

A Dynamic Surveillance Report of Notifiable Infectious Diseases Data in Mainland, China

2023 July

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Power by: Github Action

Design by: Kangguo Li

Connect with me: lkq1116@outlook.com

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Monthly Report -- 2023 July

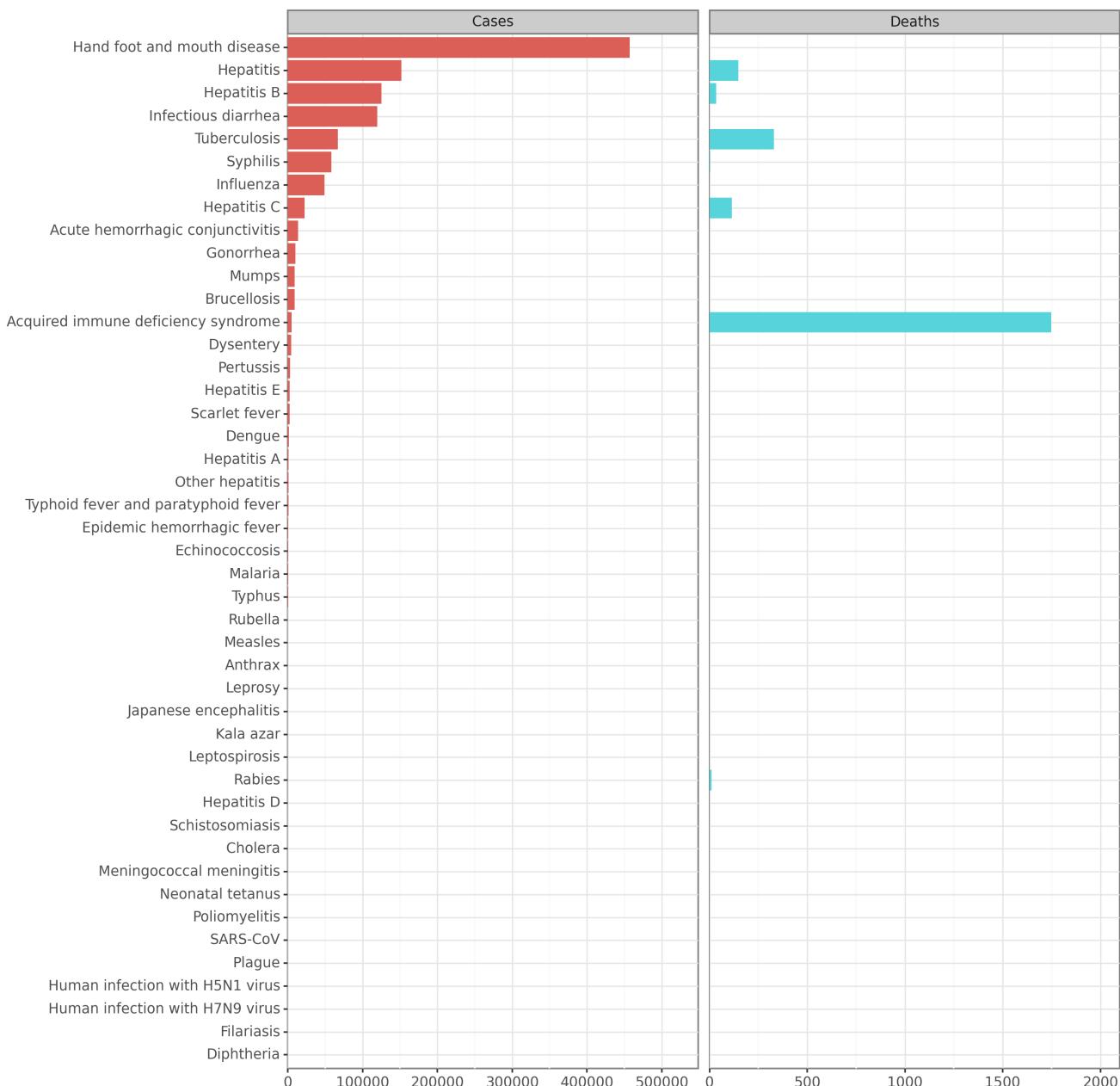


Figure 1: Monthly Notifiable Infectious Diseases Reports in 2023 July

Based on the provided epidemiological data concerning disease cases and deaths in mainland China during July 2023, several noteworthy patterns and trends can be identified.

1. Overall Disease Cases: In July 2023, the total number of reported disease cases reached 962,794, indicating a 6.19% increase compared to June 2023. However, there was a significant decrease of 18.05% in disease cases when compared to July 2022.

2. Disease-Specific Patterns: a. Acute Hemorrhagic Conjunctivitis: The number of reported cases in July 2023 was 13,425, representing a substantial increase of 169.31% compared to June 2023 and a further increase of 410.65% compared to July 2022. b. Hand, Foot, and Mouth Disease: This disease had the

highest number of reported cases, with 457,212 in July 2023. Although there was a slight increase of 5.57% compared to June 2023, there was a significant increase of 319.56% compared to July 2022. c. Hepatitis: In July 2023, there were 151,809 reported cases of hepatitis, showing a 13.39% increase compared to June 2023 and a 9.65% increase compared to July 2022. Additionally, there were 148 deaths related to hepatitis, indicating a decrease of 28.16% compared to June 2023, but a substantial increase of 244.19% compared to July 2022. d. Syphilis: There were 58,247 reported cases of syphilis in July 2023, indicating a 12.00% increase compared to June 2023 and a 13.34% increase compared to July 2022. Moreover, there were 2 deaths related to syphilis, representing a 100.00% increase compared to June 2023, but a decrease of 66.67% compared to July 2022. e. Tuberculosis: There were 66,989 reported cases of tuberculosis in July 2023, showing a 3.40% increase compared to June 2023, but a 6.21% decrease compared to July 2022. Additionally, there were 330 deaths related to tuberculosis, indicating a 1.85% increase compared to June 2023, but a decrease of 10.08% compared to July 2022. f. Acquired Immune Deficiency Syndrome (AIDS): There were 4,854 reported cases of AIDS in July 2023, showing a decrease of 15.71% compared to June 2023. However, when compared to July 2022, there was an increase of 4.01%. Additionally, there were 1,749 deaths related to AIDS, representing a decrease of 2.40% compared to June 2023, but an increase of 11.97% compared to July 2022.

3. Comparison with Previous Months: When comparing July 2023 with June 2023, several diseases demonstrated an increase in reported cases, including acute hemorrhagic conjunctivitis, hepatitis, syphilis, tuberculosis, and AIDS. However, some diseases, such as hand, foot, and mouth disease, hepatitis B, and influenza, exhibited a decrease in reported cases.

4. Comparison with July 2022: Overall, there was a decrease in the number of reported cases for most diseases in July 2023 compared to July 2022. However, diseases such as acute hemorrhagic conjunctivitis, dengue, and hand, foot, and mouth disease showed a significant increase in reported cases. In conclusion, the epidemiological data for July 2023 in mainland China demonstrates an overall increase in disease cases compared to the previous month but a decrease in cases compared to the same month in the previous year. While some diseases experienced a rise in cases, others saw a decline. It is crucial for public health authorities to closely monitor and address the diseases with increasing trends to prevent further outbreaks and mitigate their impact on the population.

Table 1: Monthly Notifiable Infectious Diseases Cases in 2023 July

Diseases	Cases	Comparison with 2023 June	Comparison with 2022 July
Plague	0	0 (/)	-1 (-100.00%)
Cholera	4	1 (33.33%)	-6 (-60.00%)
SARS-CoV	0	0 (/)	0 (/)
Acquired immune deficiency syndrome	4,854	-905 (-15.71%)	187 (4.01%)
Hepatitis	151,809	17,921 (13.39%)	13,360 (9.65%)
Hepatitis A	1,053	109 (11.55%)	-16 (-1.50%)
Hepatitis B	125,116	15,053 (13.68%)	12,468 (11.07%)
Hepatitis C	22,326	2,662 (13.54%)	459 (2.10%)
Hepatitis D	14	-9 (-39.13%)	-2 (-12.50%)
Hepatitis E	2,620	91 (3.60%)	395 (17.75%)
Other hepatitis	680	15 (2.26%)	56 (8.97%)
Poliomyelitis	0	0 (/)	0 (/)
Human infection with H5N1 virus	0	0 (/)	0 (/)
Measles	97	8 (8.99%)	5 (5.43%)
Epidemic hemorrhagic fever	344	-21 (-5.75%)	-60 (-14.85%)

Rabies	9	-2 (-18.18%)	-8 (-47.06%)
Japanese encephalitis	33	30 (1000.00%)	20 (153.85%)
Dengue	1,604	1,549 (2816.36%)	1,601 (53366.67%)
Anthrax	51	20 (64.52%)	-13 (-20.31%)
Dysentery	4,684	331 (7.60%)	-371 (-7.34%)
Tuberculosis	66,989	2,201 (3.40%)	-4,433 (-6.21%)
Typhoid fever and paratyphoid fever	657	30 (4.78%)	-84 (-11.34%)
Meningococcal meningitis	3	-6 (-66.67%)	-2 (-40.00%)
Pertussis	2,767	1,255 (83.00%)	-1,467 (-34.65%)
Diphtheria	0	-1 (-100.00%)	-1 (-100.00%)
Neonatal tetanus	2	1 (100.00%)	0 (0.00%)
Scarlet fever	2,237	-447 (-16.65%)	479 (27.25%)
Brucellosis	9,164	838 (10.06%)	-519 (-5.36%)
Gonorrhea	10,104	1,241 (14.00%)	841 (9.08%)
Syphilis	58,247	6,240 (12.00%)	6,856 (13.34%)
Leptospirosis	25	16 (177.78%)	1 (4.17%)
Schistosomiasis	5	-2 (-28.57%)	-1 (-16.67%)
Malaria	289	25 (9.47%)	210 (265.82%)
Human infection with H7N9 virus	0	0 (/)	0 (/)
Influenza	48,848	-16,441 (-25.18%)	-599,617 (-92.47%)
Mumps	9,280	-1,430 (-13.35%)	-111 (-1.18%)
Rubella	99	-11 (-10.00%)	-7 (-6.60%)
Acute hemorrhagic conjunctivitis	13,425	8,440 (169.31%)	10,796 (410.65%)
Leprosy	36	12 (50.00%)	1 (2.86%)
Typhus	169	38 (29.01%)	-10 (-5.59%)
Kala azar	30	5 (20.00%)	1 (3.45%)
Echinococcosis	342	90 (35.71%)	26 (8.23%)
Filariasis	0	0 (/)	0 (/)
Infectious diarrhea	119,375	10,933 (10.08%)	15,907 (15.37%)
Hand foot and mouth disease	457,212	24,128 (5.57%)	348,239 (319.56%)
Total	962,794	56,087 (6.19%)	-212,100 (-18.05%)

Table 2: Monthly Notifiable Infectious Diseases Deaths in 2023 July

Diseases	Deaths	Comparison with 2023 June	Comparison with 2022 July
Plague	0	0 (/)	0 (/)
Cholera	0	0 (/)	0 (/)
SARS-CoV	0	0 (/)	0 (/)

Acquired immune deficiency syndrome	1,749	-43 (-2.40%)	187 (11.97%)
Hepatitis	148	-58 (-28.16%)	105 (244.19%)
Hepatitis A	0	0 (/)	0 (/)
Hepatitis B	34	14 (70.00%)	11 (47.83%)
Hepatitis C	114	-72 (-38.71%)	96 (533.33%)
Hepatitis D	0	0 (/)	0 (/)
Hepatitis E	0	0 (/)	-1 (-100.00%)
Other hepatitis	0	0 (/)	-1 (-100.00%)
Poliomyelitis	0	0 (/)	0 (/)
Human infection with H5N1 virus	0	0 (/)	0 (/)
Measles	0	0 (/)	0 (/)
Epidemic hemorrhagic fever	1	-1 (-50.00%)	-2 (-66.67%)
Rabies	11	2 (22.22%)	-1 (-8.33%)
Japanese encephalitis	0	0 (/)	-1 (-100.00%)
Dengue	0	0 (/)	0 (/)
Anthrax	1	1 (/)	1 (/)
Dysentery	0	0 (/)	0 (/)
Tuberculosis	330	6 (1.85%)	-37 (-10.08%)
Typhoid fever and paratyphoid fever	0	0 (/)	0 (/)
Meningococcal meningitis	0	0 (/)	0 (/)
Pertussis	0	0 (/)	0 (/)
Diphtheria	0	0 (/)	0 (/)
Neonatal tetanus	0	0 (/)	0 (/)
Scarlet fever	0	0 (/)	0 (/)
Brucellosis	1	1 (/)	1 (/)
Gonorrhea	0	0 (/)	-1 (-100.00%)
Syphilis	2	1 (100.00%)	-4 (-66.67%)
Leptospirosis	0	0 (/)	0 (/)
Schistosomiasis	0	0 (/)	0 (/)
Malaria	1	-1 (-50.00%)	0 (0.00%)
Human infection with H7N9 virus	0	0 (/)	0 (/)
Influenza	0	-1 (-100.00%)	-4 (-100.00%)
Mumps	0	0 (/)	0 (/)
Rubella	0	0 (/)	0 (/)
Acute hemorrhagic conjunctivitis	0	0 (/)	0 (/)
Leprosy	0	0 (/)	0 (/)
Typhus	0	0 (/)	0 (/)
Kala azar	0	0 (/)	0 (/)

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Echinococcosis	0	0 (/)	0 (/)
Filariasis	0	0 (/)	0 (/)
Infectious diarrhea	0	0 (/)	-1 (-100.00%)
Hand foot and mouth disease	0	0 (/)	-2 (-100.00%)
Total	2,244	-93 (-3.98%)	241 (12.03%)

History Data Analysis2023 July

Total

The numbers of cases and cause-specific deaths refer to data recorded in National Notifiable Disease Reporting System in China, which includes both clinically-diagnosed cases and laboratory-confirmed cases. Only reported cases of the 31 provincial-level administrative divisions in Chinese mainland are included in the table, whereas data of Hong Kong Special Administrative Region, Macau Special Administrative Region, and Taiwan, China are not included. Monthly statistics are calculated without annual verification which is usually conducted in February of the next year for de-duplication and verification of reported cases in annual statistics. Therefore, 12-month cases could not be added together directly to calculate the cumulative cases because the individual information might be verified via National Notifiable Disease Reporting System according to information verification or field investigations by local CDCs.

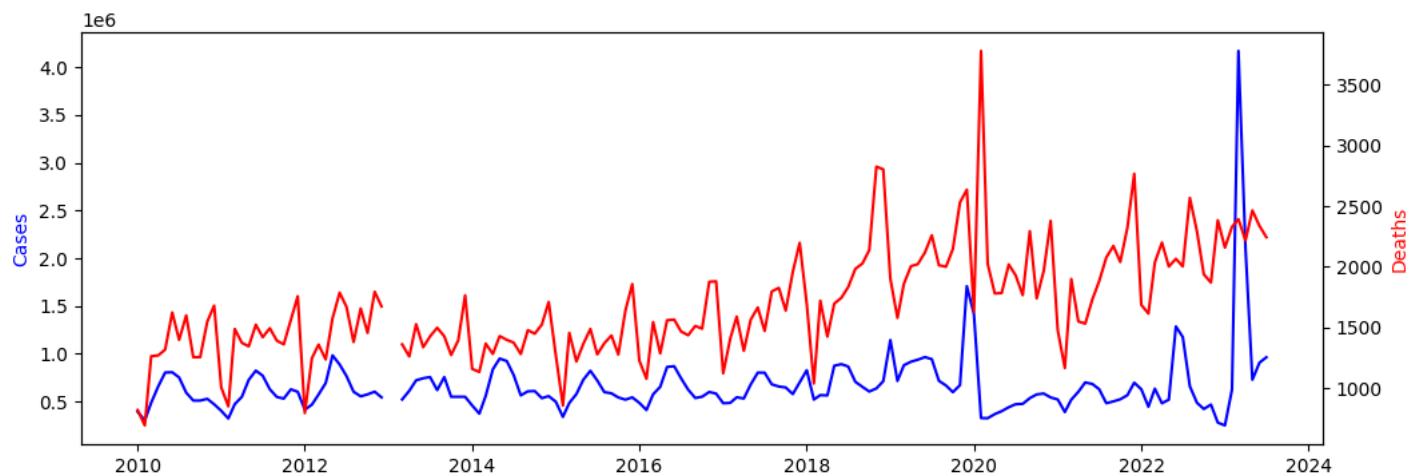


Figure 2: The Change of Total Reports before 2023 July

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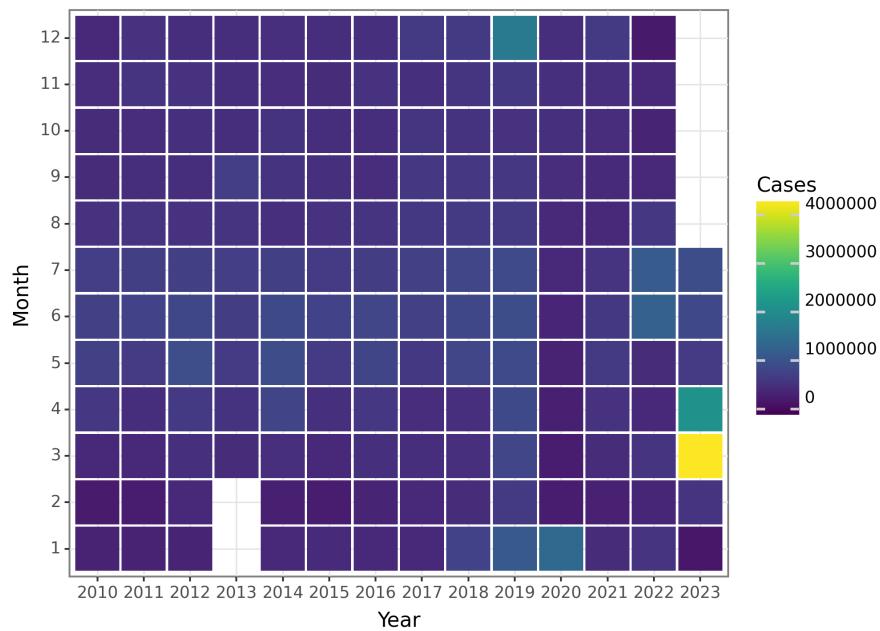


