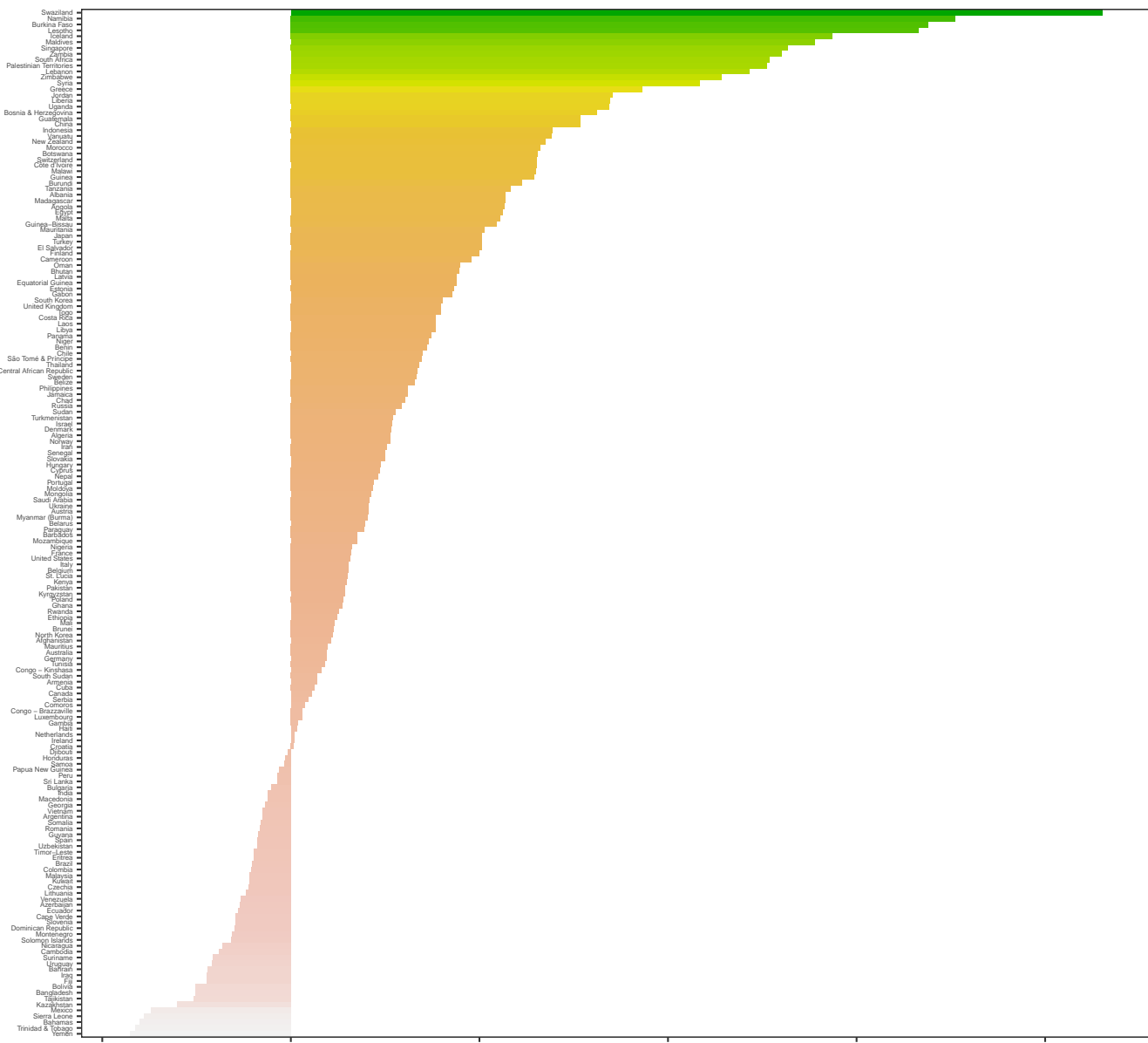
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s4 in comparison to scenario s1



# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

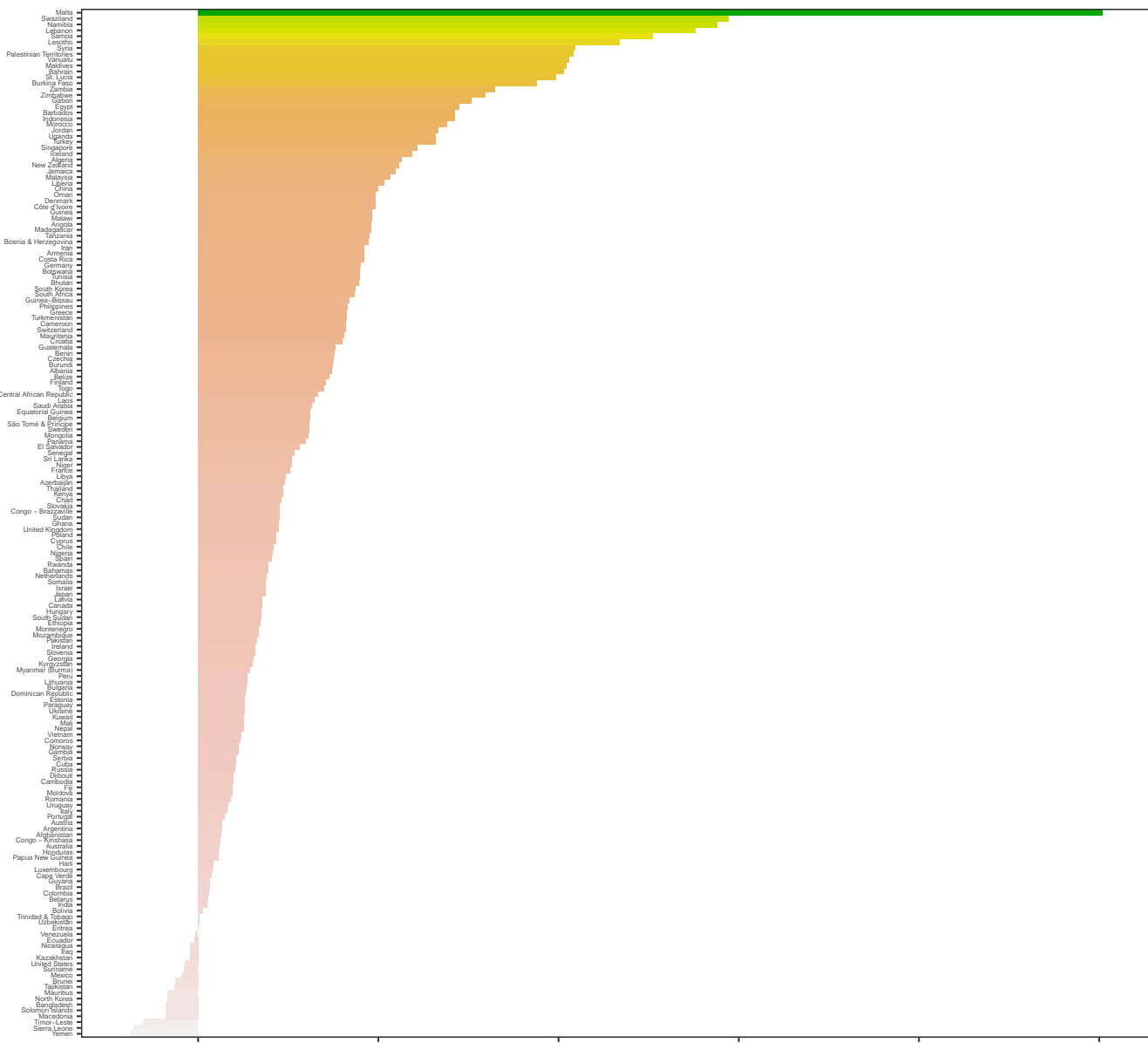
Comparison of scenario s5 in comparison to scenario s1



Percentage change in cases averted per 1000 vaccinated girls

# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s5 in comparison to scenario s1

