Dengue Data Hub:

A Centralized Repository for Dengue-related Data

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What is Dengue?

- Viral infection caused by the dengue virus (DENV), transmitted to humans through the bite of infected mosquitoes.
- There is no specific treatment for dengue fever.
- Dengue is a global issue.



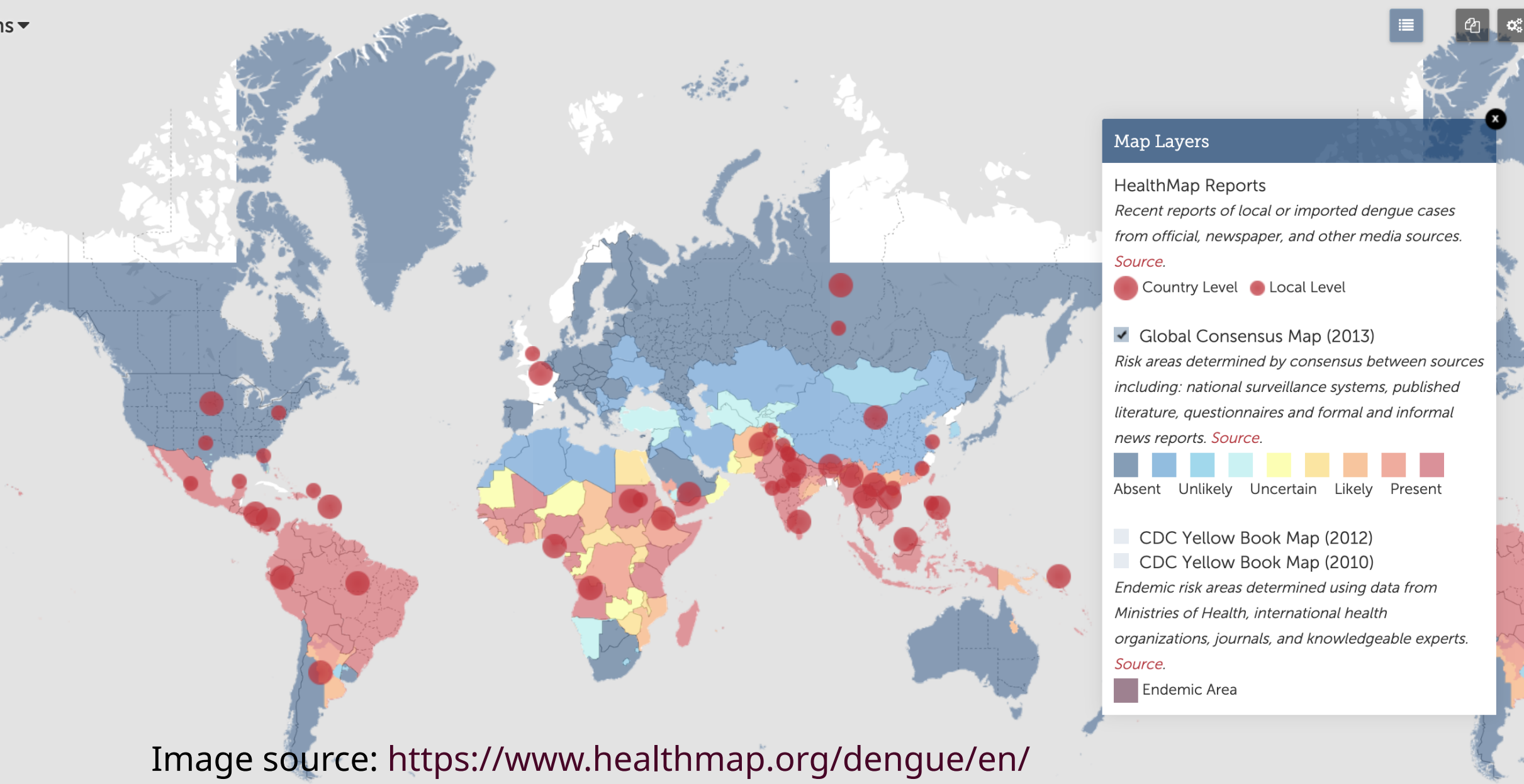
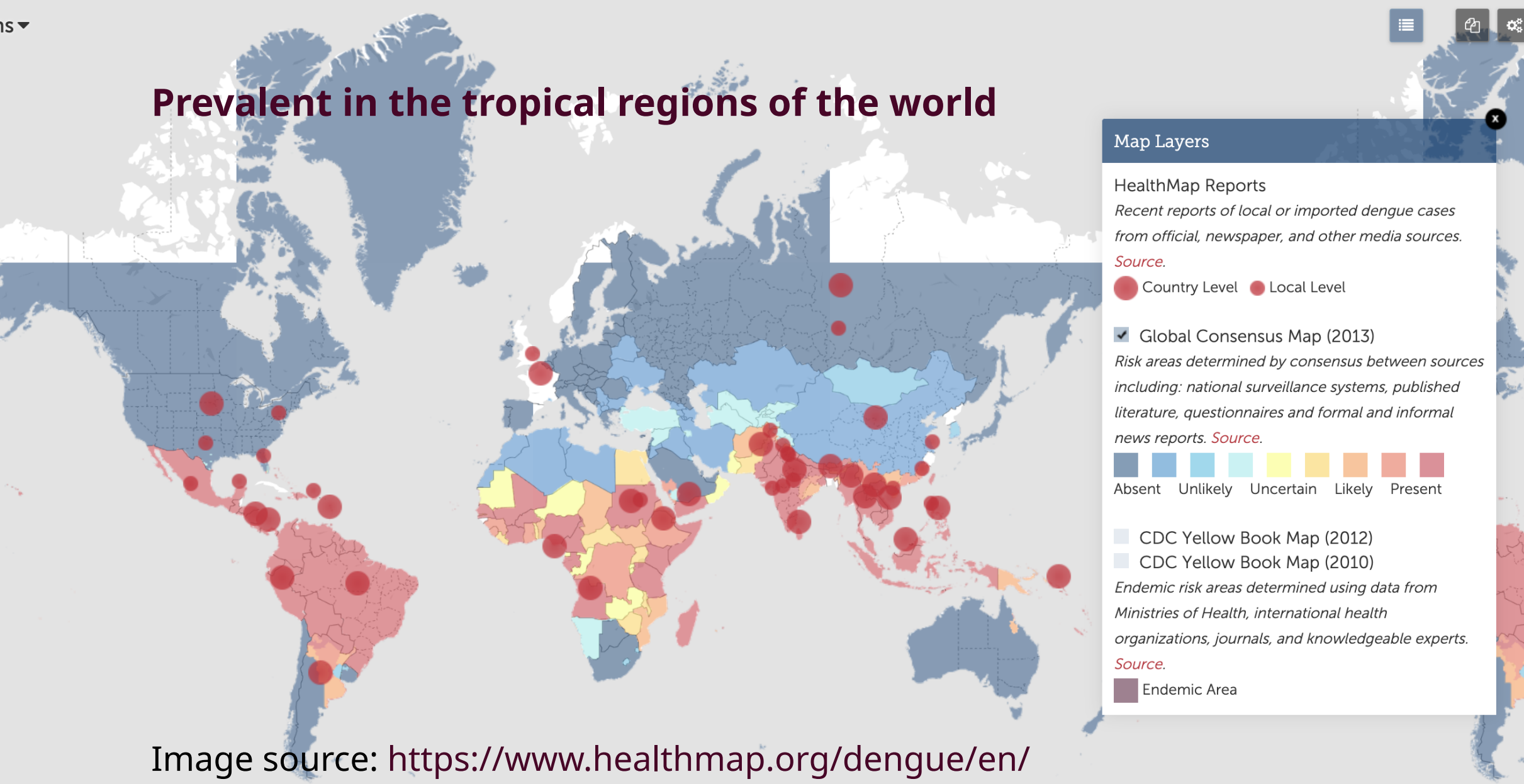