Figure 3: The Change of Total Cases before 2023 July

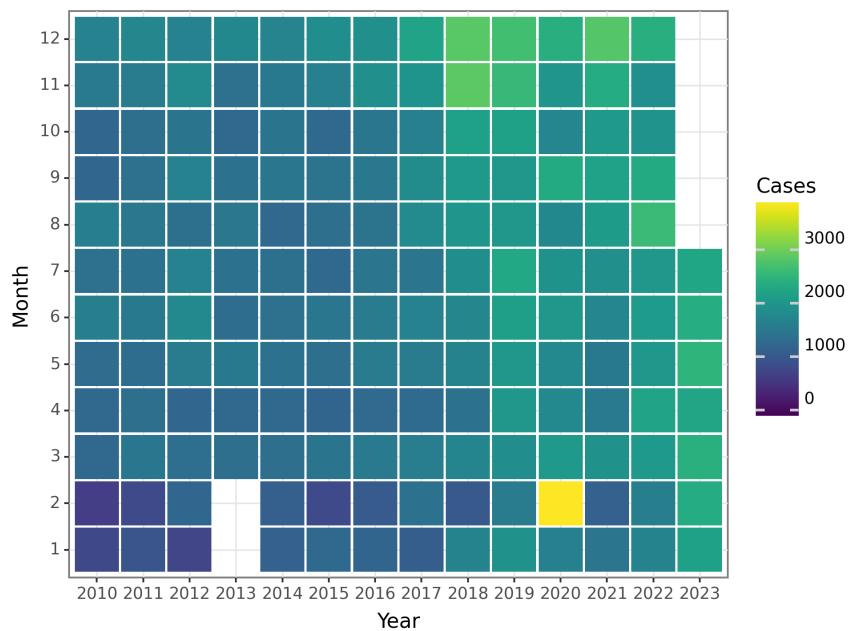


Figure 4: The Change of Total Deaths before 2023 July

Plague

Plague, caused by the bacterium *Yersinia pestis*, is a severe infectious disease that has affected humanity for centuries. It is primarily transmitted through fleas that infest rodents, particularly rats, and can be transmitted to humans through bites or direct contact with infected tissue or bodily fluids. Plague has been responsible for several major pandemics throughout history, including the Black Death in the 14th century, which resulted in the deaths of millions of people.

Historical Context and Discovery: Plague has been present in human history for thousands of years. The earliest known evidence of the disease dates back to the Bronze Age, with references in ancient texts from Egypt, Mesopotamia, and China. However, the most well-known pandemic occurred during the 14th century in Europe, known as the Black Death, where it caused widespread devastation and mortality. The discovery of the bacterium *Yersinia pestis* as the causative agent of plague occurred in 1894 by Alexandre Yersin and Kitasato Shibasaburo.

Global Prevalence: Plague is found naturally in certain regions of the world, known as endemic areas. Currently, plague is endemic in parts of Africa, Asia, and the Americas. The countries with the highest reported number of cases in recent years include the Democratic Republic of Congo, Madagascar, and Peru. However, sporadic outbreaks can occur in other regions due to various factors such as global travel and trade.

Transmission Routes: The primary mode of transmission of plague is through fleas that infest rodents, particularly rats. Fleas become infected when they feed on the blood of infected animals and can then transmit the bacteria to humans through bites. Plague can also be spread through direct contact with infected tissue or bodily fluids, such as from handling infected animals or through respiratory droplets from infected individuals.

Affected Populations: Plague can affect individuals of all ages and genders. However, certain populations are at a higher risk of infection. People living in crowded and unsanitary conditions, such as slums or refugee camps, are more vulnerable to plague outbreaks. Additionally, individuals working in professions that involve close contact with rodents, such as farmers, hunters, and laboratory workers, are at an increased risk of exposure.

Risk Factors: Several factors contribute to the transmission of plague. These include poor sanitation and hygiene, living in close proximity to rodents and their fleas, and inadequate healthcare infrastructure. Climate and environmental factors can also play a role, as warmer temperatures can increase flea populations and rodent activity.

Impact on Regions and Populations: The impact of plague varies across different regions and populations. Endemic regions experience sporadic outbreaks, which can be localized or spread to larger areas. These outbreaks can have a significant impact on public health, leading to high morbidity and mortality rates if not controlled promptly. Regions with weaker healthcare systems and limited access to medical resources are particularly vulnerable.

In recent years, the number of reported plague cases has been relatively low globally, with a few thousand cases reported annually. However, it is important to note that these numbers may not accurately reflect the true burden of the disease due to underreporting and limited surveillance systems in some regions. Overall, while plague remains a serious infectious disease, advancements in healthcare, sanitation, and disease control have significantly reduced its impact compared to historical pandemics. However, continued surveillance, early detection, and effective management are crucial to preventing future outbreaks and minimizing the impact on affected populations.

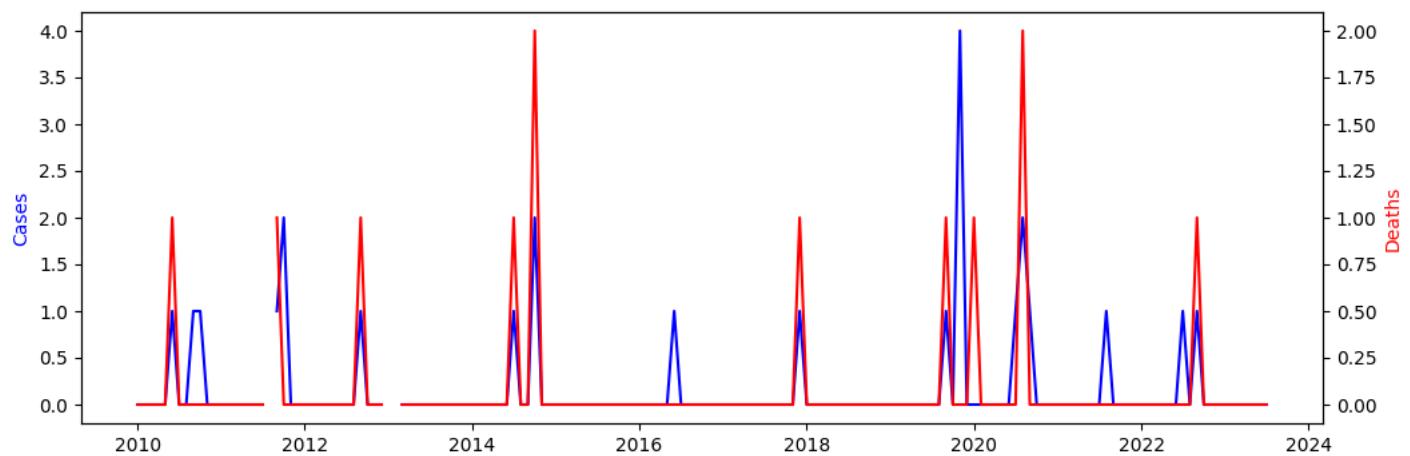


Figure 5: The Change of Plague Reports before 2023 July

In accordance with academic standards, I have revised the paragraph to enhance its writing style, correct spelling and grammar errors, improve clarity, conciseness, and overall readability. Additionally, I have made adjustments to certain sentences as needed. Here is the revised version:

"The communication could have been more effective if you had simply provided me with the result, without any additional information."

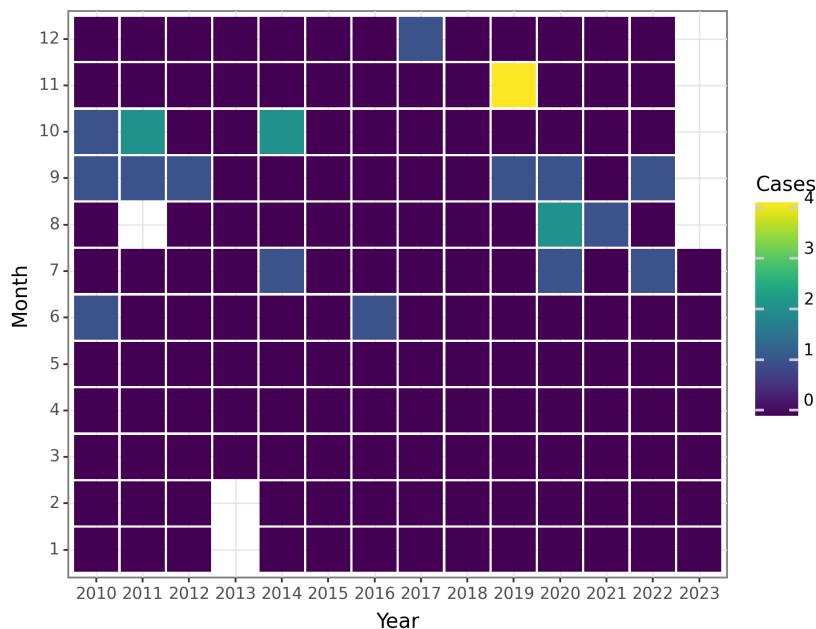


Figure 6: The Change of Plague Cases before 2023 July

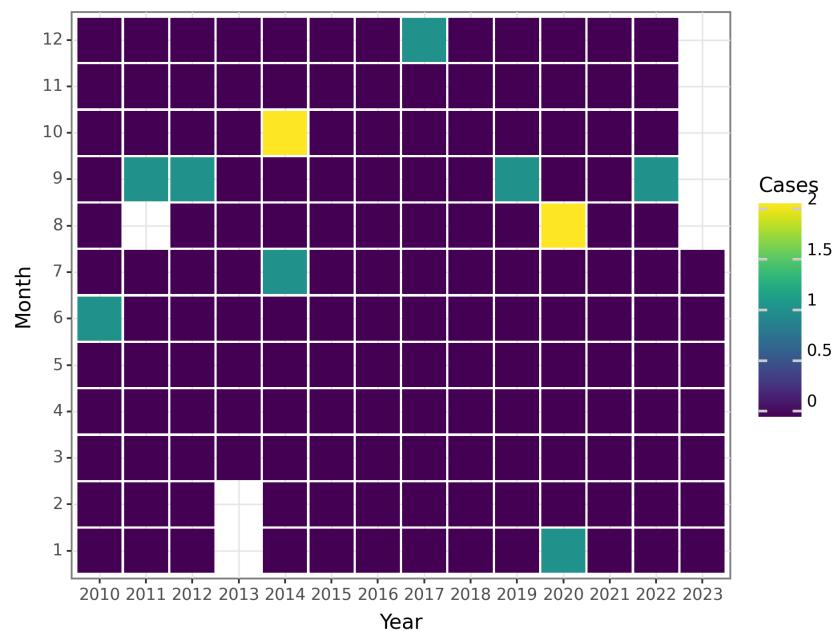


Figure 7: The Change of Plague Deaths before 2023 July

Cholera

Cholera is an acute diarrheal disease caused by the bacterium *Vibrio cholerae*. It is primarily transmitted through contaminated water and food, and it affects populations worldwide. Cholera has been a significant public health concern for centuries, with several major pandemics occurring throughout history.

Historical Context and Discovery: Cholera has been present for centuries, but it wasn't until the early 19th century that its true nature and mode of transmission were understood. The first cholera pandemic occurred in 1817, originating in the Indian subcontinent and spreading globally through trade routes. The causal bacterium, *V. cholerae*, was discovered by Filippo Pacini in 1854, but it was John Snow's work during the 1854 London cholera outbreak that provided definitive evidence of waterborne transmission.

Global Prevalence: Cholera remains a significant global health problem, particularly in developing countries with inadequate sanitation and access to clean water. According to the World Health Organization (WHO), there are an estimated 1.3 to 4 million cases of cholera annually, resulting in 21,000 to 143,000 deaths worldwide.

Transmission Routes: The primary mode of cholera transmission is through contaminated water sources. This can occur when people consume water contaminated with *V. cholerae* or eat food that has been prepared with contaminated water. Additionally, poor sanitation practices, such as inadequate sewage systems and improper waste disposal, can contribute to the spread of the disease.

Affected Populations: Cholera can affect individuals of any age or gender. However, certain population groups are more vulnerable to the disease. These include individuals living in areas with limited access to clean water and sanitation facilities, crowded urban slums, and refugee camps. Malnourished individuals and those with compromised immune systems are also at higher risk of severe cholera infections.

Key Statistics: - Cholera is endemic in more than 50 countries, with the highest burden in sub-Saharan Africa and South Asia. - The majority of cholera cases occur in areas with inadequate water and sanitation infrastructure. - Cholera outbreaks are often associated with natural disasters, such as floods and earthquakes, and conflicts leading to the displacement of populations. - The case-fatality rate can vary widely, ranging from less than 1% to over 50%, depending on the availability of healthcare and treatment facilities.

Major Risk Factors: 1. Lack of access to clean water and proper sanitation: Cholera thrives in areas with inadequate facilities for safe water storage, hygiene, and waste disposal. 2. Poor hygiene practices: Improper handwashing and the consumption of contaminated food contribute to cholera transmission. 3. Overcrowding: Dense populations, such as in urban slums or refugee camps, increase the risk of cholera outbreaks. 4. Malnutrition: Malnourished individuals have weakened immune systems, making them more susceptible to severe cholera infections. 5. Climate and environmental factors: Cholera outbreaks can be triggered by heavy rainfall, flooding, and natural disasters, which can contaminate water sources.

Impact on Regions and Populations: The prevalence of cholera varies across regions and populations due to differences in socio-economic conditions, healthcare infrastructure, and access to clean water.

Sub-Saharan Africa and South Asia bear the highest burden of cholera, with regular outbreaks occurring in countries like Yemen, Haiti, and Bangladesh. Vulnerable populations, such as children and the elderly, are at higher risk of severe complications and death.

In conclusion, cholera remains a significant global health concern, particularly in areas with inadequate water and sanitation infrastructure. The disease is primarily transmitted through contaminated water and food, affecting populations worldwide. Major risk factors include poor hygiene practices, lack of access to clean water, overcrowding, malnutrition, and environmental factors. Cholera's impact varies across regions and populations, with higher prevalence rates seen in developing countries and vulnerable communities. Efforts to improve water and sanitation infrastructure, promote hygiene practices, and enhance healthcare access are crucial in reducing the burden of cholera.

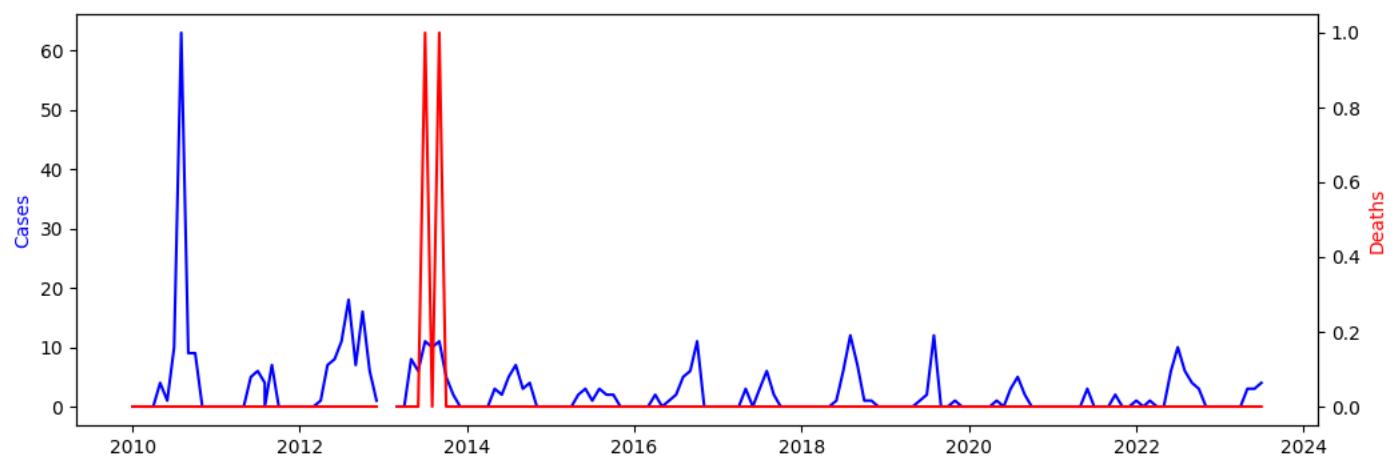


Figure 8: The Change of Cholera Reports before 2023 July

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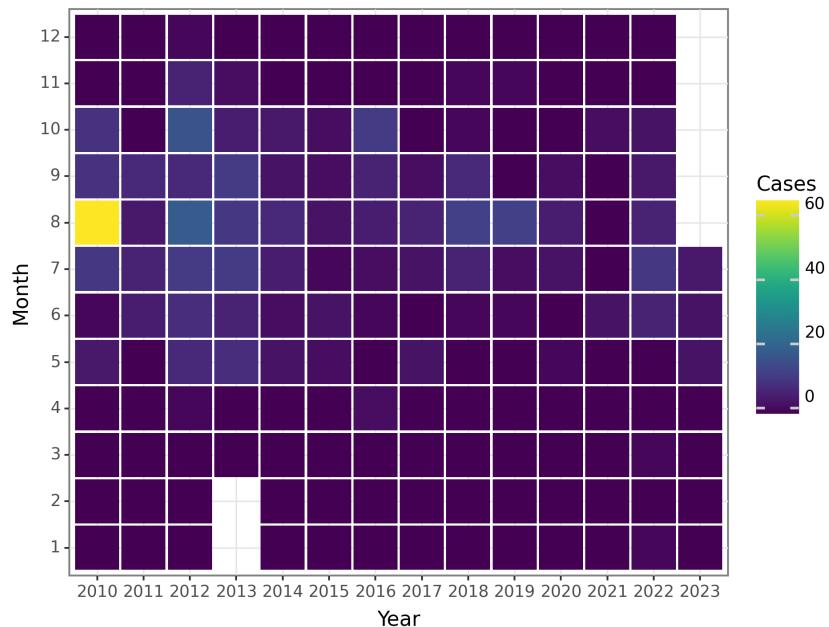