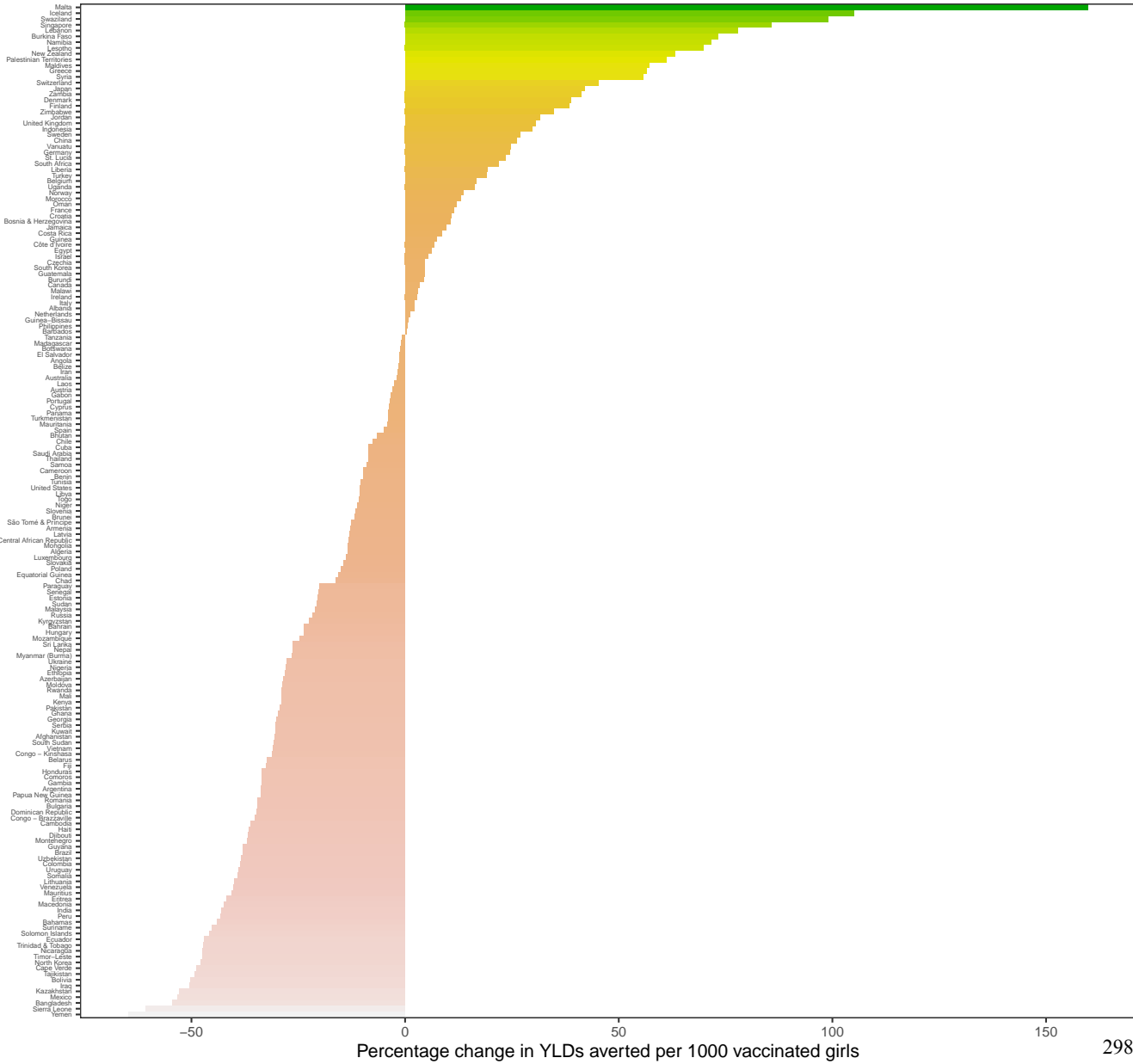


Percentage change in deaths averted per 1000 vaccinated girls



# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

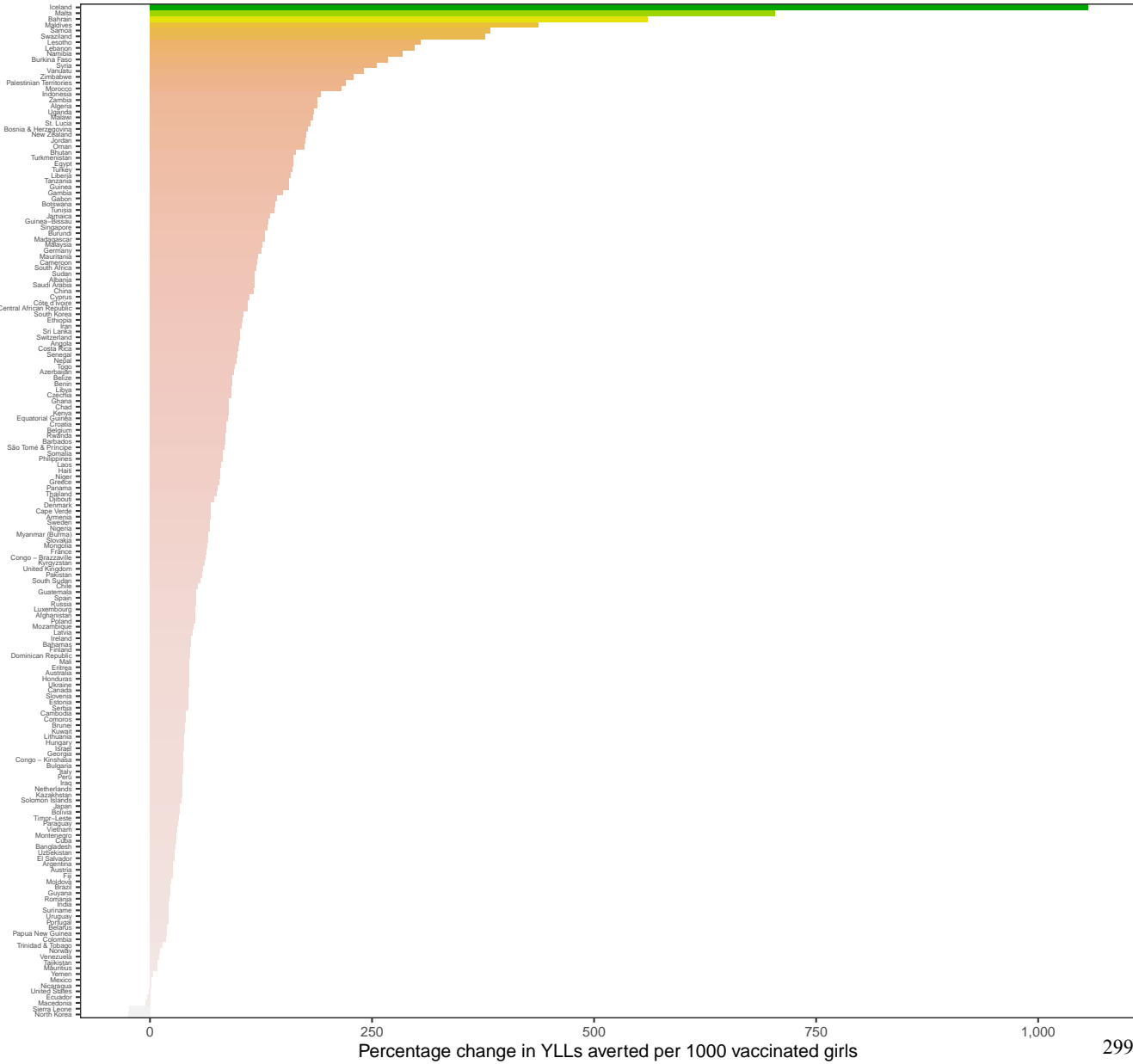
Comparison of scenario s5 in comparison to scenario s1



Percentage change in YLDs averted per 1000 vaccinated girls

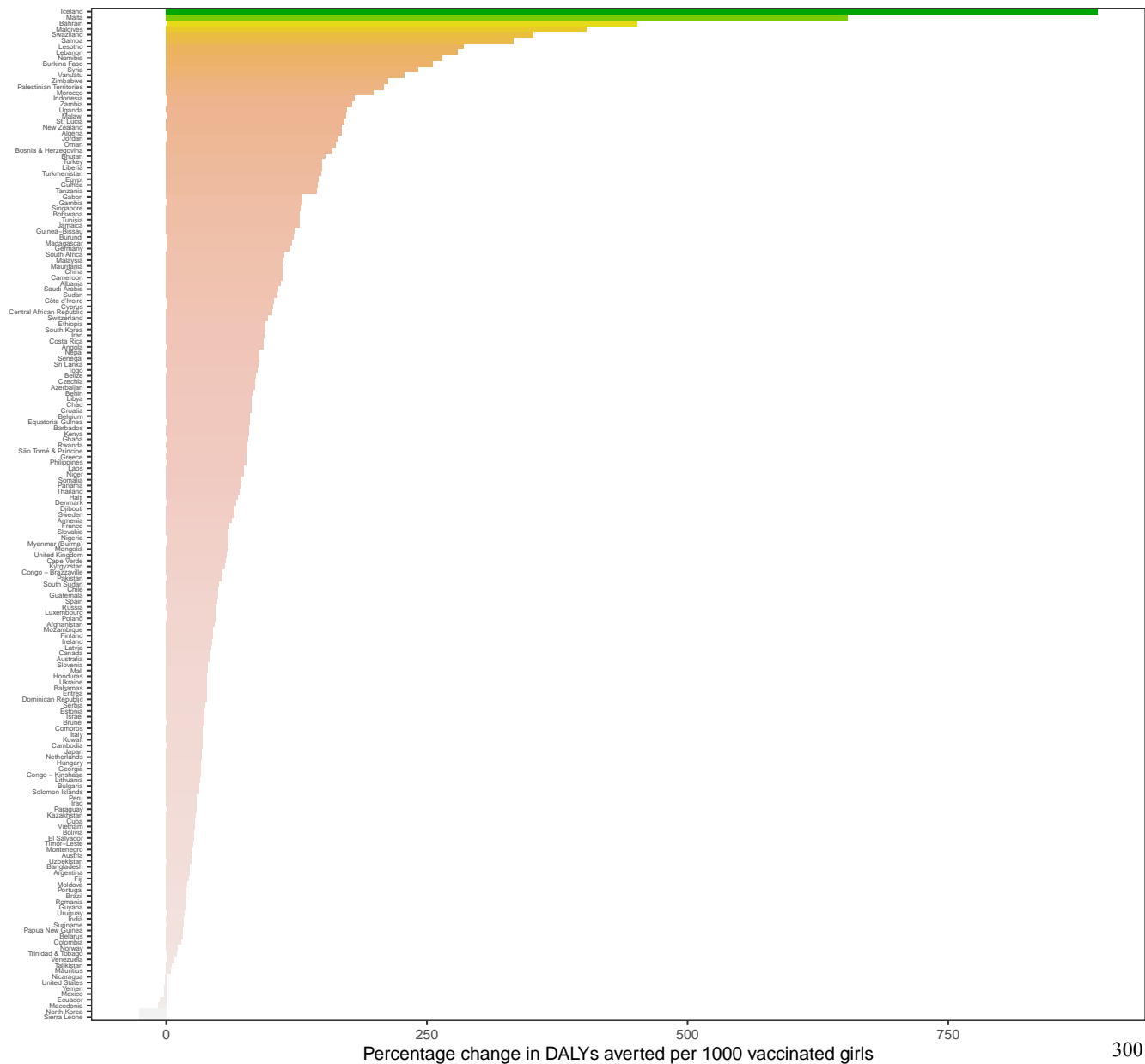
# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