Image source: https://www.healthmap.org/dengue/en/

Prevalent in the tropical regions of the world



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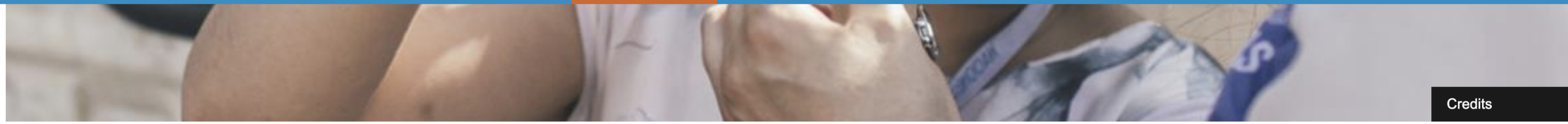
Favorable environmental conditions

- Temperature: 25 to 30 degrees Celsius (77 to 86 degrees Fahrenheit)
- Humidity: prefer high humidity levels
- Rainfall: require water to lay their eggs and complete their life cycle
- Standing water: lay their eggs in stagnant water sources such as ponds, ditches, water-filled containers, and even discarded tires
- Vegetation: often seek shelter in areas with dense vegetation



Dengue and severe dengue

العربية
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17 March 2023

Key facts

- **Dengue is a viral infection caused by the dengue virus (DENV), transmitted to humans through the bite of infected mosquitoes.**
- **About half of the world's population is now at risk of dengue with an estimated 100–400 million infections occurring each year.**
- **Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas.**
- **While many DENV infections are asymptomatic or produce only mild illness, DENV can occasionally cause more severe cases, and even death.**
- **Prevention and control of dengue depend on vector control. There is no specific treatment for dengue/severe dengue, and early detection and access to proper medical care greatly lower fatality rates of severe dengue.**

Overview

Dengue (break-bone fever) is a viral infection that spreads from mosquitoes to people. It is more common in tropical and subtropical climates.

Related

Dengue Data application
Frequently asked questions on dengue and severe dengue
Mosquito-borne diseases
WHO's work on Dengue and severe Dengue
More on Control of Neglected Tropical Diseases

News



Mosquito sterilization offers new opportunity to control



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Mosquito sterilization offers new

Small bite -Big threat!

Dengue Research Flow

Step 1: Data collection

Step 2: Data analysis

Step 3: Communication

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Author: Dr Thiyanga S. Talagala

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Small bite - Big threat!

Small data - Big impact!

Dengue Data Hub

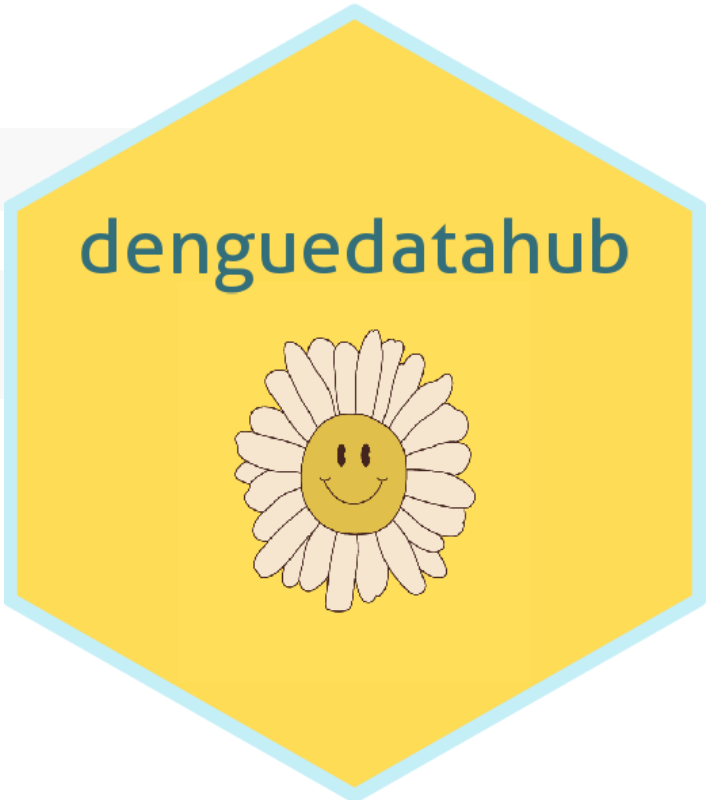
- Why? ✅
- Where?
- To whom?
- What do we have?
- How to use?
- How to collaborate?