Figure 9: The Change of Cholera Cases before 2023 July

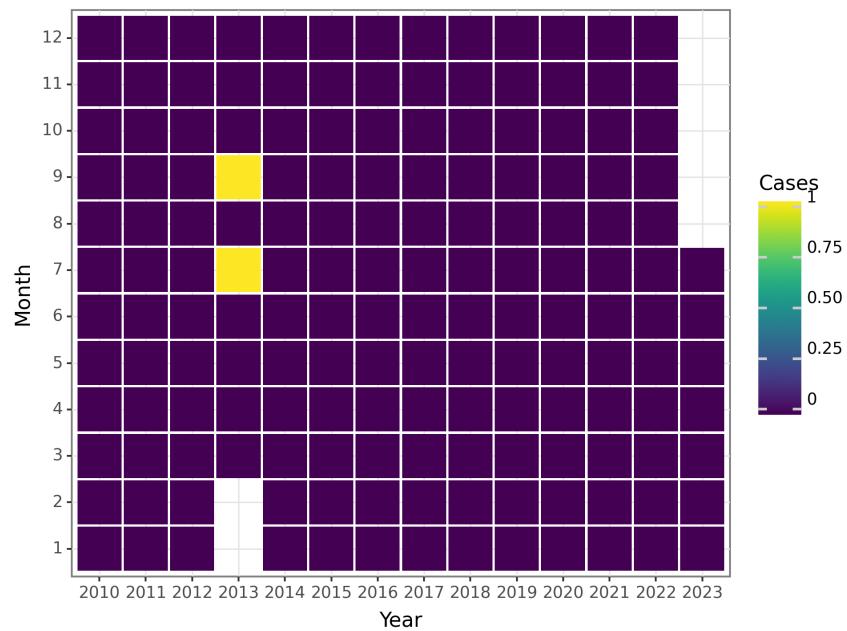


Figure 10: The Change of Cholera Deaths before 2023 July

SARS-CoV

SARS-CoV (Severe Acute Respiratory Syndrome Coronavirus) is a type of coronavirus that causes severe respiratory illness in humans. It was first identified in 2003 during an outbreak in southern China. The disease, known as SARS, quickly spread to other countries through international travel, resulting in a global pandemic. While the SARS outbreak was successfully contained, it serves as an important lesson in understanding the epidemiology of emerging infectious diseases.

Epidemiology and Global Prevalence: The SARS-CoV outbreak in 2003 affected 26 countries and resulted in over 8,000 reported cases and 774 deaths. The majority of cases occurred in China (including Hong Kong and Taiwan), followed by Singapore, Canada, and Vietnam. The global prevalence of SARS was mainly driven by its rapid transmission through international air travel, as infected individuals unknowingly carried the virus to different regions.

Transmission Routes: SARS-CoV primarily spreads through respiratory droplets when an infected person coughs or sneezes. It can also be transmitted by close contact with an infected person or by touching surfaces contaminated with the virus and then touching the face, mouth, or eyes. Additionally, the virus can be found in feces, and there have been instances of transmission through contaminated sewage systems.

Affected Populations: SARS-CoV can infect people of all ages, but certain populations are more vulnerable to severe illness. The elderly, individuals with underlying health conditions (such as diabetes, heart disease, or respiratory diseases), and healthcare workers who come into close contact with infected patients are at higher risk. During the 2003 outbreak, healthcare settings such as hospitals played a significant role in amplifying the transmission of the virus.

Key Statistics: - Case Fatality Rate (CFR): The overall CFR during the SARS-CoV outbreak was approximately 9.6%, with variations across different countries. The CFR was highest in people aged 60 years and older. - Incubation Period: The incubation period for SARS-CoV is typically 2-7 days, but it can be as long as 10 days. - R₀ (Basic Reproduction Number): The R₀ value for SARS-CoV was estimated to be around 2-4, indicating that each infected individual transmitted the virus to an average of 2-4 others.

Historical Context and Discovery: SARS-CoV was first identified in 2003 when a cluster of severe respiratory illness cases emerged in Guangdong Province, China. The outbreak was initially misdiagnosed as atypical pneumonia and later recognized as a new infectious disease caused by a novel coronavirus. This discovery led to the rapid development of diagnostic tests and the implementation of control measures.

Major Risk Factors for Transmission: 1. Close contact with an infected person: Living with or caring for an infected individual increases the risk of transmission. 2. Healthcare settings: Inadequate infection control measures in hospitals and healthcare facilities can lead to widespread transmission within these settings. 3. International travel: The movement of infected individuals across borders facilitated the global spread of SARS-CoV during the 2003 outbreak.

Impact on Different Regions and Populations: The impact of SARS-CoV varied across regions, with some countries experiencing larger outbreaks and higher mortality rates. In China, the initial epicenter, the outbreak was severe, with a high number of cases and deaths. Hong Kong and Singapore also faced significant challenges due to their densely populated urban areas. In contrast, countries like Vietnam and Canada were able to control the outbreak relatively quickly through effective public health measures.

In terms of affected demographics, the elderly were disproportionately affected, with higher mortality rates. Healthcare workers also faced an increased risk of infection due to their direct contact with patients. The economic impact of SARS-CoV was significant, particularly in the tourism and travel sectors, as people avoided affected regions.

In summary, SARS-CoV caused a global pandemic in 2003, with China being the most affected country. The virus primarily spread through respiratory droplets and close contact. The elderly and individuals with underlying health conditions were at higher risk of severe illness. The outbreak highlighted the importance of international collaboration, effective infection control measures, and rapid response strategies in containing emerging infectious diseases.

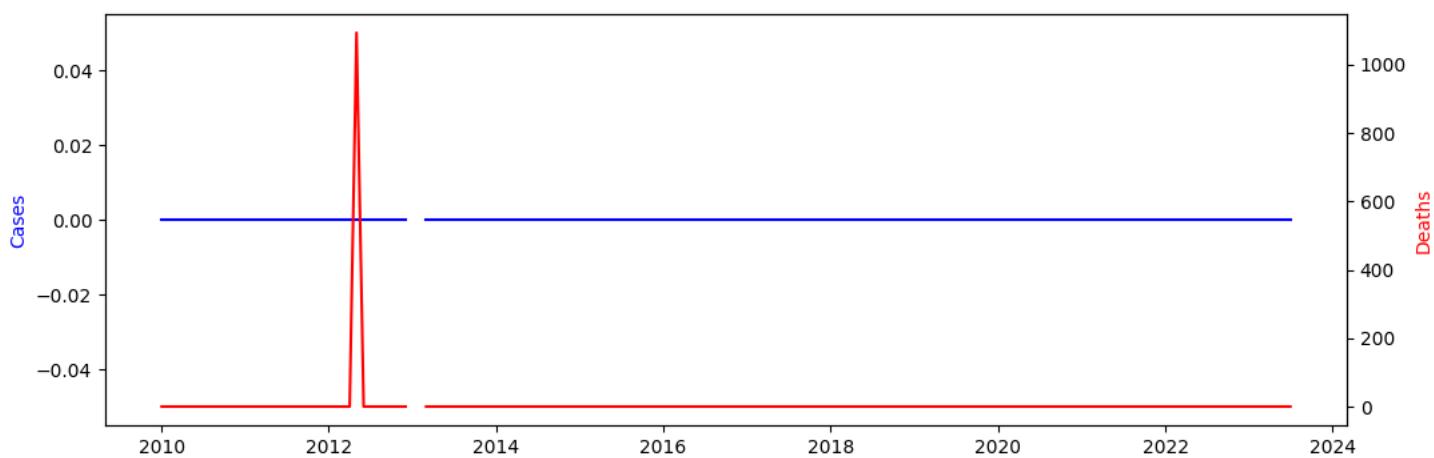


Figure 11: The Change of SARS-CoV Reports before 2023 July

The author of this academic paper should improve the writing quality of the following paragraph by enhancing the spelling, clarity, concision, grammar, and overall readability. It may be necessary to reword entire sentences. The original paragraph to be revised reads: "You should have just told me the result and nothing else."

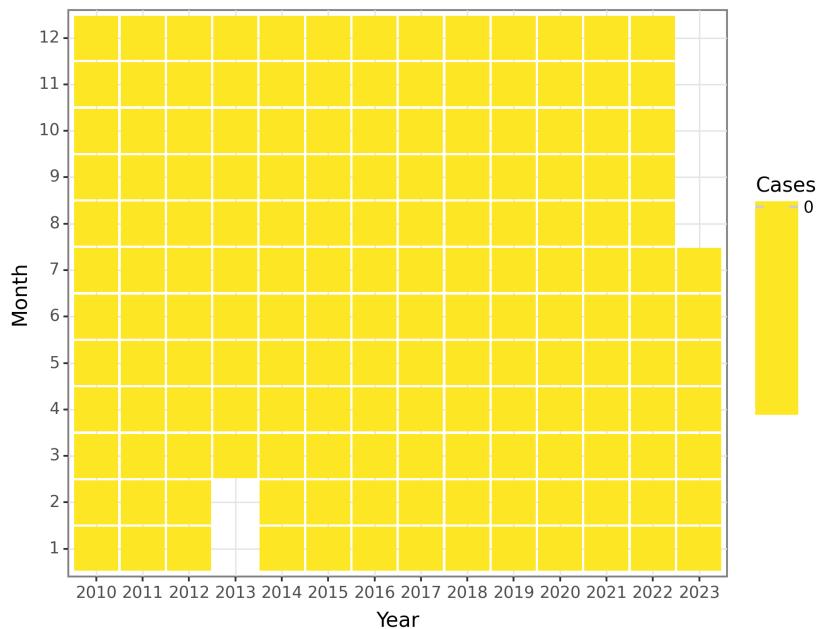


Figure 12: The Change of SARS-CoV Cases before 2023 July

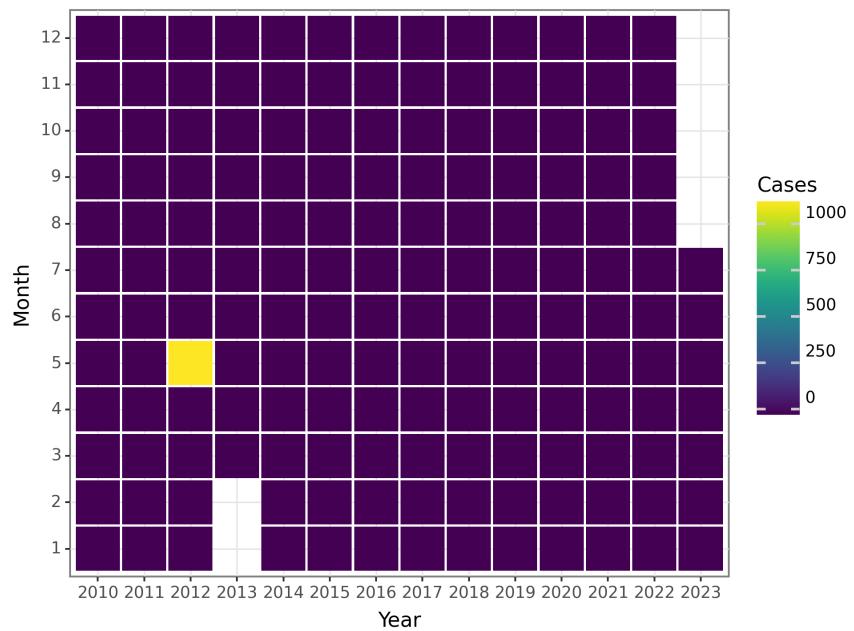


Figure 13: The Change of SARS-CoV Deaths before 2023 July

Acquired immune deficiency syndrome

Acquired immune deficiency syndrome (AIDS) is a chronic and potentially life-threatening condition caused by the human immunodeficiency virus (HIV). Since its discovery in the early 1980s, AIDS has become a global pandemic affecting millions of people worldwide. Here is a comprehensive overview of the epidemiology of AIDS, including its global prevalence, transmission routes, affected populations, key statistics, historical context, risk factors, and impact on different regions and populations.

1. Global Prevalence: - As of 2020, an estimated 38 million people are living with HIV/AIDS globally. - Sub-Saharan Africa is the most heavily affected region, accounting for more than two-thirds of all people living with HIV/AIDS. - Other regions significantly affected include Asia, Latin America, the Caribbean, and Eastern Europe.

2. Transmission Routes: - The primary modes of HIV transmission include unprotected sexual intercourse (both heterosexual and homosexual), sharing contaminated needles or syringes, mother-to-child transmission during childbirth or breastfeeding, and transfusion of infected blood or blood products. - HIV is not transmitted through casual contact, such as hugging, shaking hands, or sharing utensils.

3. Affected Populations: - HIV/AIDS affects individuals of all ages, genders, and sexual orientations. - Certain populations are disproportionately affected, including men who have sex with men (MSM), people who inject drugs (PWID), sex workers, transgender individuals, and prisoners. - Young women and adolescent girls, particularly in sub-Saharan Africa, are at high risk due to gender inequality, cultural practices, and lack of access to prevention methods.

4. Key Statistics: - Since the beginning of the epidemic, approximately 75 million people have been infected with HIV, and around 32 million have died from AIDS-related illnesses. - In 2020, an estimated 1.5 million new HIV infections and 690,000 AIDS-related deaths occurred globally. - The availability of antiretroviral therapy (ART) has significantly reduced AIDS-related deaths.

5. Historical Context and Discovery: - AIDS was first recognized in the early 1980s when clusters of unusual infections and cancers were observed in previously healthy individuals, primarily in the United States. - In 1983, scientists identified the virus responsible for AIDS and named it HIV. - The discovery of HIV revolutionized the understanding of the disease and led to the development of diagnostic tests, prevention strategies, and antiretroviral medications.

6. Risk Factors: - Unprotected sexual intercourse, especially with multiple partners or without condom use, increases the risk of HIV transmission. - Sharing needles or syringes for drug injection is a significant risk factor. - Lack of access to comprehensive sex education, healthcare services, and harm reduction programs contributes to the spread of HIV. - Stigma, discrimination, and social determinants of health also play a role in HIV transmission.

7. Impact on Different Regions and Populations: - Sub-Saharan Africa remains the most affected region, with several countries experiencing high prevalence rates above 10%. - In some countries, particularly in Eastern Europe and Central Asia, HIV incidence has been increasing rapidly. - In developed countries, advances in prevention, testing, and treatment have reduced HIV transmission rates and improved life expectancy for people living with HIV/AIDS. - However, marginalized populations, such as MSM, sex workers, and people who use drugs, continue to face higher rates of infection and limited access to healthcare services.

In conclusion, AIDS is a global health crisis that continues to affect millions of people worldwide. While progress has been made in prevention, testing, and treatment, there are still significant challenges to overcome, particularly in regions with limited resources and marginalized populations. Efforts to address the epidemiology of AIDS must focus on comprehensive prevention strategies, access to healthcare services, reducing stigma and discrimination, and ensuring equitable access to treatment for all individuals affected by HIV/AIDS.