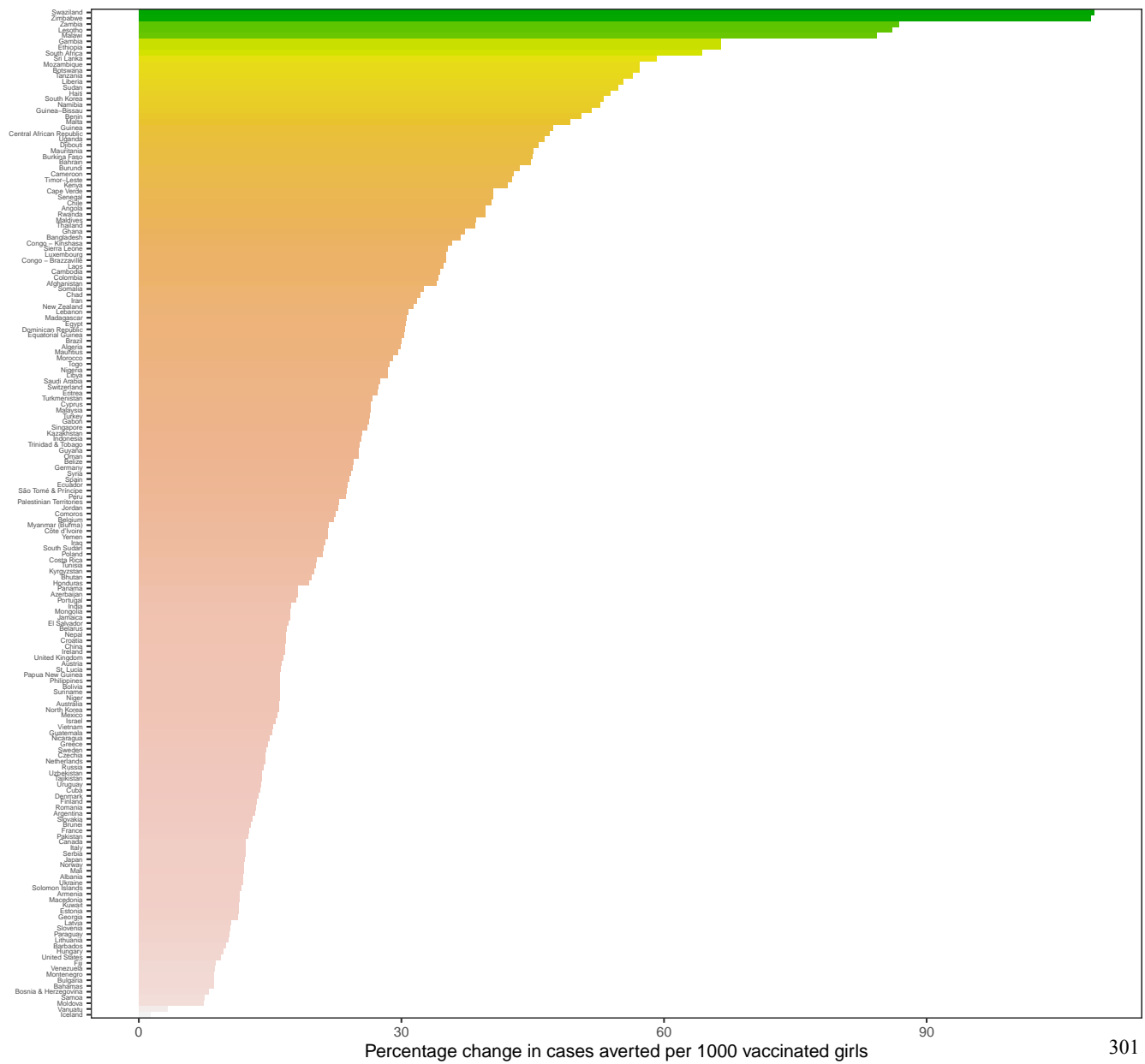
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / bivalent/quadrivalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



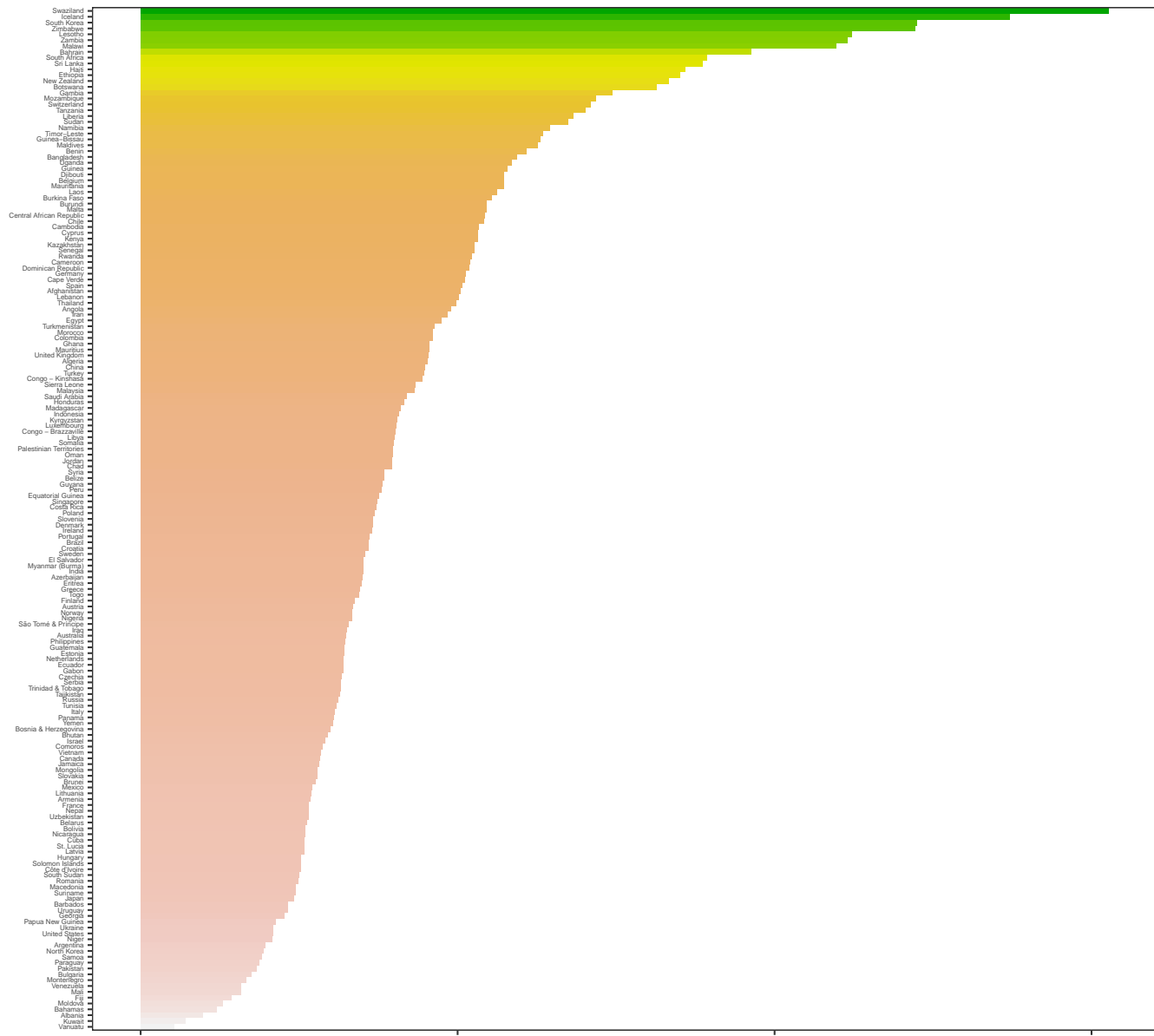
# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s2 in comparison to scenario s1



# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s2 in comparison to scenario s1