Where?

- Dengue data hub website: https://denguedatahub.netlify.app/
- R package:

```
install.packages("denguedatahub")
```

```
install.packages("devtools")
devtools::install_github("thiyangt/denguedatahub")
```



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To whom

- Researchers
- Teachers
- Epidemiologists
- Public health officials
- Medical practitioners
- National/International health organizations

Dengue Data Hub

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What do we have?

```
library(denguedatahub)
vcdExtra::datasets("denguedatahub")
```

```
##                       Item      class      dim
## 1     americas_annual_data data.frame 899134x5
## 2 cdc_usa_dengue_infection data.frame   9039x6
## 3        china_annual_data data.frame     16x5
## 4        india_annual_data data.frame    432x5
## 5            level_of_risk data.frame    138x3
## 6   philippines_daily_data data.frame  32701x5
## 7    singapore_weekly_data data.frame    272x3
## 8     srilanka_weekly_data data.frame  21934x6
## 9             world_annual data.frame   6750x4
##                                                                      Title
## 1 Dengue and severe dengue cases and deaths for subregions of the Americas
## 2                      Annual number of dengue fever infections in the USA
## 3                                          Dengue related data in china
## 4                                DENGUE/DHF situation in India since 2017
## 5                                   Level of Dengue risk around the world
## 6                  Daily number of dengue fever infections in Philippines
## 7                   Weekly number of dengue fever infections in Sri Lanka
```

Global level

```
level_of_risk
```

```
##                                country       level_of_risk
## 1                                Angola  Sporadic/Uncertain
## 2                                 Benin  Sporadic/Uncertain
## 3                          Burkina Faso Frequent/Continuous
## 4                               Burundi  Sporadic/Uncertain
## 5                              Cameroon  Sporadic/Uncertain
## 6                            Cape Verde  Sporadic/Uncertain
## 7             Central African Republic  Sporadic/Uncertain
## 8                                  Chad  Sporadic/Uncertain
## 9                               Comoros  Sporadic/Uncertain
## 10                                Congo  Sporadic/Uncertain
## 11    Congo (Democratic republic of)  Sporadic/Uncertain
## 12                        Cote d'Ivoire  Sporadic/Uncertain
## 13                             Djibouti Frequent/Continuous
## 14                                Egypt  Sporadic/Uncertain
## 15                    Equatorial Guinea  Sporadic/Uncertain
## 16                              Eritrea Frequent/Continuous
## 17                             Ethiopia Frequent/Continuous
## 18                                Gabon  Sporadic/Uncertain
## 19                               Gambia  Sporadic/Uncertain
```

```
summary(level_of_risk)
```

```
##                 country                                  level_of_risk
##  Afghanistan        :  1   Frequent/Continuous                   :75
##  Aksai Chin         :  1   Risk varies based on region. See map.: 0
##  American Samoa     :  1   Sporadic/Uncertain                    :63
##  Angola             :  1
##  Anguilla           :  1
##  Antigua and Barbuda:  1
##  (Other)            :132
##                      region
##  Africa                 :47
##  Americas               :43
##  Asia                   :26
##  Europe                 : 0
##  Oceania/Pacific Islands:22
##
##
```