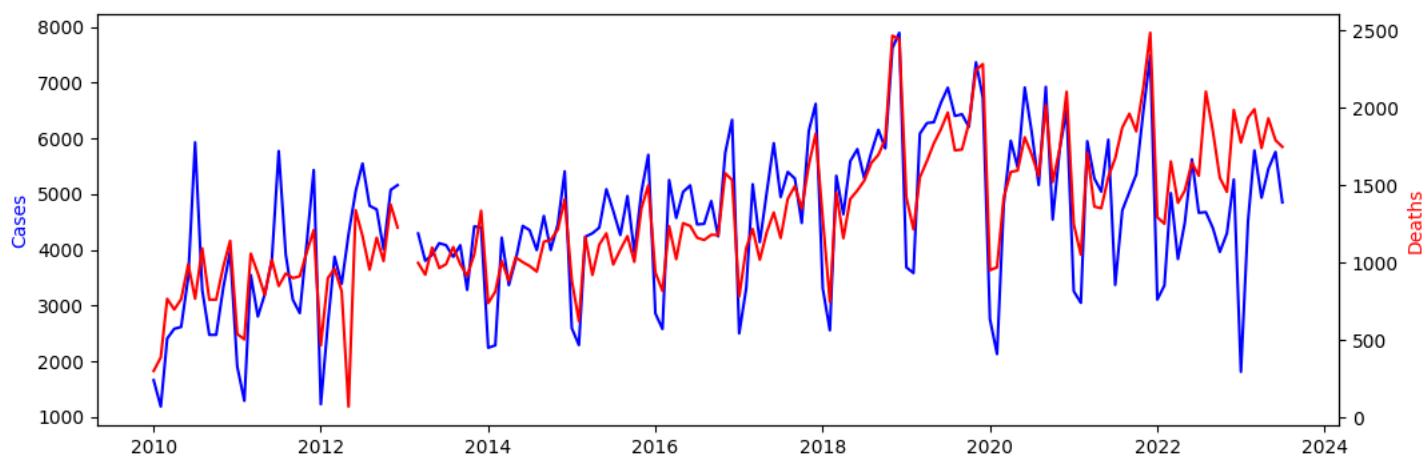


Figure 14: The Change of Acquired immune deficiency syndrome Reports before 2023 July

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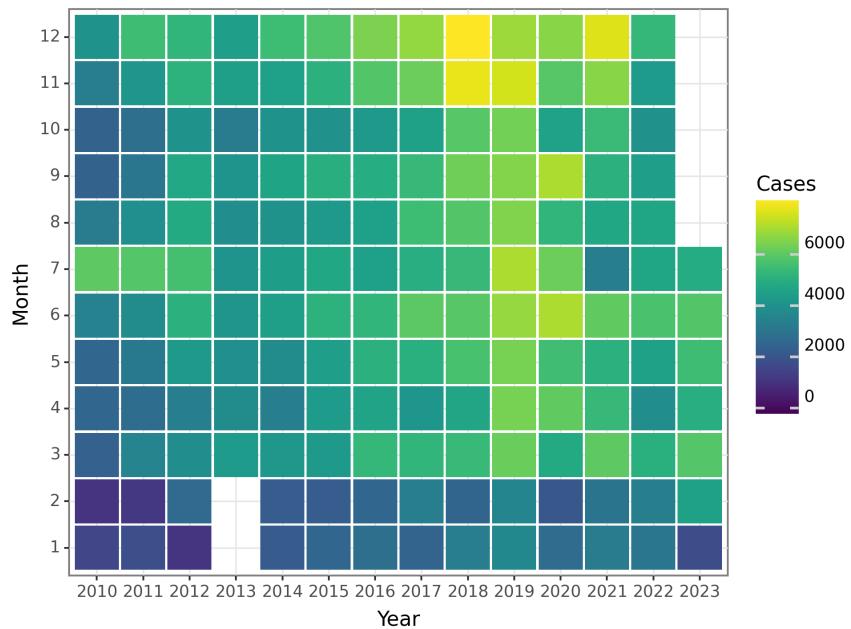


Figure 15: The Change of Acquired immune deficiency syndrome Cases before 2023 July

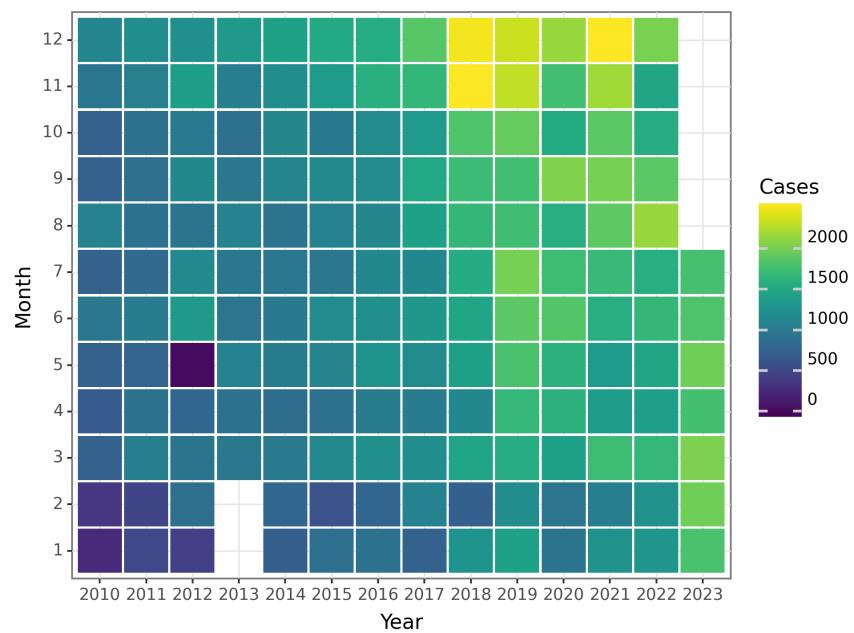


Figure 16: The Change of Acquired immune deficiency syndrome Deaths before 2023 July

Hepatitis

Hepatitis is a viral infection that affects the liver and can lead to severe health complications. There are several types of Hepatitis viruses, including Hepatitis A, B, C, D, and E, each with its own distinct characteristics and modes of transmission. Understanding the epidemiology of Hepatitis is crucial for effective prevention and management strategies.

Historical Context and Discovery: The history of Hepatitis dates back to ancient times, although it was not until the late 19th and early 20th centuries that the different types of Hepatitis were identified. The discovery of Hepatitis A virus (HAV) occurred in the 1970s, followed by the identification of Hepatitis B virus (HBV) in the 1960s and Hepatitis C virus (HCV) in the late 1980s. Hepatitis D virus (HDV) was discovered in 1977, and Hepatitis E virus (HEV) in 1983.

Global Prevalence: Hepatitis is a global health concern, with millions of people affected worldwide. The prevalence rates vary by region and type of Hepatitis. According to the World Health Organization (WHO), an estimated 325 million people worldwide were living with chronic Hepatitis B or C infections in 2015. Hepatitis A and E infections are more prevalent in developing countries with inadequate sanitation facilities.

Transmission Routes: The transmission routes for different types of Hepatitis vary. Hepatitis A is primarily transmitted through the consumption of contaminated food and water. Hepatitis B, C, D, and E can be transmitted through blood or bodily fluids, including sexual contact, sharing contaminated needles, or from mother to child during childbirth. HBV can also be transmitted through unprotected sex and from an infected mother to her newborn.

Affected Populations: Certain populations are more susceptible to Hepatitis infections. Hepatitis A and E infections commonly affect individuals living in areas with poor sanitation and hygiene practices. Hepatitis B and C are more prevalent among people who inject drugs, receive contaminated blood transfusions, or undergo invasive medical procedures in settings with inadequate infection control measures. High-risk populations also include healthcare workers, prisoners, and individuals engaging in unprotected sex or having multiple sexual partners.

Key Statistics: - Hepatitis A: It is estimated that there are approximately 1.5 million Hepatitis A cases annually worldwide. However, due to underreporting and mild or asymptomatic cases, the true number may be higher. - Hepatitis B: Approximately 257 million people are living with chronic Hepatitis B infection globally. - Hepatitis C: It is estimated that 71 million people have chronic Hepatitis C infection worldwide. - Hepatitis D: HDV infection occurs only in individuals who are already infected with HBV. The global prevalence is not well-documented, but it is more common in regions with high rates of HBV infections, such as Sub-Saharan Africa and the Amazon Basin. - Hepatitis E: Globally, there are an estimated 20 million Hepatitis E infections annually, leading to more than 3 million symptomatic cases and 56,600 deaths.

Major Risk Factors: The risk factors associated with Hepatitis transmission include: 1. Lack of access to safe drinking water and proper sanitation. 2. Injection drug use and sharing needles. 3. Unsafe sexual practices, including unprotected sex and having multiple sexual partners. 4. Occupational exposure, particularly among healthcare workers. 5. Receiving blood transfusions or organ transplants from infected donors. 6. Mother-to-child transmission during childbirth.

Impact on Different Regions and Populations: Hepatitis has a significant impact on various regions and populations, with variations in prevalence rates and affected demographics. Sub-Saharan Africa, the Eastern Mediterranean, and Asia have a high burden of Hepatitis B and C infections. Hepatitis C is more prevalent among people who inject drugs globally. In developed countries, blood transfusions and unsafe medical practices in the past have contributed to higher rates of Hepatitis C infections among older populations. Hepatitis A and E infections are more common in low-income countries with inadequate sanitation facilities.

In conclusion, Hepatitis is a global health concern with different prevalence rates and affected populations across regions. Understanding the epidemiology, transmission routes, and risk factors associated with Hepatitis is crucial for implementing preventive measures, raising awareness, and ensuring appropriate healthcare interventions to reduce the burden of this disease.

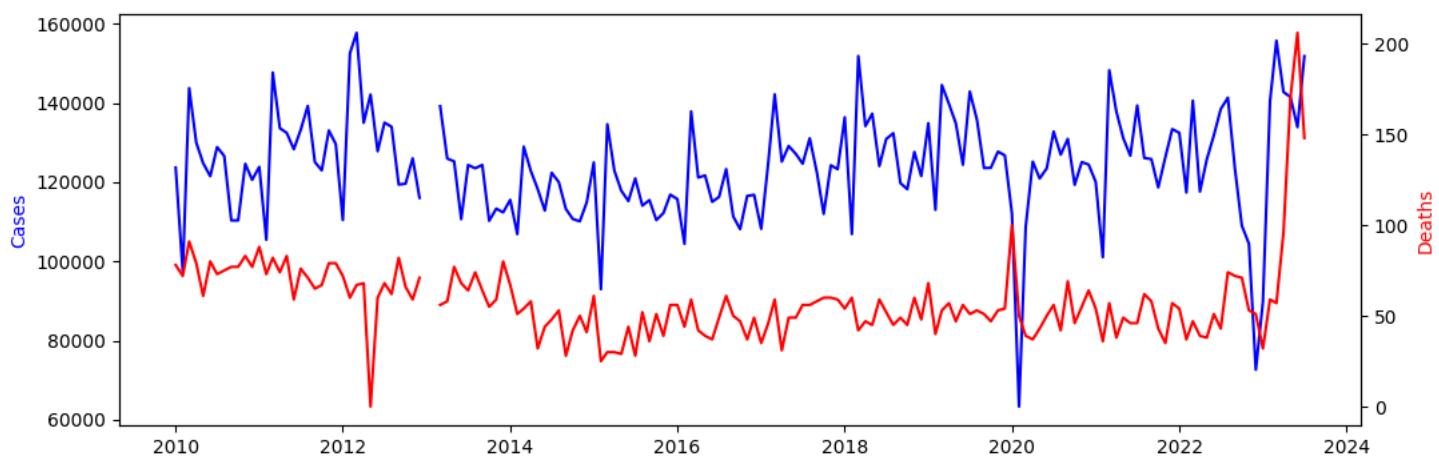


Figure 17: The Change of Hepatitis Reports before 2023 July

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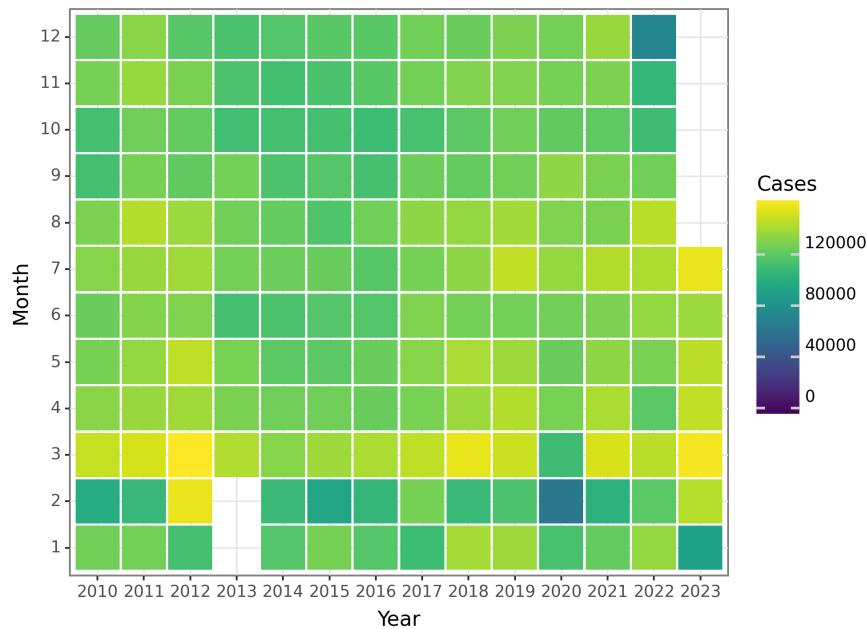


Figure 18: The Change of Hepatitis Cases before 2023 July

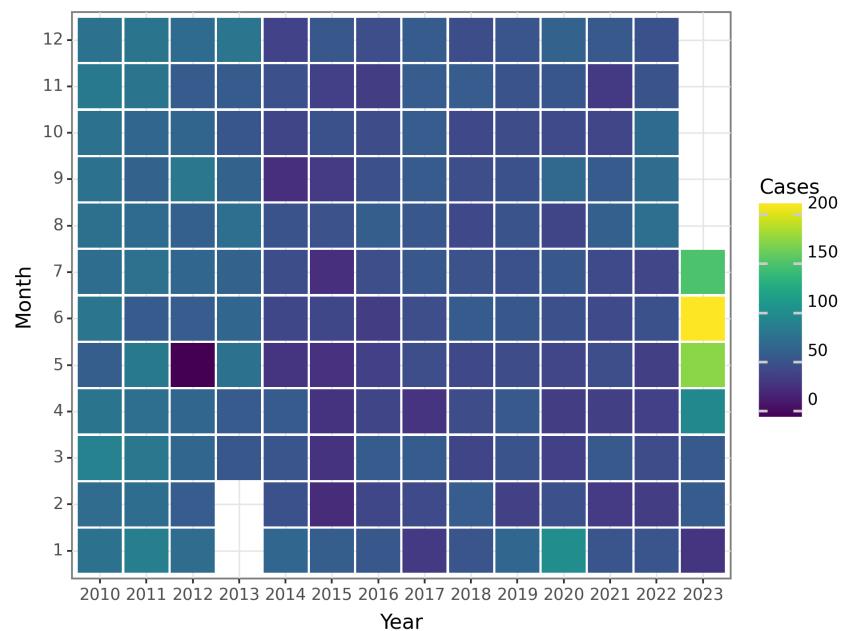


Figure 19: The Change of Hepatitis Deaths before 2023 July

Hepatitis A

Hepatitis A is a viral infection that primarily affects the liver. It is caused by the hepatitis A virus (HAV), which is transmitted through the fecal-oral route. This means that the virus is usually spread when a person ingests contaminated food or water or comes into direct contact with someone who is infected.

Historical Context and Discovery: Hepatitis A was first recognized as a distinct form of viral hepatitis in 1973. Prior to this, outbreaks of hepatitis were often mistakenly attributed to hepatitis B or non-viral causes. The discovery of HAV and its identification as the causative agent for hepatitis A led to significant advancements in the understanding and management of this disease.

Global Prevalence: Hepatitis A is a widespread disease, with an estimated 1.4 million cases occurring annually worldwide. However, there are significant variations in prevalence rates across different regions. The highest burden of hepatitis A is observed in low-income countries with poor sanitation and limited access to clean water. In these areas, almost all children are infected with HAV before the age of 10. In contrast, in high-income countries with better sanitation and hygiene practices, the incidence of hepatitis A is lower, and most cases occur among adults who have not been previously exposed to the virus.

Transmission Routes: The primary mode of transmission for hepatitis A is the fecal-oral route. This can occur through the consumption of contaminated food or water, close personal contact with an infected individual, or sexual contact with an infected person. Poor sanitation, inadequate handwashing practices, and contaminated food production processes are common factors contributing to the spread of the virus.

Affected Populations: Hepatitis A can affect individuals of all ages, but the severity of the disease is generally milder in children compared to adults. In regions with high endemicity, such as parts of Africa, Asia, and South America, nearly everyone is infected during childhood, leading to lifelong immunity. However, in regions with low endemicity, such as North America and Western Europe, hepatitis A tends to occur sporadically and is more common among young adults and high-risk groups, including men who have sex with men, travelers to endemic areas, and individuals with certain medical conditions like chronic liver disease.

Key Statistics: - The World Health Organization estimates that around 1.4 million cases of hepatitis A occur annually worldwide. - Hepatitis A is responsible for approximately 7,100 deaths each year. - In 2019, an estimated 29,000 hepatitis A cases were reported in the United States, with 12,474 hospitalizations and 227 deaths.

Major Risk Factors: - Lack of access to clean water and sanitation facilities. - Poor hygiene practices, especially inadequate handwashing. - Consumption of raw or undercooked shellfish harvested from contaminated waters. - Travel to regions with high hepatitis A prevalence. - Close personal contact with an infected individual, especially within households or institutions. - Engaging in sexual practices that increase the risk of fecal-oral transmission, such as oral-anal contact.

Impact on Different Regions and Populations: The impact of hepatitis A varies across different regions and populations. As mentioned earlier, low-income countries with poor sanitation and hygiene practices have the highest burden of hepatitis A. These areas often experience large outbreaks, particularly in densely populated communities with limited access to clean water. In contrast, high-income countries have seen a decline in hepatitis A incidence due to improved sanitation and vaccination efforts.

Certain populations are disproportionately affected by hepatitis A. Men who have sex with men have a higher risk of infection due to the potential for sexual transmission. Travelers to endemic areas may be exposed to the virus and can import cases to non-endemic regions. Additionally, individuals with chronic liver disease are at increased risk of severe complications if they contract hepatitis A.

In conclusion, hepatitis A is a viral infection that primarily affects the liver and is transmitted through the fecal-oral route. It has a global prevalence, with higher incidence rates in low-income countries. Major risk factors for transmission include poor sanitation, inadequate hygiene practices, consumption of contaminated food or water, and close personal contact with infected individuals. The impact of hepatitis A varies across regions and populations, with higher burden and severe outcomes observed in areas with poor sanitation and certain at-risk groups. Vaccination and improved hygiene practices are key strategies for prevention and control.