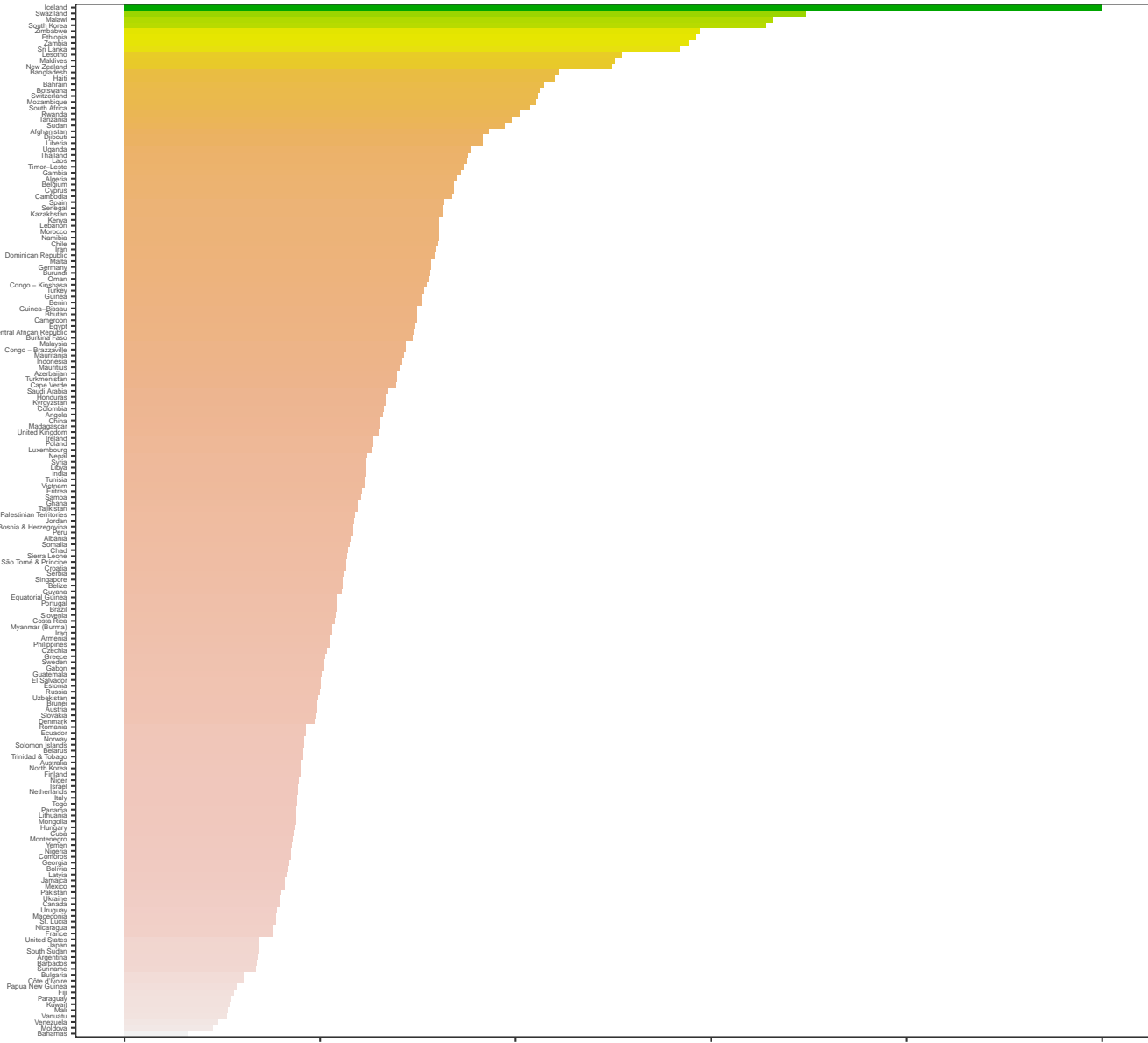


Percentage change in deaths averted per 1000 vaccinated girls



# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

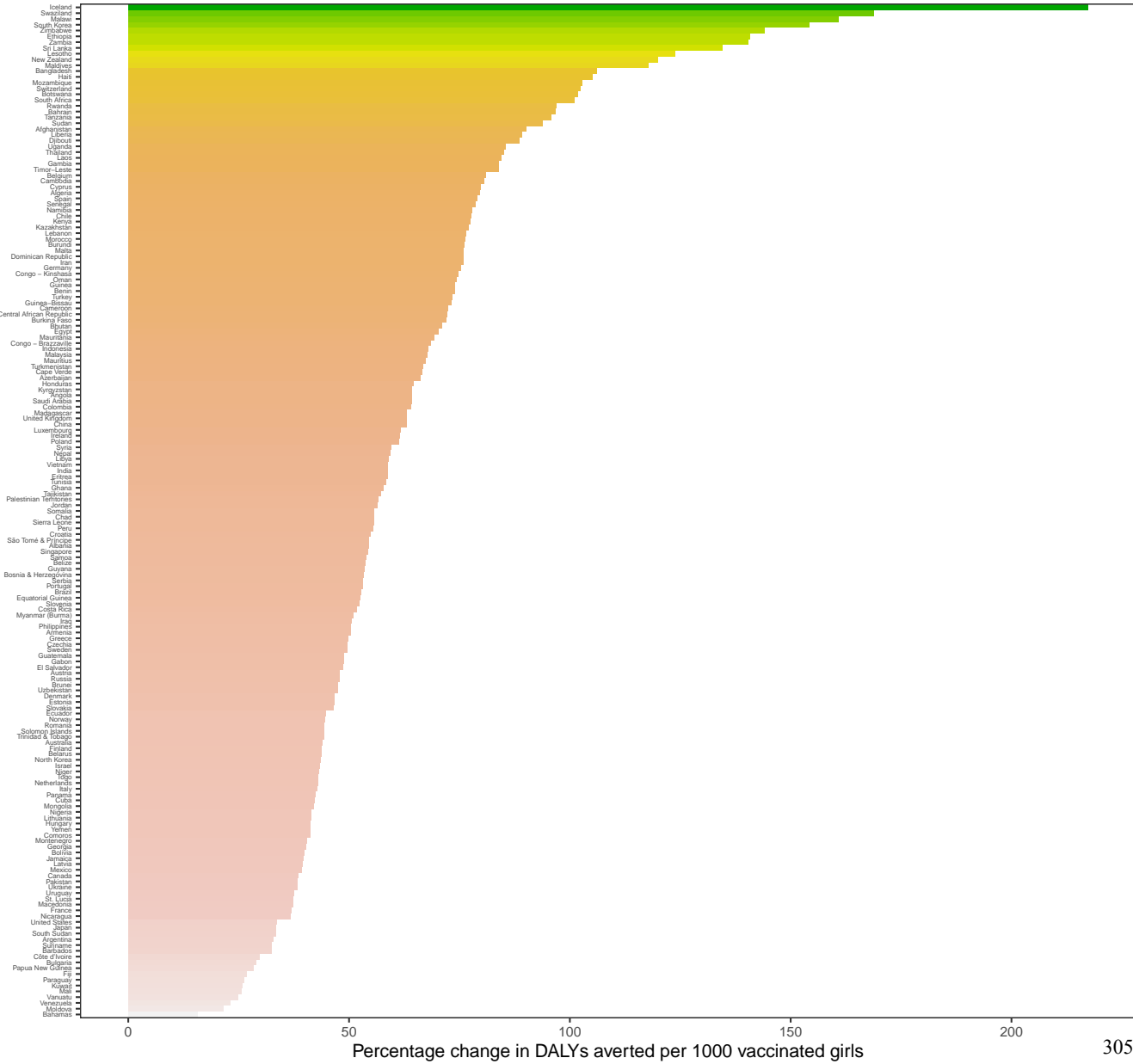
Comparison of scenario s2 in comparison to scenario s1



Percentage change in YLLs averted per 1000 vaccinated girls

# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s2 in comparison to scenario s1