Annual incidence (225 countries, from 1990 to 2019)

```
world_annual
```

```
##                                 entity     code year incidence
## 1                          Afghanistan      AFG 1990     23371
## 2                          Afghanistan      AFG 1991     25794
## 3                          Afghanistan      AFG 1992     29766
## 4                          Afghanistan      AFG 1993     32711
## 5                          Afghanistan      AFG 1994     34268
## 6                          Afghanistan      AFG 1995     35823
## 7                          Afghanistan      AFG 1996     37397
## 8                          Afghanistan      AFG 1997     38862
## 9                          Afghanistan      AFG 1998     39660
## 10                         Afghanistan      AFG 1999     39987
## 11                         Afghanistan      AFG 2000     40618
## 12                         Afghanistan      AFG 2001     42170
## 13                         Afghanistan      AFG 2002     44487
## 14                         Afghanistan      AFG 2003     46217
## 15                         Afghanistan      AFG 2004     47881
## 16                         Afghanistan      AFG 2005     49744
## 17                         Afghanistan      AFG 2006     51615
## 18                         Afghanistan      AFG 2007     54663
## 19                         Afghanistan      AFG 2008     58307
```

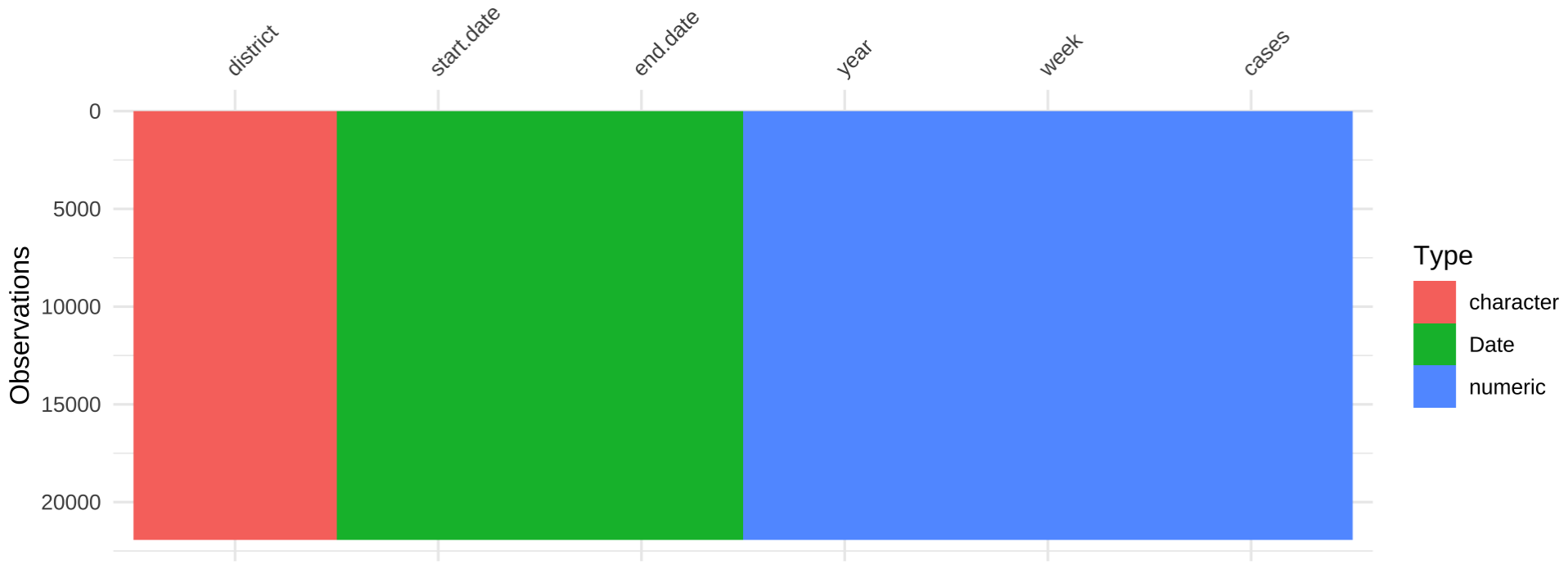
Sri Lanka

```
srilanka_weekly_data
```

```
##       year week start.date   end.date     district cases
## 1     2006   52 2006-12-23 2006-12-29      Colombo    71
## 2     2006   52 2006-12-23 2006-12-29      Gampaha    12
## 3     2006   52 2006-12-23 2006-12-29     Kalutara    12
## 4     2006   52 2006-12-23 2006-12-29        Kandy    20
## 5     2006   52 2006-12-23 2006-12-29       Matale     4
## 6     2006   52 2006-12-23 2006-12-29  NuwaraEliya     1
## 7     2006   52 2006-12-23 2006-12-29        Galle     1
## 8     2006   52 2006-12-23 2006-12-29  Hambanthota     1
## 9     2006   52 2006-12-23 2006-12-29       Matara    11
## 10    2006   52 2006-12-23 2006-12-29       Jaffna     0
## 11    2006   52 2006-12-23 2006-12-29  Kilinochchi     0
## 12    2006   52 2006-12-23 2006-12-29       Mannar     0
## 13    2006   52 2006-12-23 2006-12-29     Vavuniya     3
## 14    2006   52 2006-12-23 2006-12-29   Mullaitivu     0
## 15    2006   52 2006-12-23 2006-12-29   Batticaloa     0
## 16    2006   52 2006-12-23 2006-12-29       Ampara     0
## 17    2006   52 2006-12-23 2006-12-29  Trincomalee     0
## 18    2006   52 2006-12-23 2006-12-29   Kurunegala    16
## 19    2006   52 2006-12-23 2006-12-29     Puttalam     6
```