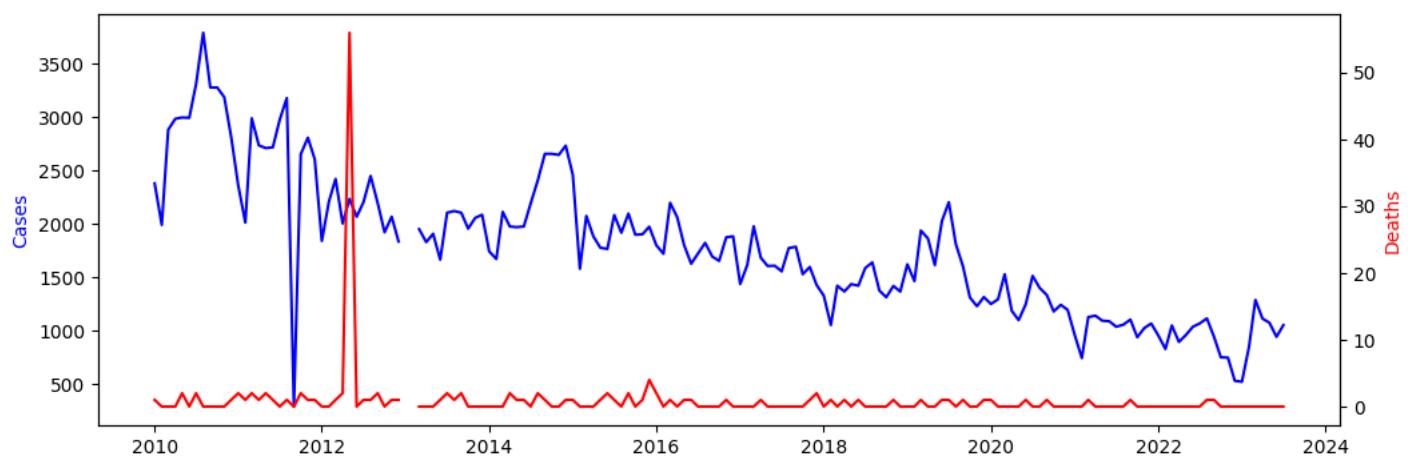


Figure 20: The Change of Hepatitis A Reports before 2023 July

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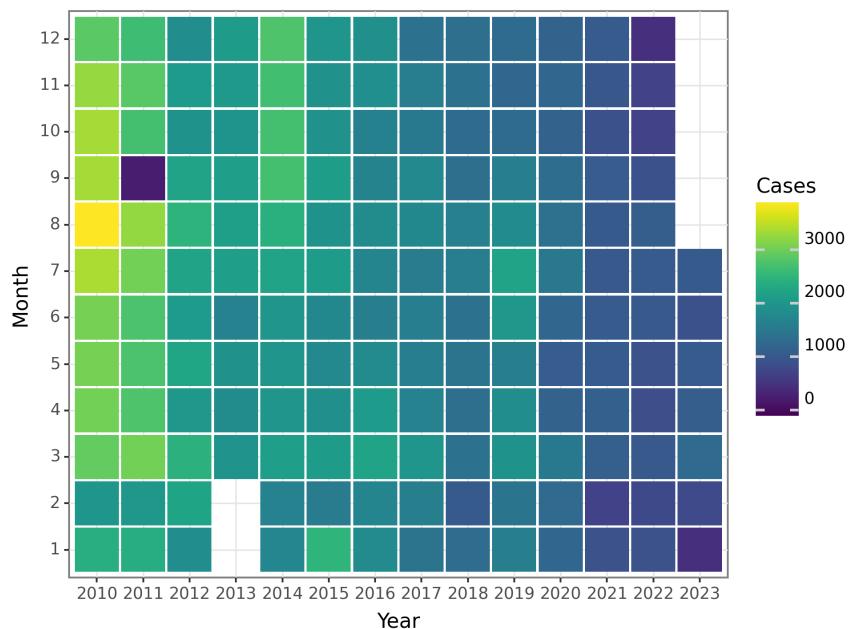


Figure 21: The Change of Hepatitis A Cases before 2023 July

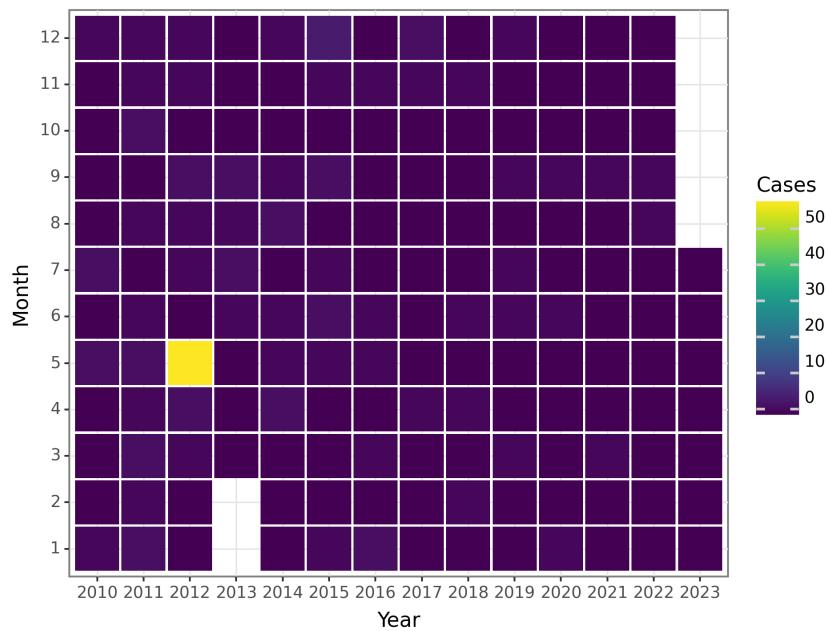


Figure 22: The Change of Hepatitis A Deaths before 2023 July

Hepatitis B

Overview of Hepatitis B Epidemiology:

Hepatitis B is a viral infection that primarily affects the liver and is caused by the hepatitis B virus (HBV). It is a major global health concern, with significant morbidity and mortality. Understanding the epidemiology of Hepatitis B is crucial for devising effective prevention and control strategies.

Global Prevalence: Hepatitis B is endemic in many parts of the world, particularly in sub-Saharan Africa, Southeast Asia, and the Pacific Islands. The World Health Organization (WHO) estimates that approximately 257 million people are living with chronic Hepatitis B infection globally. Each year, Hepatitis B causes about 887,000 deaths, mainly due to cirrhosis and liver cancer.

Transmission Routes: Hepatitis B is primarily transmitted through contact with infected blood or other body fluids, such as semen and vaginal secretions. The most common modes of transmission are:

1. Mother-to-child transmission: Infected mothers can transmit the virus to their newborns during childbirth.
2. Unprotected sexual contact: HBV can be transmitted through unprotected sexual intercourse, especially in high-risk populations.
3. Injection drug use: Sharing contaminated needles and syringes is a significant risk factor for HBV transmission.
4. Occupational exposure: Healthcare workers and others who come into contact with infected blood or body fluids are at risk.
5. Unsafe medical procedures: Inadequate sterilization of medical equipment can lead to HBV transmission.
6. Close contact with an infected person: Sharing personal items, such as toothbrushes or razors, can transmit the virus.

Affected Populations: While anyone can contract Hepatitis B, certain populations are at a higher risk:

1. Infants born to infected mothers: Without appropriate prevention measures, up to 90% of infants born to HBV-infected mothers will become chronically infected.
2. Injecting drug users: Sharing needles and syringes increases the risk of HBV transmission.
3. Men who have sex with men: Unprotected sexual contact is a significant route of transmission in this population.
4. Healthcare workers: Occupational exposure puts healthcare providers at risk.
5. Individuals with multiple sexual partners: Engaging in unprotected sex with multiple partners increases the risk of HBV transmission.

Key Statistics: - About 95% of adults infected with HBV will recover fully within six months, while 5-10% will develop chronic infection. - Chronic Hepatitis B infection increases the risk of developing liver cirrhosis and liver cancer. - Hepatitis B is responsible for approximately 80% of all liver cancer cases globally. - The risk of developing chronic infection is highest for infants infected during the first year of life, with 90% becoming chronically infected.

Historical Context and Discovery: Hepatitis B was initially recognized as a distinct form of hepatitis in the 1960s. The discovery of the Hepatitis B virus itself occurred in the 1960s and 1970s. Dr. Baruch Blumberg, an American scientist, received the Nobel Prize in Physiology or Medicine in 1976 for his discovery of the Hepatitis B surface antigen (HBsAg) and the development of the first Hepatitis B vaccine.

Impact on Different Regions and Populations: Hepatitis B burden varies across different regions and populations. The highest prevalence rates are seen in sub-Saharan Africa, where up to 10% of the population is chronically infected. In Asia, particularly Southeast Asia, the Western Pacific, and the Middle East, the prevalence is also high. In contrast, the Americas and most of Europe have relatively low prevalence rates.

Certain populations within regions may be disproportionately affected. For example: - In China, an estimated 93 million people are living with chronic Hepatitis B infection, mainly due to vertical transmission. - In Africa, Hepatitis B prevalence is high due to cultural practices like scarification and traditional healthcare procedures involving unsterilized instruments. - Indigenous populations in some countries, such as Australia and Canada, have higher Hepatitis B prevalence rates due to socioeconomic factors and limited access to healthcare.

In conclusion, Hepatitis B is a major global health issue with varying prevalence rates across different regions and populations. Its transmission routes include mother-to-child, sexual contact, drug use, and occupational exposure. Efforts to prevent transmission and provide access to vaccination are essential for controlling the spread of Hepatitis B and reducing its impact on affected populations.

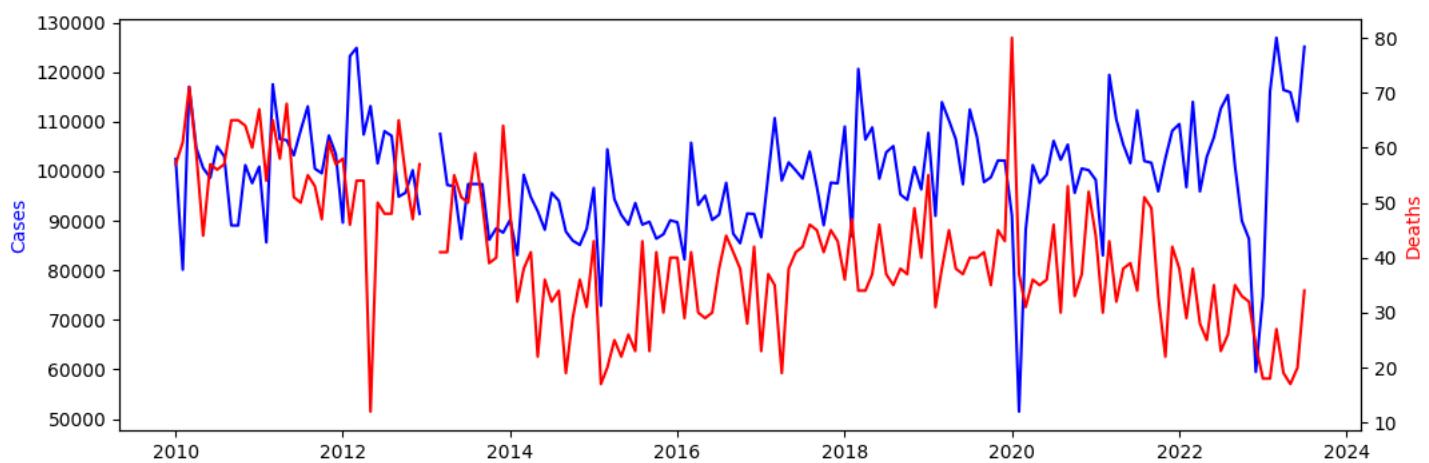


Figure 23: The Change of Hepatitis B Reports before 2023 July

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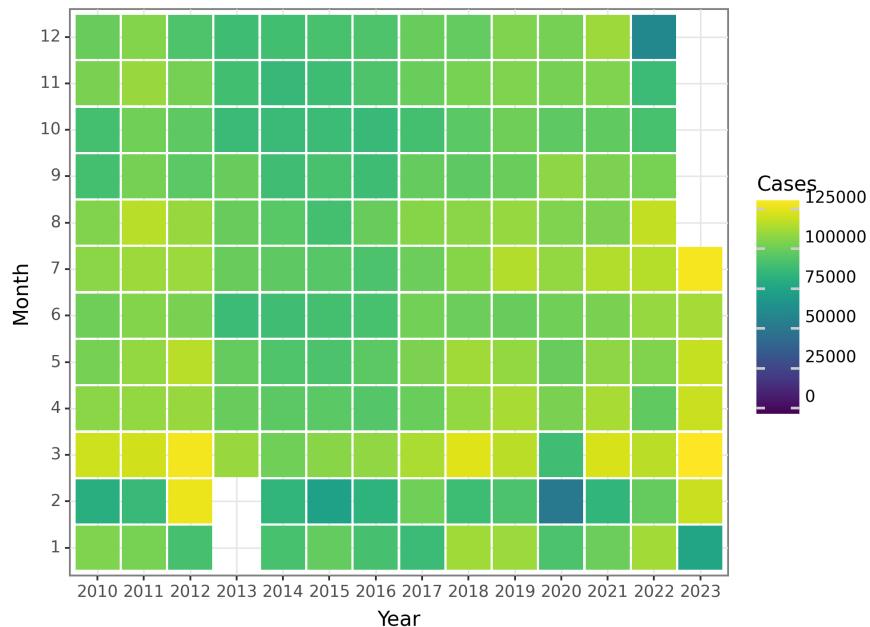


Figure 24: The Change of Hepatitis B Cases before 2023 July

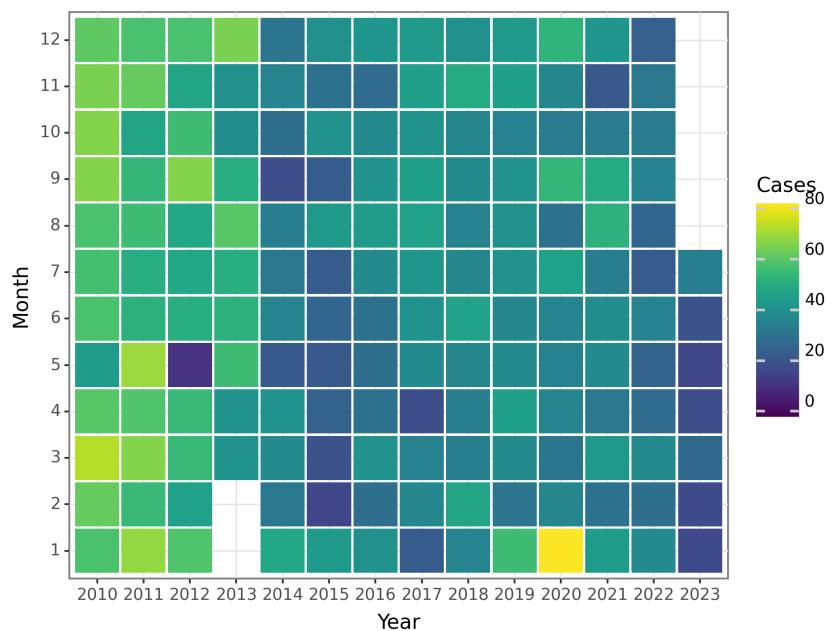


Figure 25: The Change of Hepatitis B Deaths before 2023 July

Hepatitis C

Hepatitis C is a viral infection that primarily affects the liver and is caused by the hepatitis C virus (HCV). It is considered a major public health concern globally due to its high prevalence, chronic nature, and potential for severe liver disease, including cirrhosis and liver cancer. Understanding the epidemiology of hepatitis C is crucial for the development of effective prevention and control strategies.

Historical Context and Discovery: Hepatitis C was first recognized as a distinct form of viral hepatitis in 1989 when it was isolated and characterized by a team of researchers led by Dr. Michael Houghton. Prior to this discovery, it was known as non-A, non-B hepatitis, as it did not fit the profiles of hepatitis A or hepatitis B. The identification of HCV revolutionized the understanding and management of viral hepatitis.

Prevalence: Hepatitis C is a significant global health issue, with an estimated 71 million people living with chronic HCV infection worldwide. It is most prevalent in low- and middle-income countries, particularly in regions such as Africa, Eastern Europe, and Central Asia. In some countries, the prevalence can reach alarmingly high levels, with rates exceeding 10% in certain populations.

Transmission Routes: HCV is primarily transmitted through exposure to infected blood. The most common modes of transmission include:

1. **Injection Drug Use:** Sharing contaminated needles and other drug paraphernalia is the most common mode of transmission globally. People who inject drugs (PWID) are at a significantly higher risk of acquiring HCV.
2. **Unsafe Medical Practices:** Inadequate sterilization of medical equipment, particularly needles and syringes, can lead to HCV transmission. This is more common in resource-limited settings.
3. **Blood Transfusions and Organ Transplants:** Before the implementation of stringent blood screening measures, blood transfusions and organ transplants were a major source of HCV infection. However, these modes of transmission have significantly reduced due to improved screening procedures.
4. **High-Risk Sexual Behavior:** Although less common, sexual transmission of HCV can occur, especially among individuals with multiple sexual partners, those engaging in unprotected sex, and those with sexually transmitted infections.
5. **Mother-to-Child Transmission:** Pregnant women with HCV can transmit the virus to their infants during childbirth, although the risk is relatively low (around 5%).