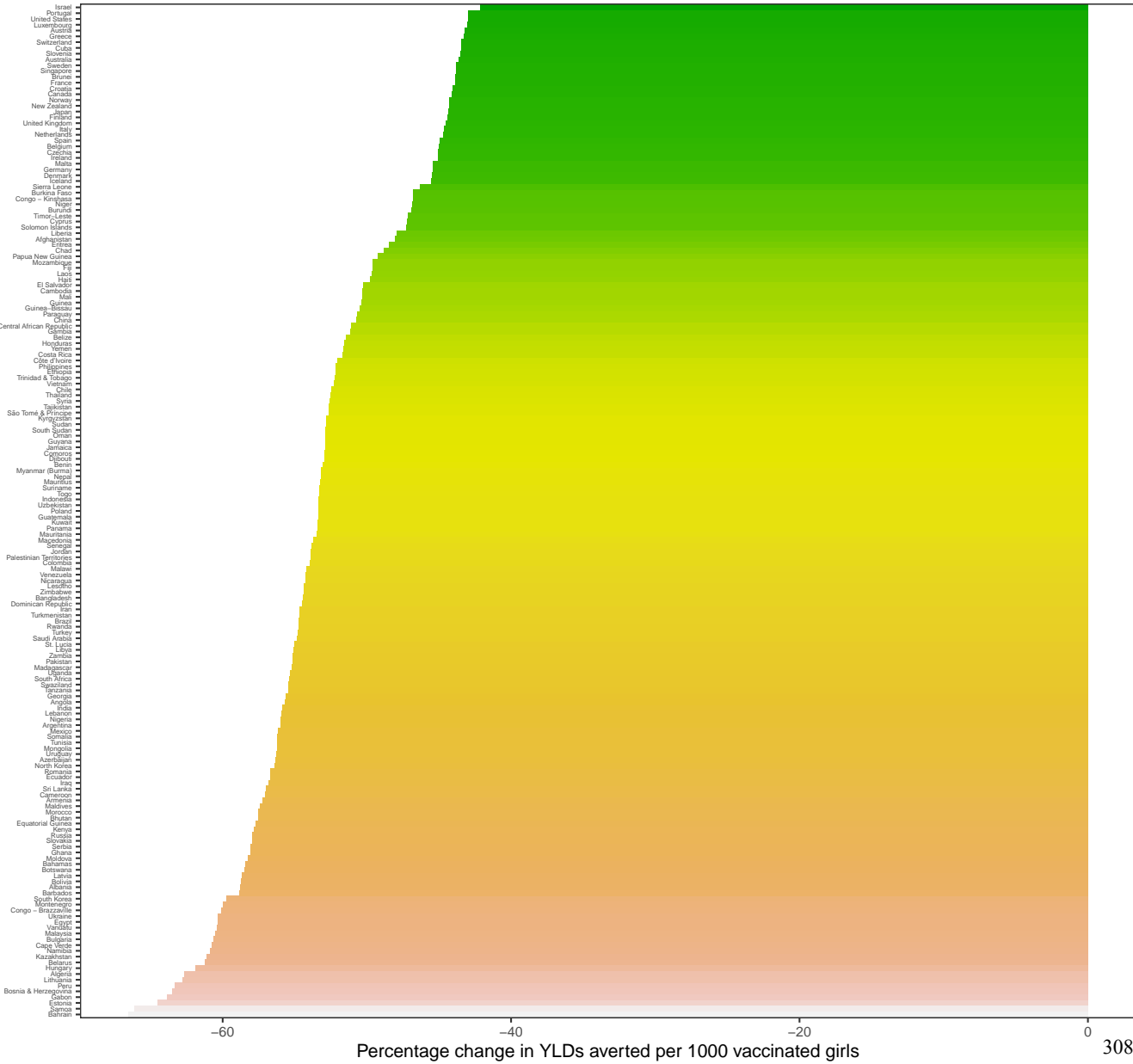






# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

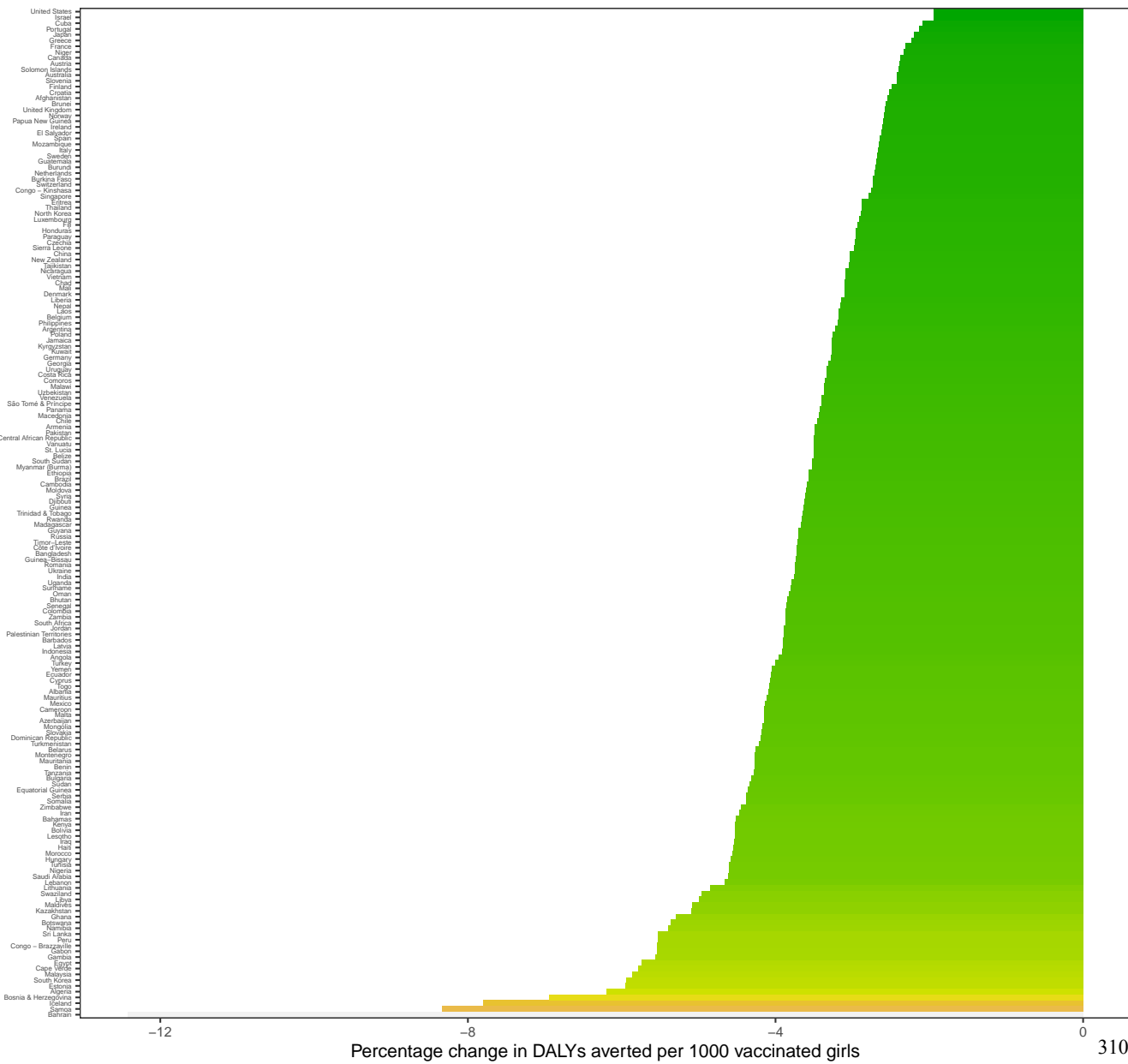
Comparison of scenario s3 in comparison to scenario s1





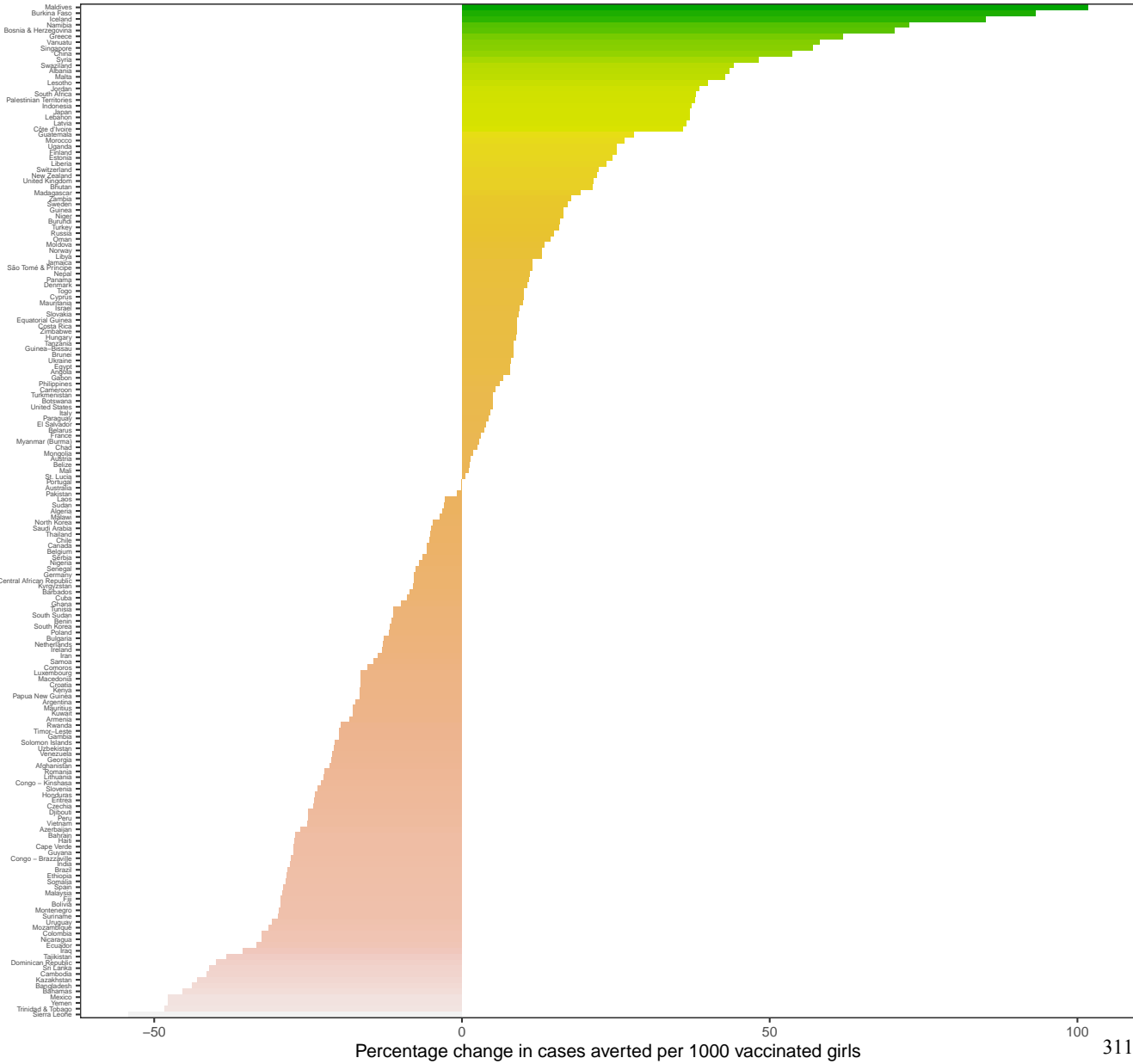
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s3 in comparison to scenario s1



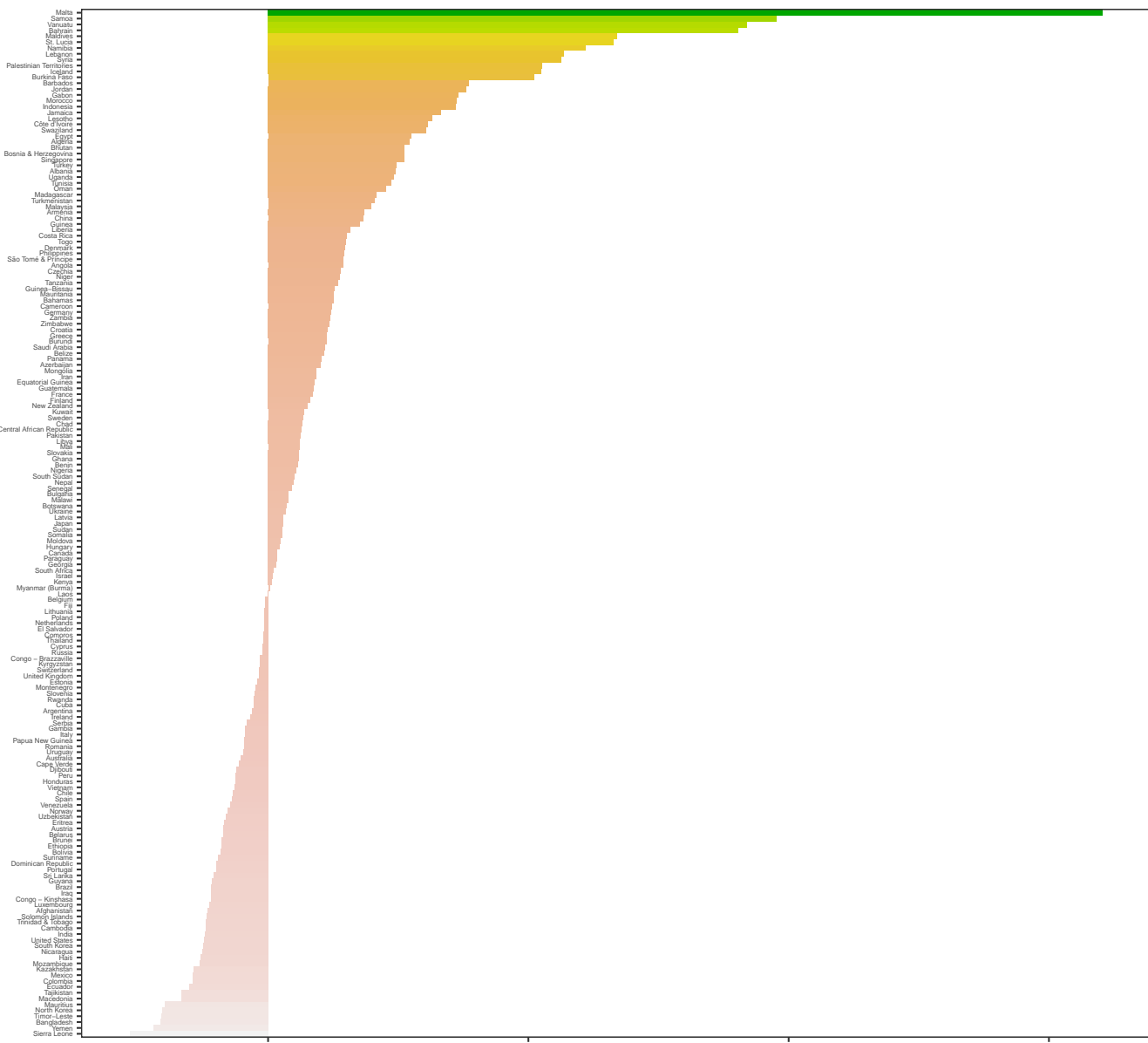
# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s4 in comparison to scenario s1