Sri Lanka: District-wise weekly Dengue cases from 2006 to 2023-present

```
visdat::vis_dat(srilanka_weekly_data)
```



China: Annual Dengue Cases from 2005 to 2020

```
china_annual_data
```

```
## # A tibble: 16 × 5
##     year dengue.cases.indigenous dengue.cases.imported counties.with.dengue.fe…¹
##    <int>                   <dbl>                  <dbl>                      <dbl>
##  1  2005                       0                     45                          0
##  2  2006                    1007                     46                         15
##  3  2007                     481                     56                         13
##  4  2008                      86                    134                         11
##  5  2009                     200                     73                          5
##  6  2010                     112                    119                         14
##  7  2011                      35                    113                          6
##  8  2012                     438                    149                         14
##  9  2013                    4263                    460                         36
## 10  2014                   46034                    399                        160
## 11  2015                    3044                   1083                         44
## 12  2016                    1549                    675                         41
## 13  2017                    4609                   2112                         76
## 14  2018                    3801                   1266                        100
## 15  2019                   15378                   5813                        266
## 16  2020                     616                    158                          7
## # ℹ abbreviated name: ¹counties.with.dengue.fever.indigenous
```

Singapore: Weekly Dengue Cases

```
singapore_weekly_data
```

```
## # A tibble: 272 × 3
##     year  week cases
##    <dbl> <int> <dbl>
##  1  2018     0    54
##  2  2018     1    45
##  3  2018     2    48
##  4  2018     3    50
##  5  2018     4    50
##  6  2018     5    28
##  7  2018     6    30
##  8  2018     7    37
##  9  2018     8    51
## 10  2018     9    37
## # ℹ 262 more rows
```

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Interactive dashboard

https://denguedatahub.netlify.app/dh.mov

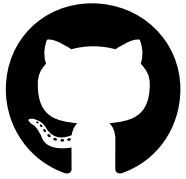
Interactive visualisation

https://denguedatahub.netlify.app/c1_and_c2.mov

How to collaborate

- Add data
- Fix issues
- Documentation

Thank You!



@thiyangt

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