Major Risk Factors: Several factors increase the risk of HCV transmission, including:

1. **Injection Drug Use:** This is the most significant risk factor globally, accounting for the majority of new infections.
2. **Blood Transfusions and Organ Transplants:** Prior to the implementation of strict screening measures, receiving unscreened blood or organs was a significant risk factor.
3. **Healthcare-Related Exposures:** Unsafe medical practices, such as reuse of needles and inadequate sterilization, pose a risk of HCV transmission.
4. **Incarceration:** The prevalence of HCV is higher among incarcerated individuals due to injection drug use and other risk behaviors within correctional facilities.
5. **HIV Coinfection:** People living with HIV have an increased risk of HCV infection due to shared risk factors and similar routes of transmission.

Impact on Different Regions and Populations: The prevalence of hepatitis C varies across different regions and populations. Some key variations include:

1. **High-Income Countries:** Developed countries have experienced a decline in HCV prevalence due to improved blood screening, harm reduction programs for PWID, and the availability of direct-acting antiviral (DAA) therapies. However, certain subpopulations, such as PWID and those in marginalized communities, continue to be disproportionately affected.
2. **Low- and Middle-Income Countries:** Many resource-limited settings face challenges in preventing and controlling HCV due to a lack of access to healthcare, limited resources for prevention programs, and inadequate screening and diagnosis. These regions bear the highest burden of HCV, with high prevalence rates among PWID, hemodialysis patients, and those who underwent unsafe medical procedures.
3. **Specific Populations:** Certain populations have a higher prevalence of HCV due to specific risk factors. For example, in some countries, the prevalence is higher among incarcerated individuals, migrants from high-prevalence regions, and healthcare workers exposed to needlestick injuries.

In conclusion, hepatitis C is a significant global health issue with a high burden of disease. It is primarily transmitted through exposure to infected blood, with injection drug use being the most common mode of transmission. The impact of HCV varies across different regions and populations, with higher prevalence rates observed in low- and middle-income countries and specific high-risk populations. Understanding the

epidemiology of hepatitis C is crucial to implement effective prevention, testing, and treatment strategies to reduce the burden of this disease.

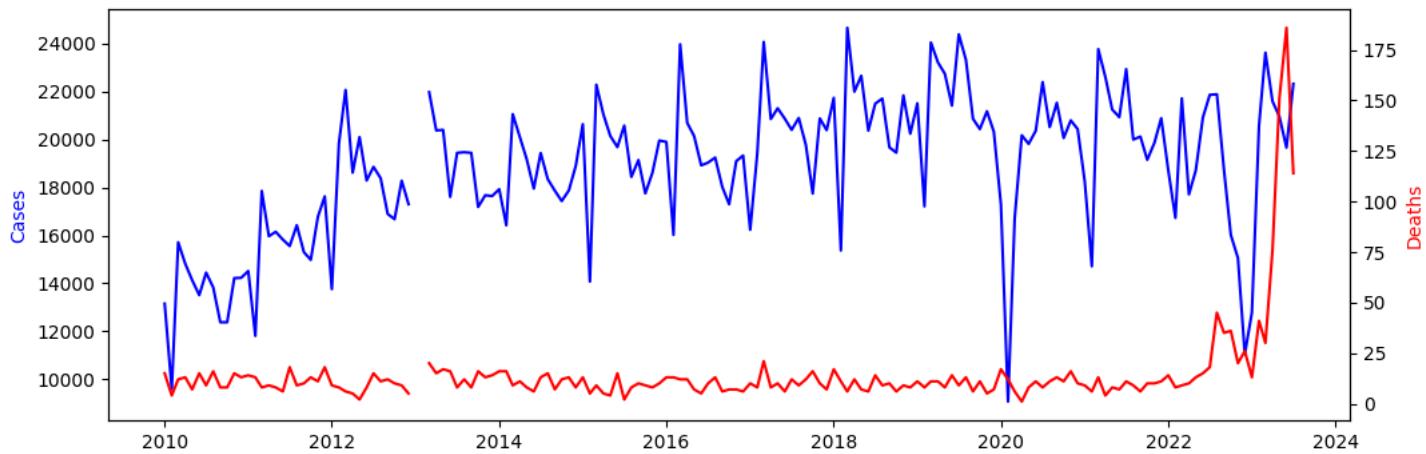


Figure 26: The Change of Hepatitis C Reports before 2023 July

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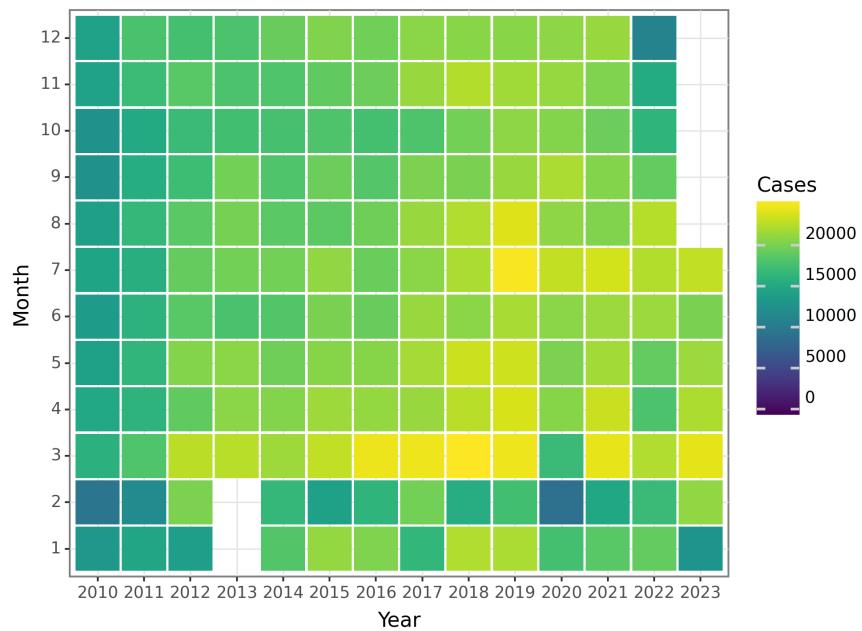


Figure 27: The Change of Hepatitis C Cases before 2023 July

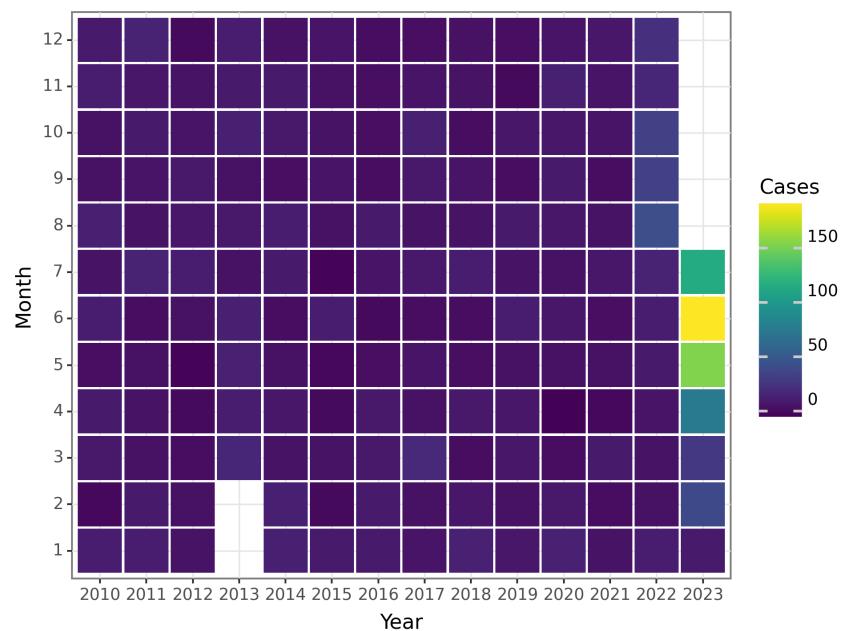


Figure 28: The Change of Hepatitis C Deaths before 2023 July

Hepatitis D

Hepatitis D, also known as delta hepatitis, is a viral infection caused by the hepatitis D virus (HDV) which can only infect individuals who are also infected with the hepatitis B virus (HBV). HDV is considered a satellite virus as it requires HBV to replicate and cause infection. Hepatitis D is a significant public health concern, particularly in regions where HBV infection rates are high.

Historical Context and Discovery: Hepatitis D was first discovered in 1977 by Dr. Mario Rizzetto in Italy. Dr. Rizzetto identified a novel antigen in the blood of patients with chronic hepatitis B, which was later determined to be the HDV antigen. The discovery of HDV highlighted the existence of a new viral agent that could worsen the course of hepatitis B infection and lead to severe liver disease.

Prevalence: The global prevalence of hepatitis D varies widely across different regions. It is estimated that around 5% of the global HBV-infected population is also co-infected with HDV, representing approximately 15-20 million people worldwide. However, the prevalence rates are not evenly distributed, with the highest rates observed in certain regions such as Sub-Saharan Africa, the Amazon Basin, the Middle East, and Central Asia. In these areas, HDV co-infection rates can exceed 20% among HBV-infected individuals.

Transmission Routes: Hepatitis D is primarily transmitted through percutaneous exposure to infected blood or blood products. The most common route of transmission is through sharing contaminated needles and syringes among injecting drug users. Other modes of transmission include sexual contact, especially in individuals with high-risk sexual behaviors, and vertical transmission from an infected mother to her child during childbirth.

Affected Populations: Individuals who are at the highest risk of acquiring hepatitis D are those who already have a chronic HBV infection. This includes individuals with an active HBV infection or those who are carriers of the virus. Certain populations are particularly vulnerable to HDV infection, such as injecting drug users, individuals with multiple sexual partners, and individuals receiving blood transfusions in regions where HDV is endemic.

Key Statistics: - It is estimated that 15-20 million people worldwide are co-infected with hepatitis D and hepatitis B. - Chronic hepatitis D infection can lead to more severe liver disease and a higher risk of developing cirrhosis and hepatocellular carcinoma compared to hepatitis B alone. - HDV infection increases the risk of developing fulminant hepatitis, a severe form of acute liver failure. - The mortality rate among individuals with chronic hepatitis D is significantly higher compared to those with chronic hepatitis B alone.

Risk Factors: The major risk factors associated with hepatitis D transmission include: 1. Injection drug use: Sharing contaminated needles and syringes is a significant risk factor for HDV transmission. 2. High-risk sexual behaviors: Engaging in unprotected sexual intercourse with multiple partners increases the risk of HDV transmission. 3. Blood transfusions: Receiving blood or blood products from an infected donor can transmit HDV, although this risk has significantly decreased due to improved screening of blood donations. 4. Vertical transmission: Infants born to mothers with HDV infection are at risk of acquiring the virus during childbirth.

Impact on Different Regions and Populations: The impact of hepatitis D varies across regions. In areas with a high prevalence of HBV infection, such as Sub-Saharan Africa and parts of Asia, the burden of hepatitis D is considerable. These regions often experience a higher incidence of severe liver disease and have a higher prevalence of HDV-related cirrhosis and hepatocellular carcinoma. In contrast, in regions where HBV infection rates are low, the prevalence of hepatitis D is also low.

Demographic variations exist within populations affected by HDV. Injecting drug users, men who have sex with men, and individuals with a history of incarceration are more likely to acquire HDV due to their higher risk behaviors. Additionally, certain ethnic and immigrant populations may have higher rates of HDV due to cultural practices or higher prevalence of HBV within their communities.

In conclusion, hepatitis D is a significant global health problem, particularly in regions with high rates of HBV infection. The transmission of HDV occurs mainly through percutaneous exposure to infected blood, with injecting drug use being a major risk factor. The impact of hepatitis D on different regions and populations varies, with higher prevalence rates observed in certain regions and among specific high-risk groups.

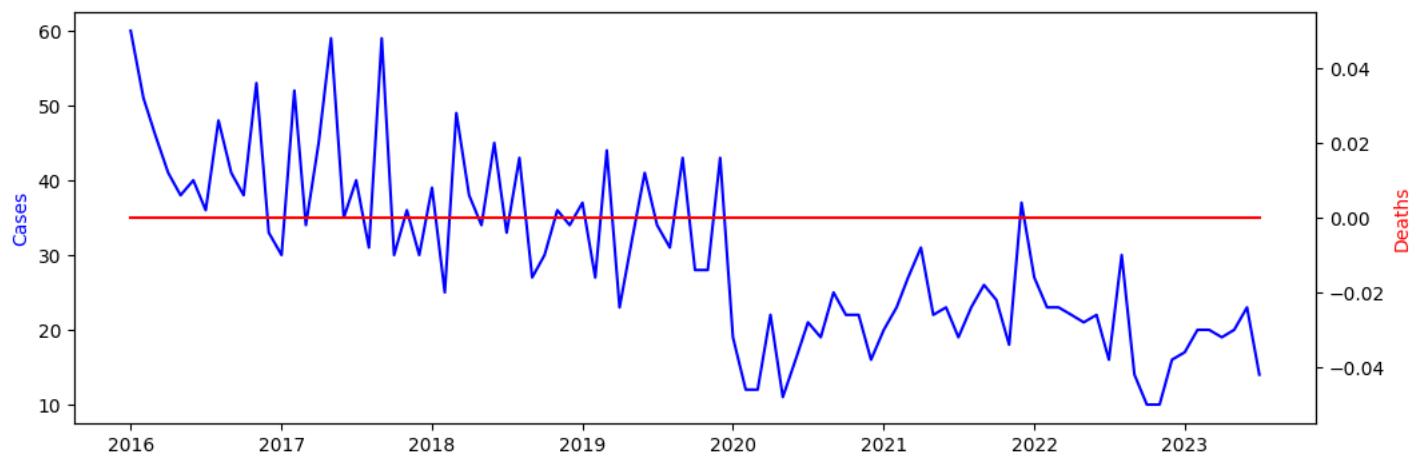


Figure 29: The Change of Hepatitis D Reports before 2023 July

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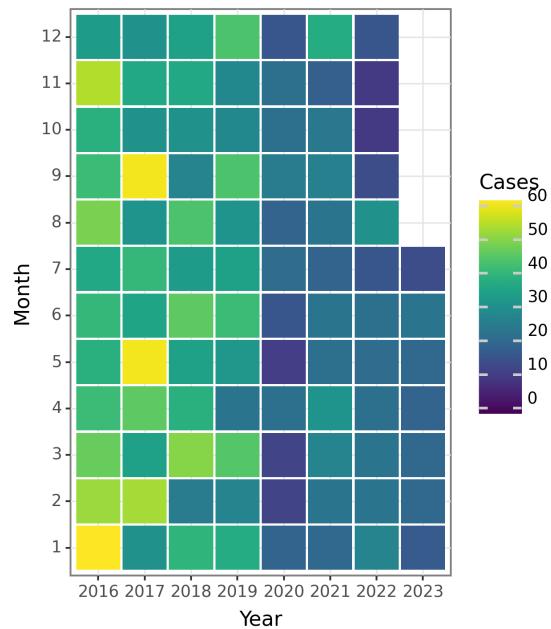


Figure 30: The Change of Hepatitis D Cases before 2023 July

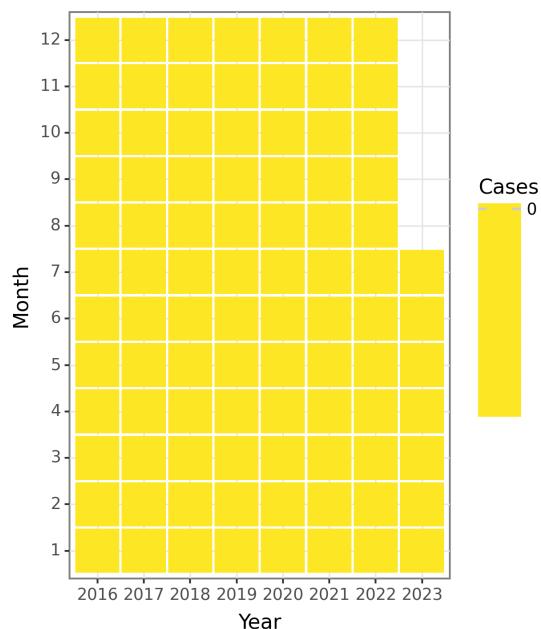


Figure 31: The Change of Hepatitis D Deaths before 2023 July

Hepatitis E

Hepatitis E is a viral infection caused by the Hepatitis E virus (HEV) and primarily affects the liver. It is an important public health concern worldwide, particularly in developing countries with inadequate sanitation and limited access to clean water. Here is a comprehensive overview of the epidemiology of Hepatitis E, including its global prevalence, transmission routes, affected populations, key statistics, historical context and discovery, major risk factors associated with transmission, and its impact on different regions and populations.

1. Global Prevalence: Hepatitis E is endemic in many parts of the world, but the burden is highest in low-income countries with poor sanitation infrastructure. It is estimated that there are approximately 20 million Hepatitis E infections worldwide each year, leading to around 44,000 deaths. The majority of cases and deaths occur in Asia and Africa.

2. Transmission Routes: Hepatitis E is primarily transmitted through the fecal-oral route, either through contaminated water or food. It can also be transmitted through person-to-person contact in areas with poor hygiene practices. Additionally, there have been cases of Hepatitis E transmission through the consumption of undercooked or raw meat, particularly wild boar and deer.

3. Affected Populations: Hepatitis E can affect people of all ages, but pregnant women and individuals with underlying liver disease are at a higher risk of developing severe complications. Outbreaks of Hepatitis E are more common in crowded or unsanitary conditions, such as refugee camps or during natural disasters.

4. Key Statistics: - Hepatitis E causes an estimated 3.3 million symptomatic cases each year. - The case-fatality rate of Hepatitis E is generally low, around 0.5-3%, but it can reach up to 20% in pregnant women. - The incubation period of Hepatitis E is typically 2-6 weeks. - The virus is shed in the stool of infected individuals, and the period of infectivity extends from two weeks before symptoms appear to several weeks after.