# Percentage change in deaths averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

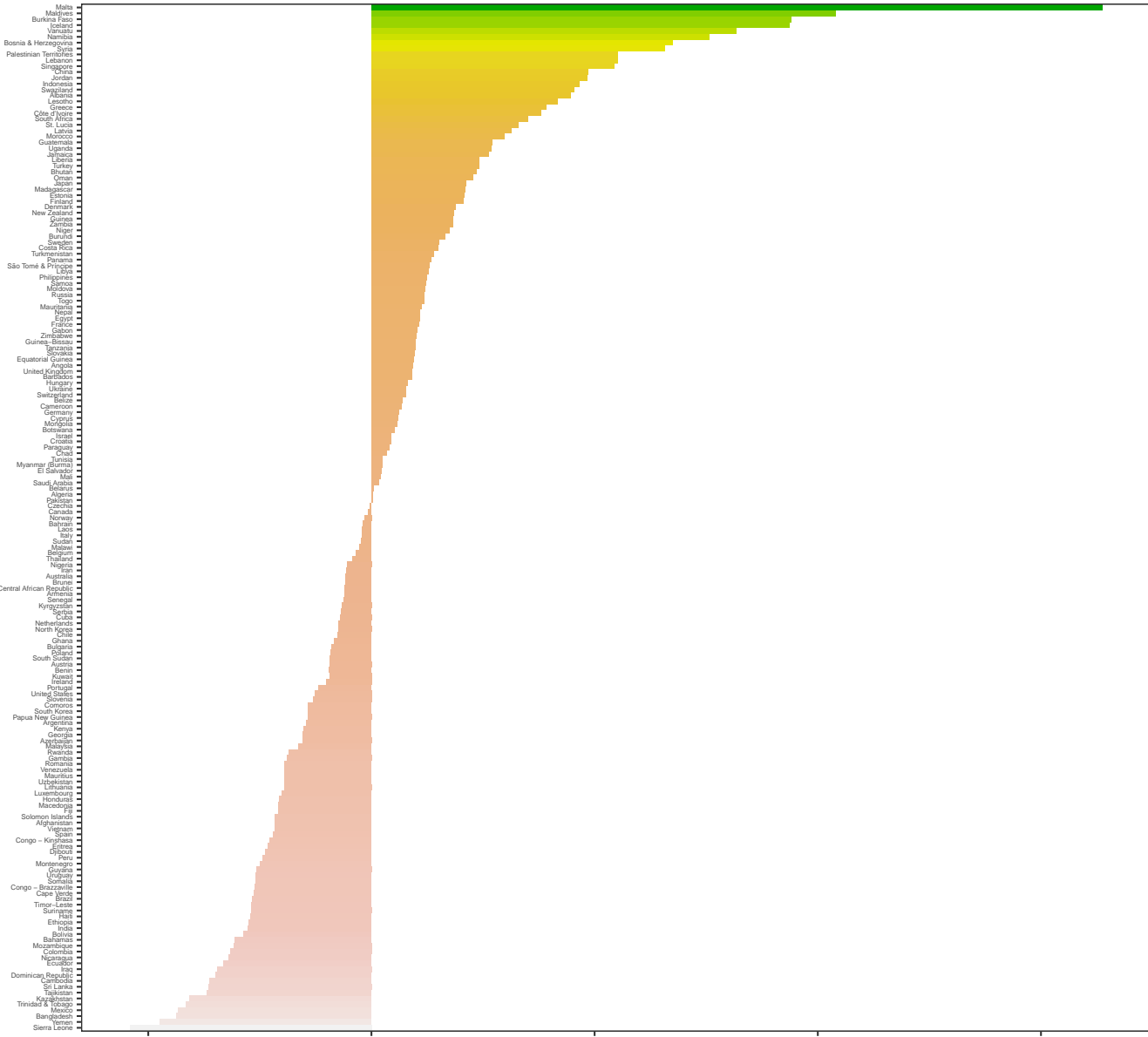
Comparison of scenario s4 in comparison to scenario s1



Percentage change in deaths averted per 1000 vaccinated girls

# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s4 in comparison to scenario s1