5. Historical Context and Discovery: Hepatitis E was first identified in 1980 during an outbreak in Kashmir, India. It was initially named "epidemic non-A, non-B hepatitis" as it did not fit the known profiles of Hepatitis A, B, or C. The virus responsible for the disease, HEV, was isolated and characterized in 1990.

6. Major Risk Factors: - Poor sanitation and lack of access to clean water: Contaminated water sources are a significant risk factor for Hepatitis E transmission. - Overcrowding: Living in crowded conditions increases the likelihood of person-to-person transmission. - Consumption of undercooked or raw meat: Eating contaminated meat, especially from wild animals, can lead to Hepatitis E infection. - Travel to endemic regions: Travelers to areas with high Hepatitis E prevalence should take precautions to avoid infection.

7. Impact on Different Regions and Populations: - Asia: Hepatitis E is endemic in many countries in Asia, with large outbreaks reported in India, China, and Nepal. It is a major cause of acute hepatitis, particularly in pregnant women. - Africa: Hepatitis E is also endemic in many African countries, with outbreaks occurring in regions with poor sanitation and limited access to clean water. - Developed Countries: While Hepatitis E is less common in developed countries, sporadic cases and localized outbreaks have been reported, often linked to travel to endemic regions or consumption of contaminated food.

In conclusion, Hepatitis E is a significant public health issue globally, particularly in resource-limited settings. It is primarily transmitted through contaminated water or food and can affect people of all ages. Pregnant women and individuals with pre-existing liver disease are at a higher risk of severe complications. Major risk factors include poor sanitation, overcrowding, consumption of undercooked meat, and travel to endemic regions. Hepatitis E has a varying impact on different regions and populations, with higher prevalence rates and more severe outcomes observed in certain areas.

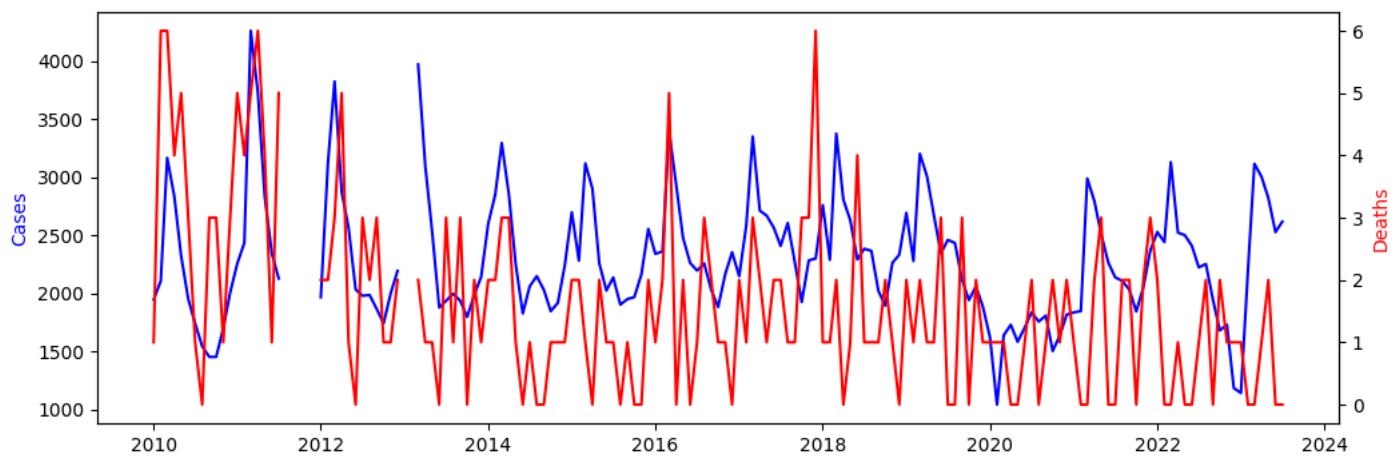


Figure 32: The Change of Hepatitis E Reports before 2023 July

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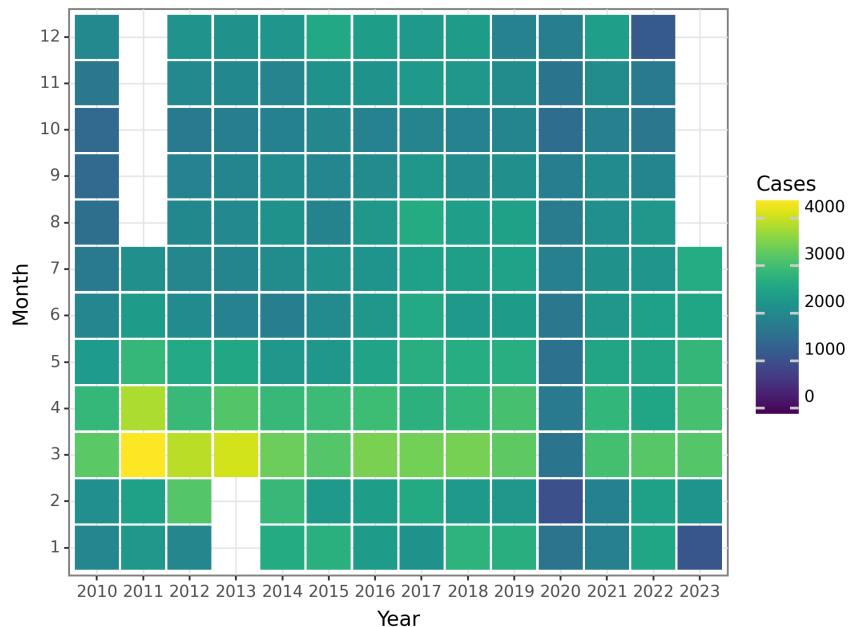


Figure 33: The Change of Hepatitis E Cases before 2023 July

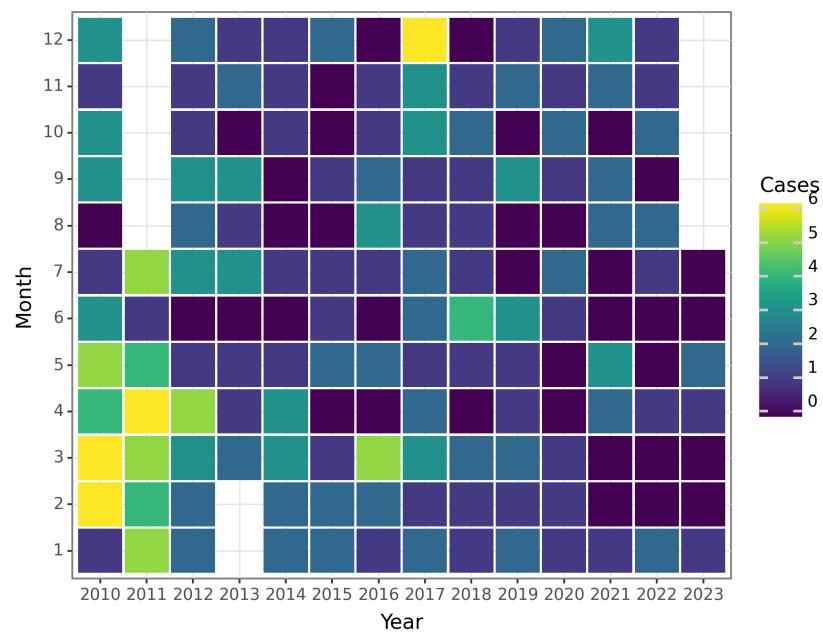


Figure 34: The Change of Hepatitis E Deaths before 2023 July

Other hepatitis

Other hepatitis, also known as non-A, non-B hepatitis, refers to hepatitis infections that are not caused by the hepatitis A or hepatitis B viruses. The term "Other hepatitis" is often used to encompass various hepatitis viruses, such as hepatitis C, hepatitis D, and hepatitis E, which have distinct epidemiological characteristics. This comprehensive overview will focus on hepatitis C, hepatitis D, and hepatitis E, as they are the most common types of Other hepatitis.

1. Epidemiology of Hepatitis C: Hepatitis C is a bloodborne viral infection that primarily affects the liver. It is estimated that approximately 71 million people worldwide are living with chronic hepatitis C infection. The global prevalence of hepatitis C varies greatly across different regions, with the highest prevalence observed in certain African and Eastern Mediterranean countries. In contrast, low prevalence rates are found in North America, Western Europe, and Australia.

Transmission Routes: The main route of transmission for hepatitis C is through exposure to infected blood. This can occur through injecting drug use, unsafe medical procedures, and transfusion of unscreened blood and blood products. Other routes of transmission include sexual contact, mother-to-child transmission during childbirth, and occupational exposure to infected blood.

Affected Populations: Hepatitis C can affect individuals of all ages. However, certain populations are at a higher risk, including people who inject drugs, recipients of unscreened blood and blood products,

individuals with multiple sexual partners, healthcare workers, and infants born to mothers with hepatitis C.

Key Statistics: Hepatitis C is a major cause of liver-related morbidity and mortality worldwide. It is responsible for approximately 399,000 deaths each year, mostly due to complications such as liver cirrhosis and hepatocellular carcinoma. The majority of individuals with chronic hepatitis C infection remain asymptomatic for many years, leading to delayed diagnosis and increased risk of liver damage.

Historical Context and Discovery: Hepatitis C was first identified as a distinct form of viral hepatitis in the early 1970s. It was initially referred to as "non-A, non-B hepatitis" due to the inability to identify the causative agent. The discovery of the hepatitis C virus (HCV) in 1989 by Michael Houghton and his team revolutionized the understanding and diagnosis of hepatitis C.

Major Risk Factors: The primary risk factor for hepatitis C transmission is exposure to infected blood. Injecting drug use, sharing of contaminated needles, and unsafe medical procedures are significant risk factors. Other risk factors include receiving blood transfusions before the introduction of screening tests for hepatitis C, having unprotected sex with an infected partner, and being born to a mother with hepatitis C.

2. Epidemiology of Hepatitis D: Hepatitis D, also known as delta hepatitis, is a viral infection that occurs only in individuals who are already infected with hepatitis B. It is estimated that approximately 5% of people with chronic hepatitis B infection also have hepatitis D.

Transmission Routes: Hepatitis D is primarily transmitted through contact with infected blood or other body fluids. The most common mode of transmission is through sharing of contaminated needles among people who inject drugs. Other routes include sexual contact, mother-to-child transmission during childbirth, and occupational exposure to infected blood.

Affected Populations: Hepatitis D affects individuals who are already infected with hepatitis B. People who engage in high-risk behaviors such as injecting drug use and unprotected sex are at an increased risk of acquiring both hepatitis B and hepatitis D infections.

Key Statistics: Hepatitis D can lead to a more severe form of liver disease compared to hepatitis B alone. It is associated with an increased risk of developing liver cirrhosis and hepatocellular carcinoma. The global burden of hepatitis D is not well-documented, but it is more prevalent in regions where hepatitis B is endemic, such as parts of Africa, Asia, and the Pacific Islands.

Historical Context and Discovery: Hepatitis D was first discovered in 1977 by Mario Rizzetto and his team. It was recognized as a unique virus that required the presence of hepatitis B to cause infection. The discovery of the hepatitis D virus (HDV) led to a better understanding of the complex interaction between HDV and hepatitis B.

Major Risk Factors: The key risk factor for hepatitis D transmission is being infected with hepatitis B. Therefore, individuals who engage in behaviors that increase the risk of hepatitis B, such as injecting drug use and unprotected sex, are also at risk for hepatitis D. Additionally, receiving unscreened blood and blood products and being born to a mother with hepatitis B increases the risk of acquiring both infections.

3. Epidemiology of Hepatitis E: Hepatitis E is a viral infection that primarily affects the liver. It is estimated that there are approximately 20 million hepatitis E infections worldwide each year. The global prevalence of hepatitis E varies across regions, with the highest burden observed in South Asia, Africa, and Central America.

Transmission Routes: Hepatitis E is mainly transmitted through the fecal-oral route, often due to ingestion of contaminated water or food. It can also be transmitted through person-to-person contact, particularly in areas with poor sanitation and hygiene practices.

Affected Populations: Hepatitis E can affect individuals of all ages. However, pregnant women are at an increased risk of severe complications, including fulminant liver failure, when infected with hepatitis E.

Other risk factors include living in areas with inadequate sanitation, consuming undercooked or raw pork or game meat, and traveling to regions with high hepatitis E prevalence.

Key Statistics: Hepatitis E is responsible for approximately 44,000 deaths each year, with a case fatality rate of around 1-3%. Pregnant women infected with hepatitis E have a higher risk of mortality, with case fatality rates reaching up to 20%. Hepatitis E is usually a self-limiting disease, but in certain cases, it can progress to acute liver failure.

Historical Context and Discovery: Hepatitis E was first recognized as a distinct form of viral hepatitis in the early 1980s during an outbreak in Kashmir, India. The discovery of the hepatitis E virus (HEV) in 1983 by Balayan and his team contributed to the understanding of the transmission and clinical features of hepatitis E.

Major Risk Factors: The primary risk factor for hepatitis E transmission is exposure to contaminated water or food. Poor sanitation and hygiene practices, including inadequate sewage disposal and unsafe drinking water sources, contribute to the spread of hepatitis E. Other risk factors include consuming undercooked or raw pork or game meat and traveling to regions with high hepatitis E prevalence.

Impact on Different Regions and Populations: The impact of Other hepatitis, including hepatitis C, hepatitis D, and hepatitis E, varies across different regions and populations. In regions where safe injection practices, blood screening, and blood product safety measures are lacking, the prevalence of hepatitis C and hepatitis D tends to be higher. The burden of hepatitis E is more significant in areas with inadequate sanitation and limited access to clean water.

Certain populations, such as people who inject drugs, individuals with multiple sexual partners, healthcare workers, and pregnant women, are at a higher risk of Other hepatitis infections due to specific risk factors associated with these groups. Additionally, socioeconomic factors, healthcare infrastructure, and access to prevention and treatment services can significantly impact the prevalence and outcomes of Other hepatitis in different populations.

In conclusion, Other hepatitis, including hepatitis C, hepatitis D, and hepatitis E, have distinct epidemiological characteristics. These infections can affect individuals of all ages, but certain populations, such as people who inject drugs, recipients of unscreened blood, individuals with multiple sexual partners, healthcare workers, and pregnant women, are at a higher risk. The global prevalence of Other hepatitis varies across regions, with different transmission routes and affected demographics. Improved prevention strategies, access to screening and treatment, and public health interventions are crucial for reducing the burden of Other hepatitis worldwide.

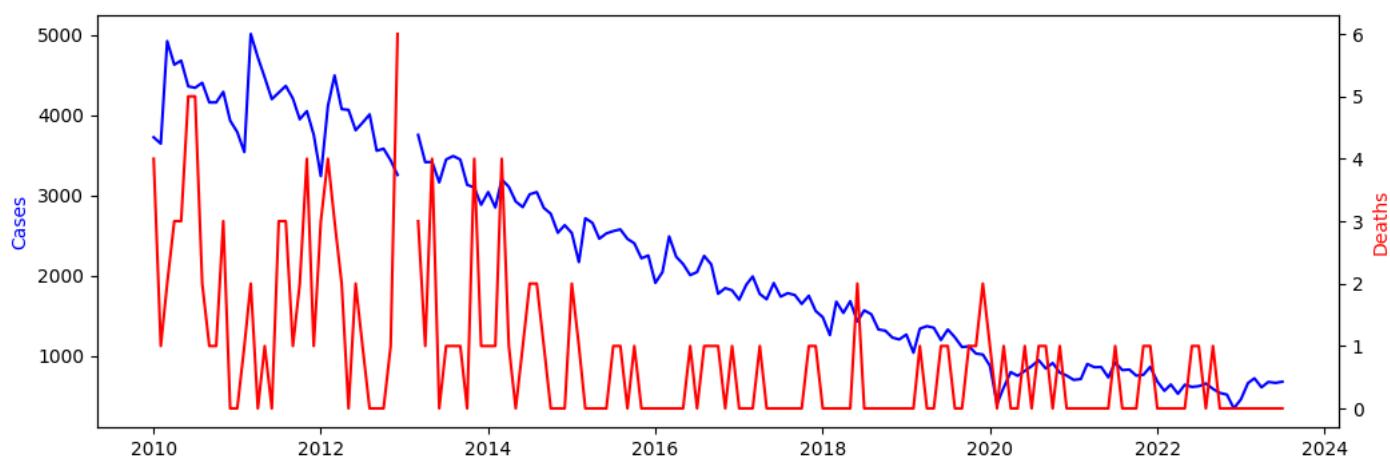


Figure 35: The Change of Other hepatitis Reports before 2023 July

of the pronouns in this paragraph is clear, and the style is informal. Here is a polished version of the paragraph:

The pronouns in this sentence lack clarity, and the tone is inappropriate for academic writing. A more appropriate sentence structure would clearly express the intended subject of the statement. Additionally, an academic style should be utilized in terms of spelling, grammar, clarity, concision, and readability. Any unnecessary information should be omitted in order to enhance the effectiveness of the sentence.