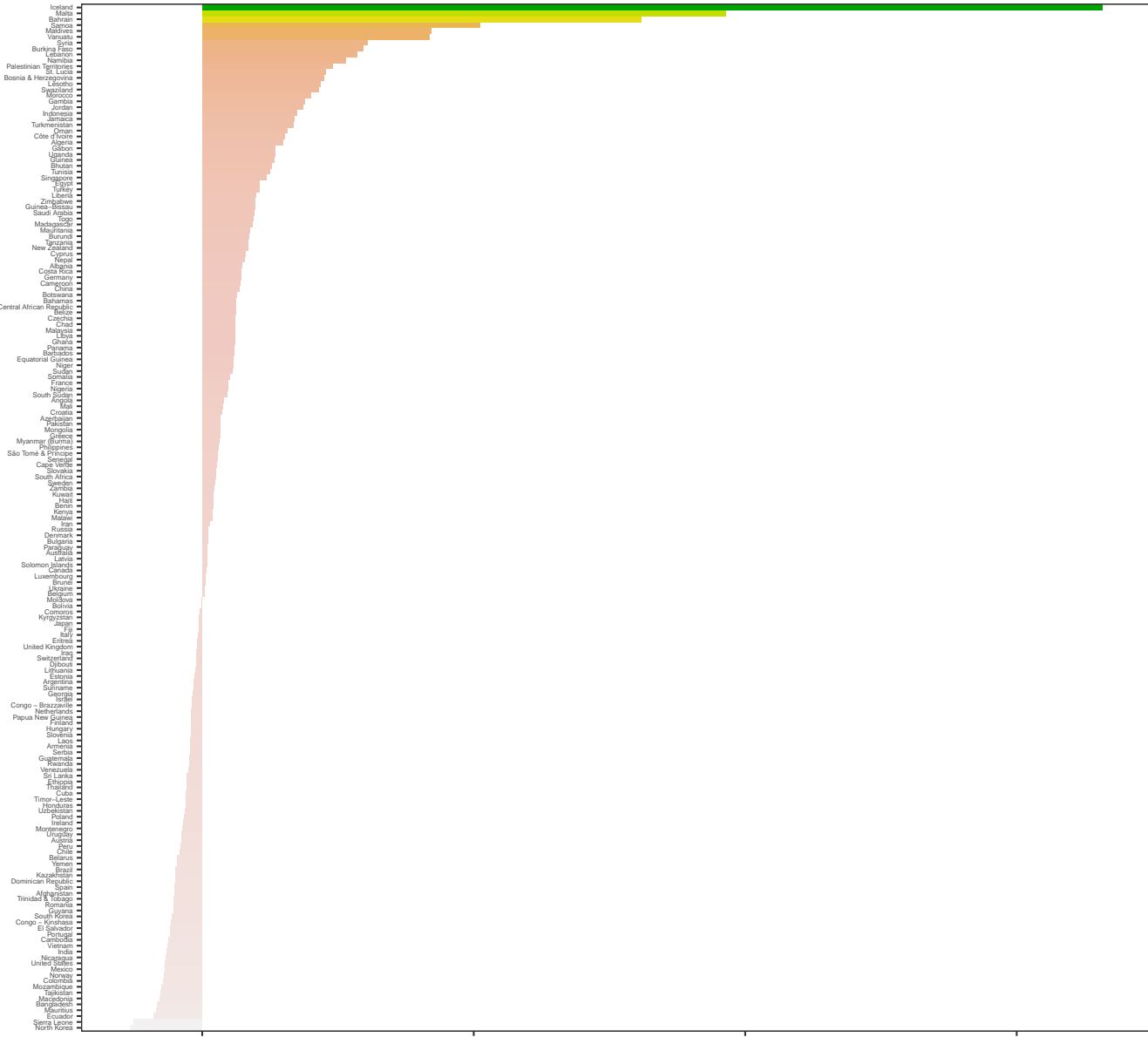


Percentage change in YLDs averted per 1000 vaccinated girls



# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

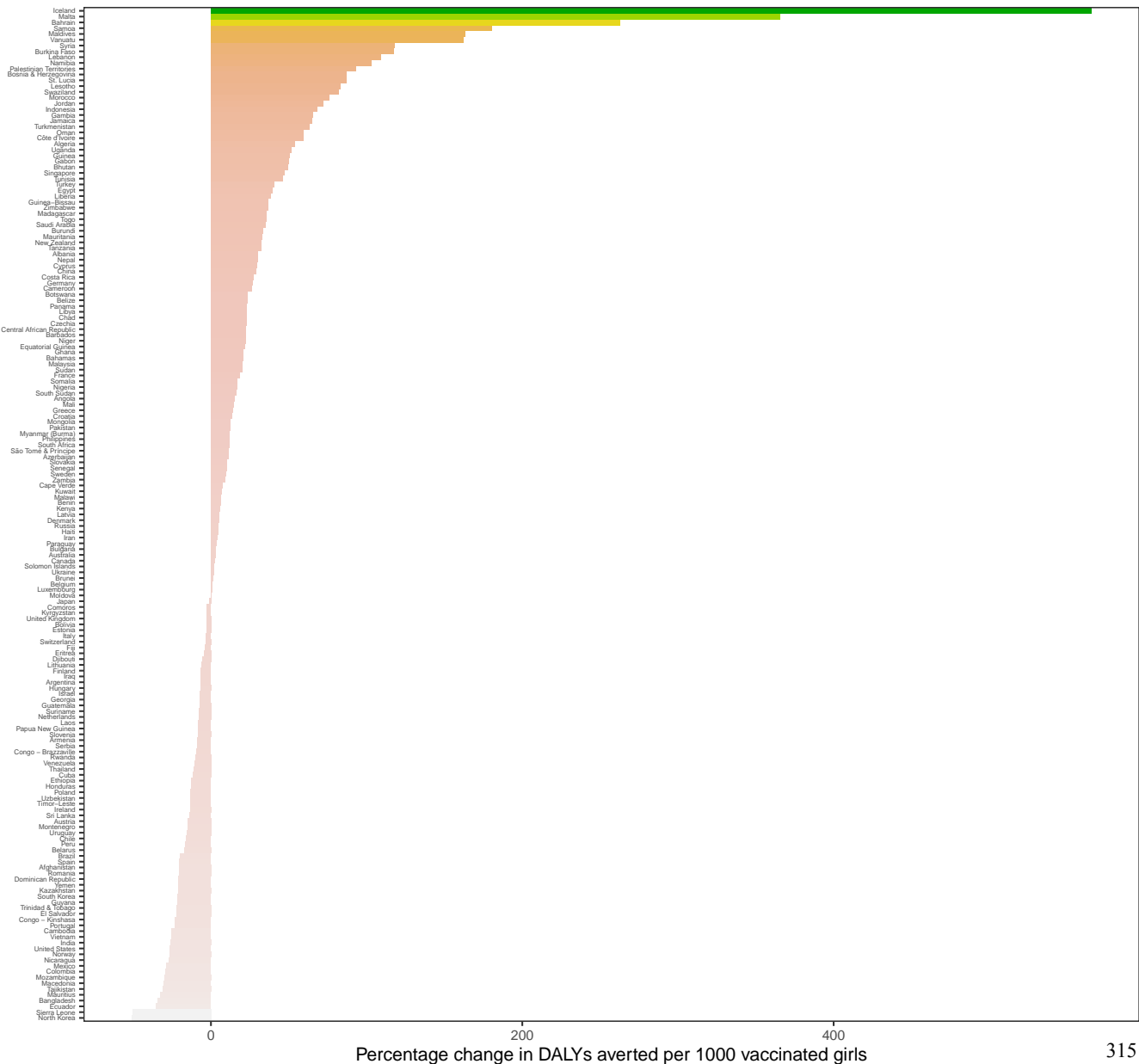
Comparison of scenario s4 in comparison to scenario s1



Percentage change in YLLs averted per 1000 vaccinated girls

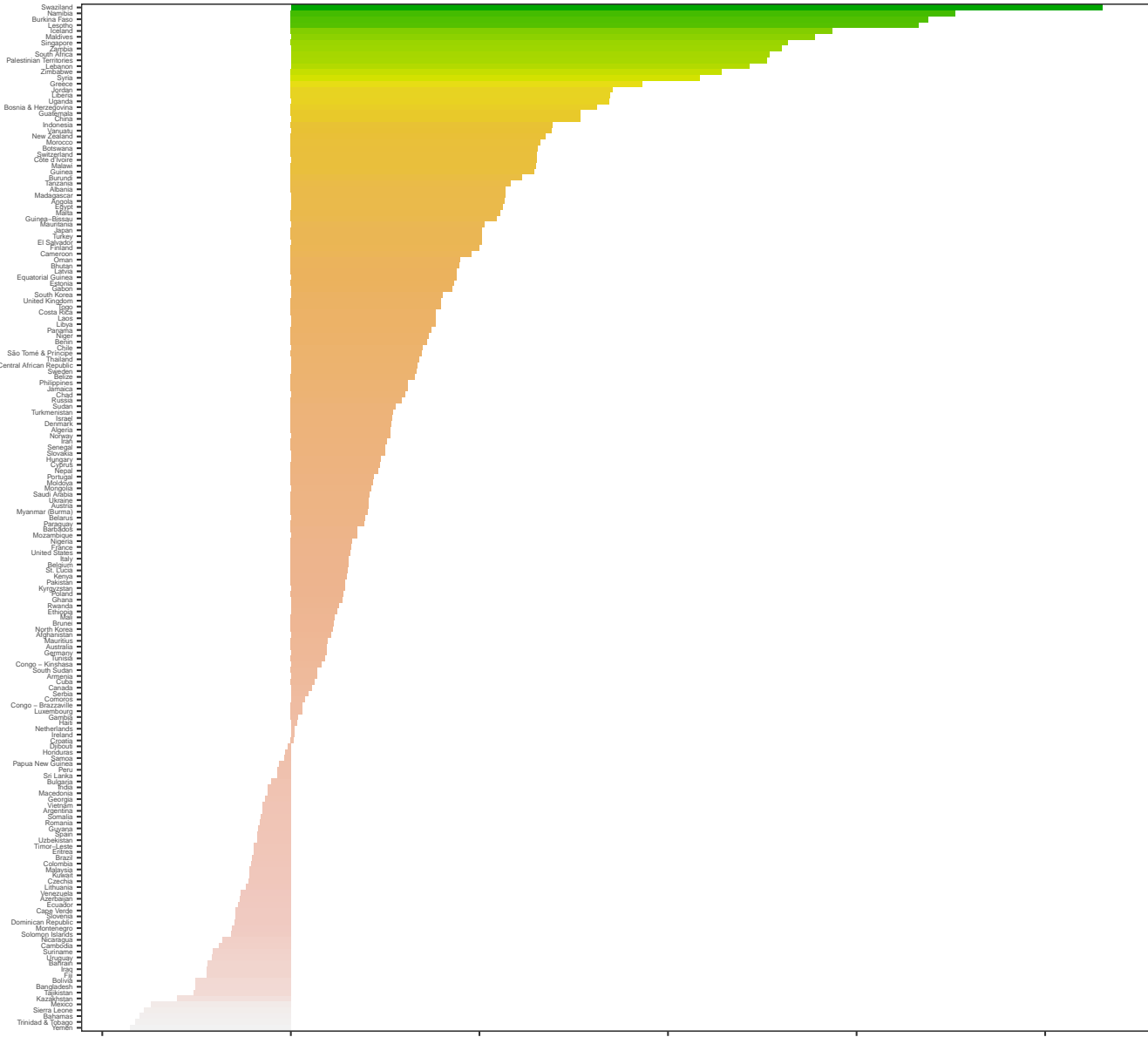
# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s4 in comparison to scenario s1



# Percentage change in cases averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s5 in comparison to scenario s1

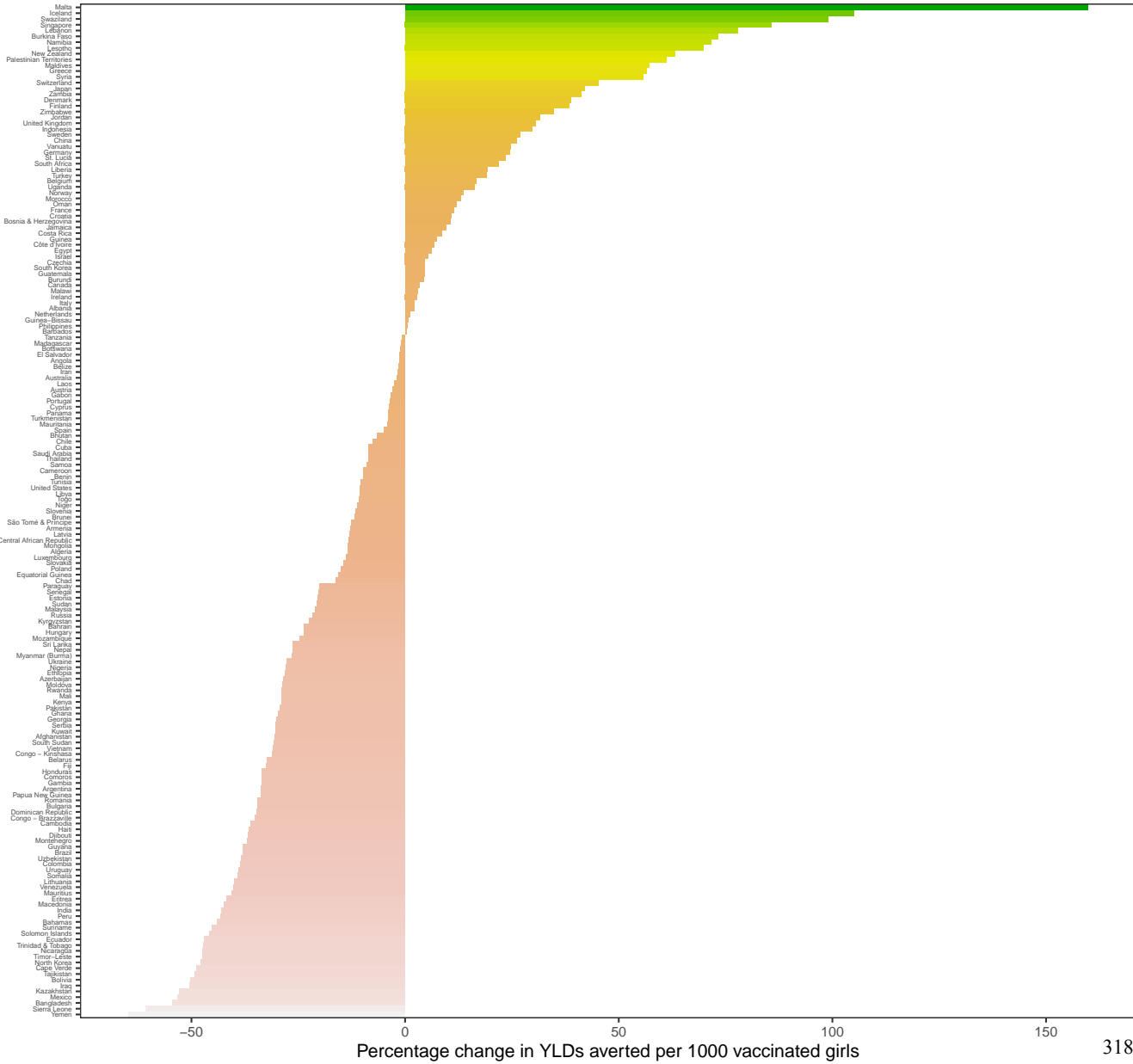


Percentage change in cases averted per 1000 vaccinated girls



# Percentage change in YLDs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

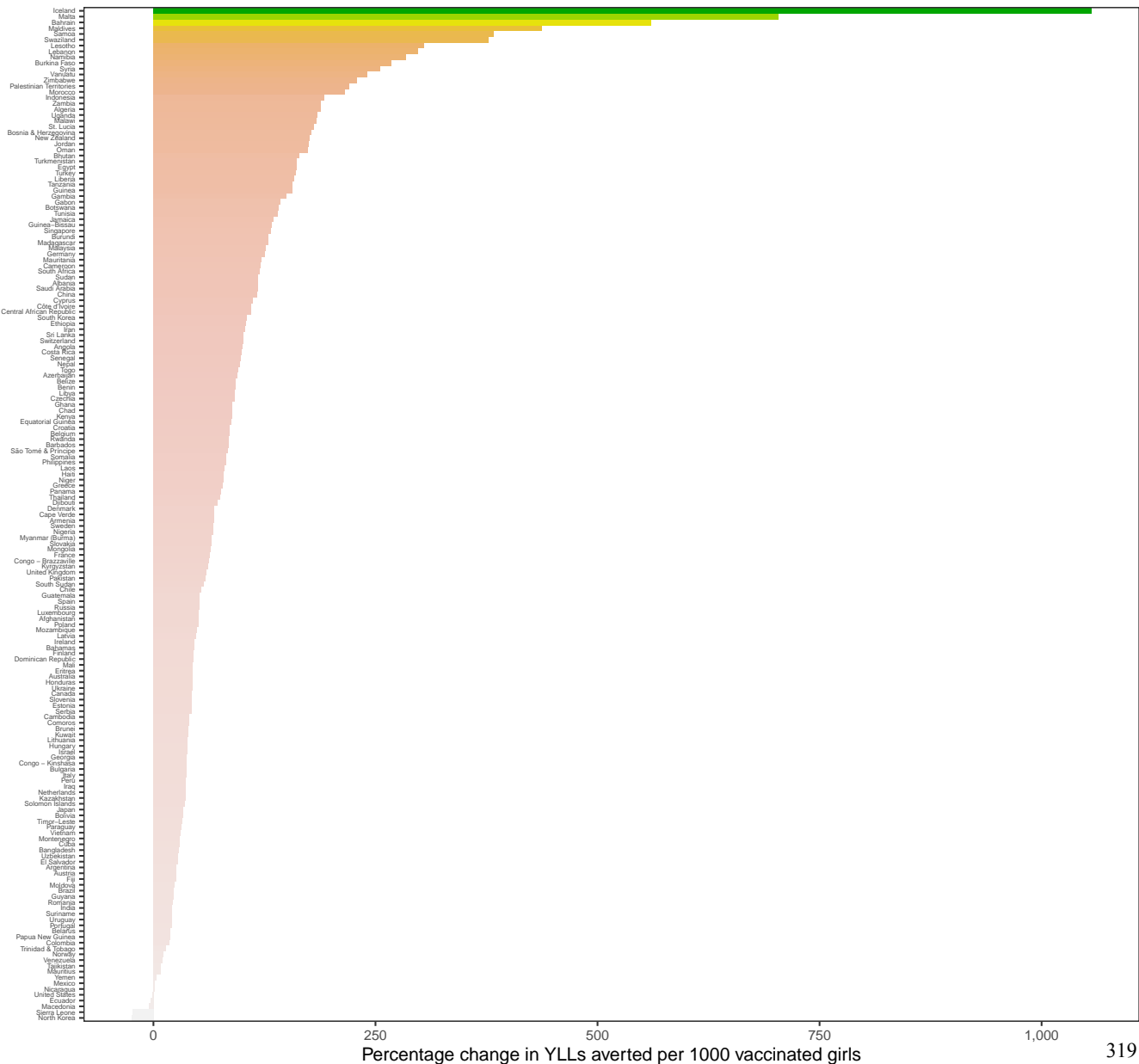
Comparison of scenario s5 in comparison to scenario s1



Percentage change in YLDs averted per 1000 vaccinated girls

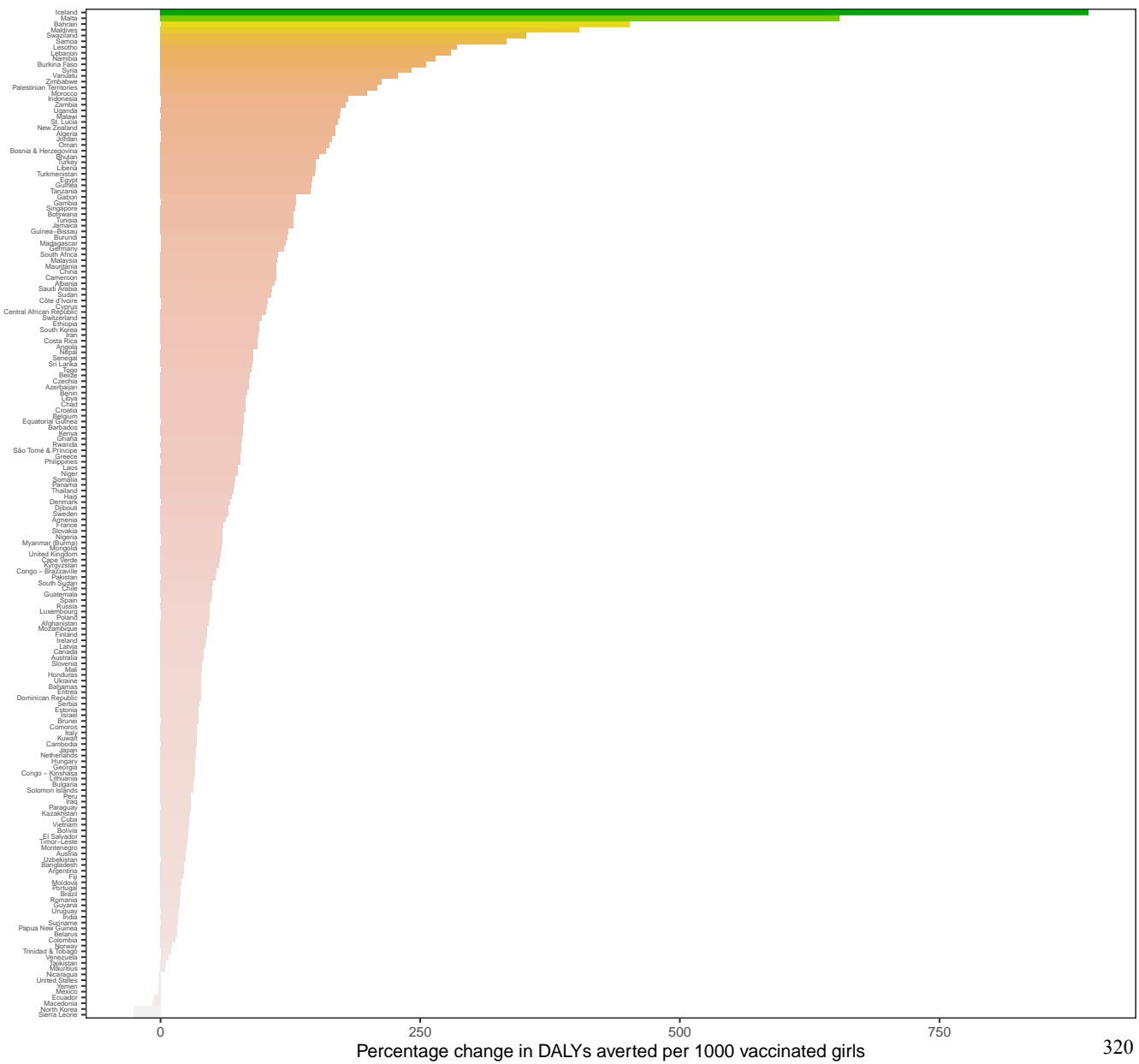
# Percentage change in YLLs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



# Percentage change in DALYs averted per 1000 vaccinated girls (vaccination age = 12 years / nonavalent vaccine)

Comparison of scenario s5 in comparison to scenario s1



Percentage change in DALYs averted per 1000 vaccinated girls