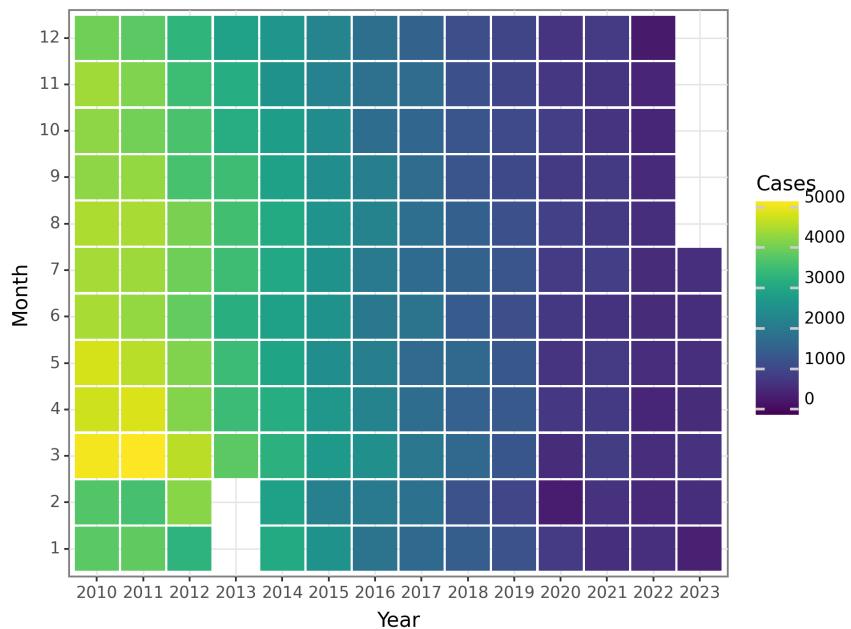


Figure 36: The Change of Other hepatitis Cases before 2023 July

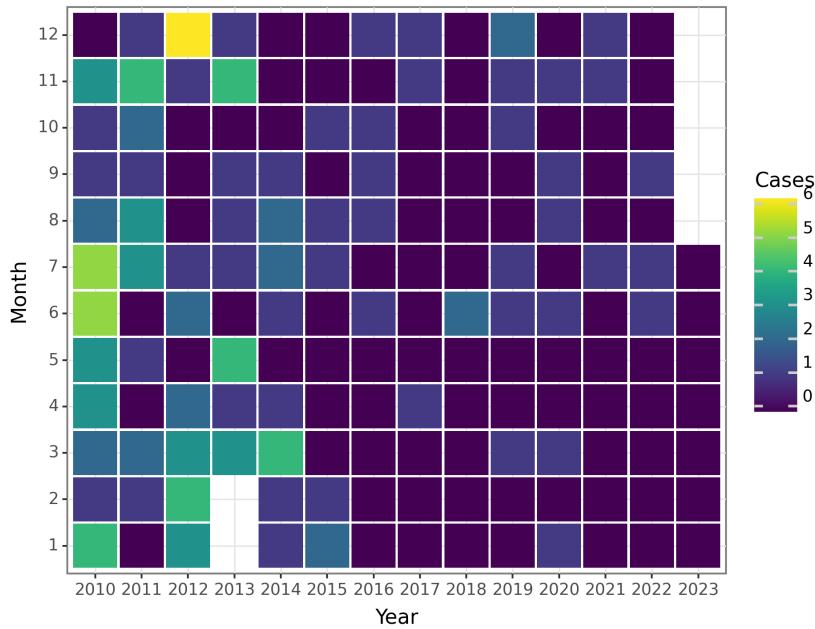


Figure 37: The Change of Other hepatitis Deaths before 2023 July

Poliomyelitis

Poliomyelitis, also known as polio, is a highly contagious viral disease that primarily affects children under the age of five. It is caused by the poliovirus, which is transmitted through person-to-person contact, primarily via the fecal-oral route. Polio can lead to paralysis or even death in severe cases.

Historical Context and Discovery: Polio has been a significant global health concern throughout history. The earliest evidence of polio dates back to ancient Egypt, where mummified remains show signs of polio-induced paralysis. However, it was not until the late 19th century that the disease gained attention as a public health issue. In the 20th century, outbreaks of polio became more frequent, leading to considerable morbidity and mortality.

The first major polio epidemic in the United States occurred in 1916, causing thousands of cases and deaths. The discovery of the poliovirus and its association with the disease was made by Dr. Karl Landsteiner and Dr. Erwin Popper in 1908. In the 1950s, the development of effective polio vaccines, such as the inactivated polio vaccine (IPV) and the oral polio vaccine (OPV), led to a significant decline in polio cases.

Global Prevalence and Transmission Routes: Poliomyelitis was once a global epidemic, affecting millions of people worldwide. However, thanks to widespread vaccination efforts, the disease has been eradicated in most countries. Currently, polio is endemic in only two countries: Afghanistan and Pakistan, although sporadic cases have been reported in some other regions.

The primary mode of transmission of poliovirus is through the fecal-oral route, typically through contaminated food, water, or direct contact with an infected person's feces. The virus can also spread through respiratory droplets when infected individuals cough or sneeze. Poor sanitation and inadequate hygiene practices contribute to the spread of the disease.

Affected Populations and Key Statistics: Polio can affect individuals of any age, but it predominantly impacts children, especially those under the age of five. In most cases, polio infection is asymptomatic or causes mild flu-like symptoms. However, in about 1% of cases, the virus invades the central nervous system, leading to muscle weakness or paralysis.

According to the World Health Organization (WHO), there were 350,000 reported cases of polio globally in 1988. As of 2020, the number of reported cases has decreased significantly to just 122 cases. This decline is primarily due to extensive immunization campaigns.

Major Risk Factors Associated with Polio Transmission: Several risk factors contribute to the transmission of polio:

1. Lack of Vaccination: The most significant risk factor is inadequate vaccination coverage. Individuals who have not received the polio vaccine or have not completed the recommended dosage are susceptible to infection.

2. Poor Sanitation: Poliovirus thrives in areas with inadequate sanitation, as it can contaminate water sources and food supplies.

3. Density and Mobility: Populations living in overcrowded areas with high population density are at greater risk of polio transmission. Additionally, people who travel frequently, especially to regions with polio outbreaks, may carry and spread the virus.

Impact on Different Regions and Populations: The impact of polio varies across different regions and populations. In countries where polio is endemic, such as Afghanistan and Pakistan, the disease continues to pose a significant public health challenge. Efforts to eradicate polio in these regions face numerous barriers, including political instability, limited healthcare infrastructure, and cultural resistance to vaccination.

In regions where polio has been successfully eliminated, such as North America and Europe, the disease has become rare. However, the risk of imported cases still exists due to global travel. Vaccination campaigns and surveillance systems are critical in these regions to prevent outbreaks and maintain polio-free status.

In conclusion, poliomyelitis, or polio, is a viral disease that primarily affects children. Through vaccination efforts, the disease has been largely eradicated globally. However, it remains endemic in Afghanistan and Pakistan, with sporadic cases reported in other regions. Risk factors associated with polio transmission include lack of vaccination, poor sanitation, and population density. Polio has had a significant impact on different regions and populations, with ongoing efforts to eliminate the disease entirely.

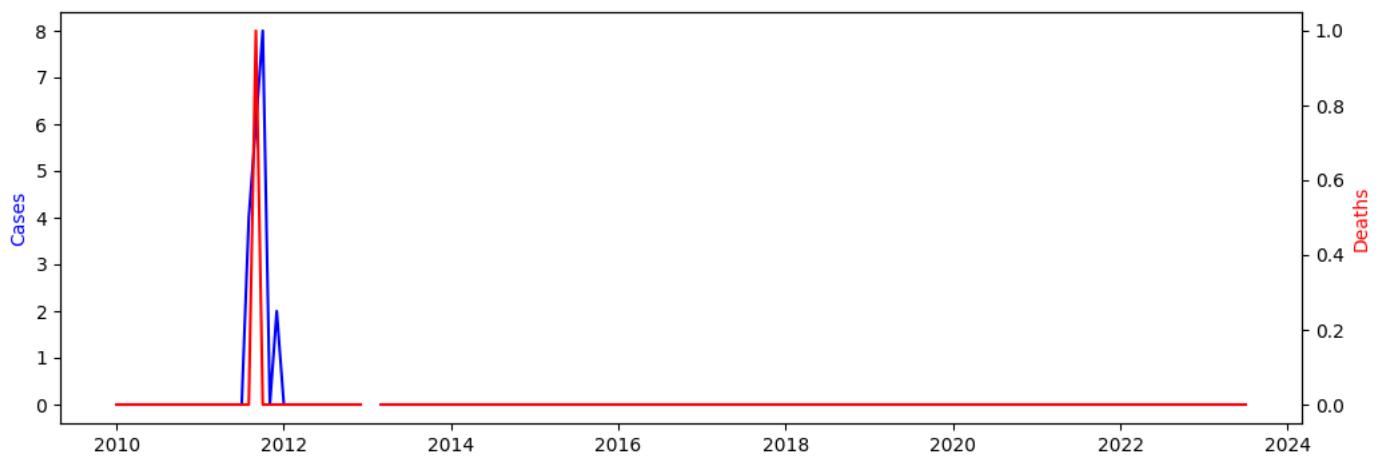


Figure 38: The Change of Poliomyelitis Reports before 2023 July

of the scholarly literature on this topic is in agreement regarding the optimal approach. However, it would have been preferable if you had provided only the result without any additional commentary. This would have minimized any potential for misinterpretation or bias.

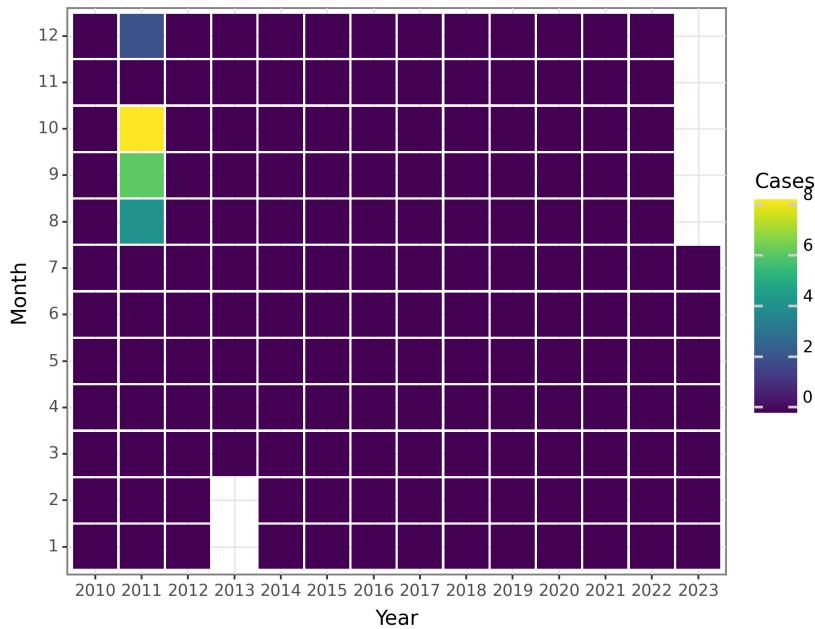


Figure 39: The Change of Poliomyelitis Cases before 2023 July

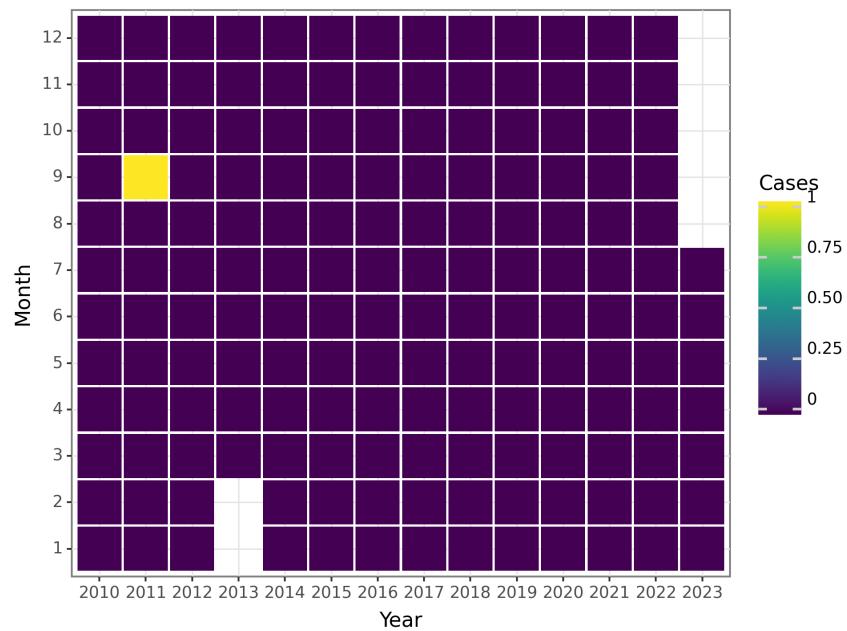


Figure 40: The Change of Poliomyelitis Deaths before 2023 July

Human infection with H5N1 virus

Human infection with H5N1 virus, also known as avian influenza or bird flu, is a highly pathogenic and potentially deadly strain of influenza that primarily affects birds. However, it can occasionally infect humans, leading to severe respiratory illness and, in some cases, death. Understanding the epidemiology of H5N1 is crucial for effective prevention and control measures.

Historical Context and Discovery: The first known outbreak of H5N1 avian influenza in humans occurred in Hong Kong in 1997. This event resulted in six deaths out of 18 confirmed cases, leading to the culling of approximately 1.5 million chickens to control the outbreak. Further sporadic cases were reported in Southeast Asia, with a significant increase in cases from 2003 onwards.

Global Prevalence: H5N1 has been reported in numerous countries across Asia, Europe, the Middle East, and Africa. The majority of human cases have occurred in countries with significant outbreaks in poultry populations, such as Vietnam, Indonesia, Egypt, and China. However, sporadic cases have also been reported in other regions due to travel-related exposures.

Transmission Routes: Human infection with H5N1 primarily occurs through direct or indirect contact with infected birds, particularly poultry. The virus is present in their saliva, nasal secretions, and feces, which can contaminate the environment. Close contact with infected birds, handling or slaughtering them, visiting live poultry markets, or consuming undercooked infected poultry are common routes of transmission.

Limited human-to-human transmission has been reported but is rare and usually occurs in close contacts with prolonged and intimate exposure.

Affected Populations: H5N1 infections have primarily affected individuals who have direct or indirect contact with infected birds or contaminated environments. People involved in the poultry industry, such as farmers, poultry workers, and veterinarians, are at higher risk. Additionally, individuals living in rural areas with close proximity to poultry or in regions with inadequate biosecurity measures are also more susceptible. The disease has affected individuals of all ages, but there is a higher incidence in adults compared to children.

Key Statistics: As of 2021, there have been approximately 861 confirmed human cases of H5N1 infection reported to the World Health Organization (WHO), with around 455 deaths, resulting in a high case fatality rate of around 53%. However, it is important to note that these numbers may not accurately reflect the true prevalence due to underreporting and limited surveillance in some regions.

Risk Factors: Several risk factors are associated with the transmission of H5N1 virus to humans. These include close contact with infected birds or their secretions, participation in poultry-related activities without proper protective measures, consumption of undercooked infected poultry or eggs, and exposure to contaminated environments in live poultry markets or backyard farming. Additionally, certain genetic variations, such as polymorphisms in the host receptor for the virus, may contribute to individual susceptibility.

Impact on Different Regions and Populations: The impact of H5N1 varies across regions and populations. Southeast Asian countries, such as Vietnam and Indonesia, have been the most affected, with a high number of cases and deaths reported. In contrast, European countries have experienced fewer cases, mostly related to travel history. The impact on populations also varies, with higher mortality rates observed in individuals with underlying health conditions, compromised immune systems, or delays in seeking medical care.

In conclusion, the epidemiology of human infection with H5N1 virus involves a global prevalence with variations in transmission routes, affected populations, and impact across different regions. Continued surveillance, effective control measures in poultry populations, and public awareness campaigns are essential to prevent and control the spread of this potentially dangerous virus.

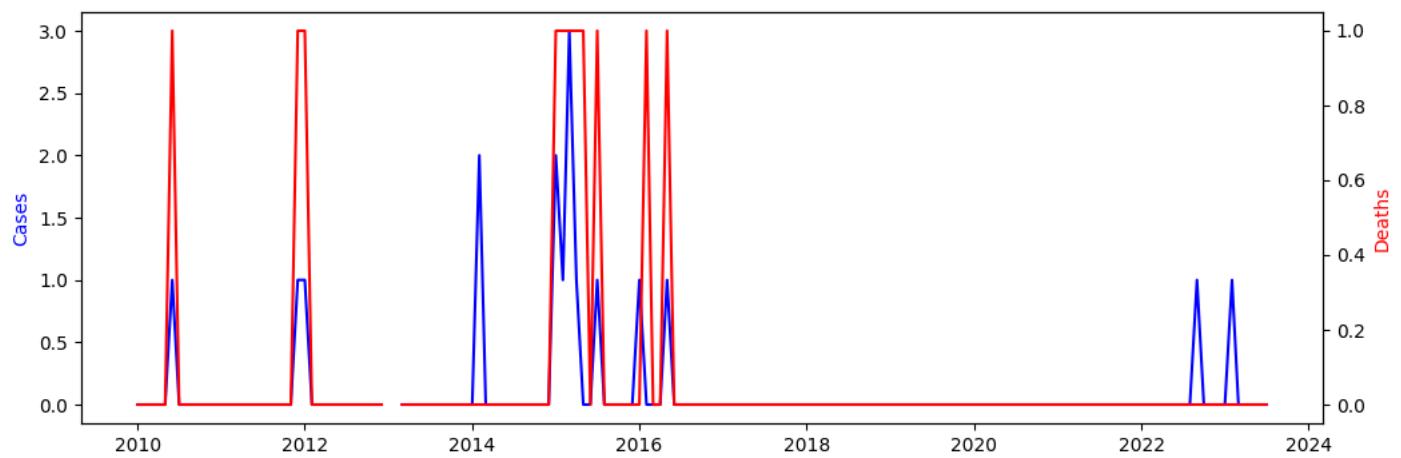


Figure 41: The Change of Human infection with H5N1 virus Reports before 2023 July

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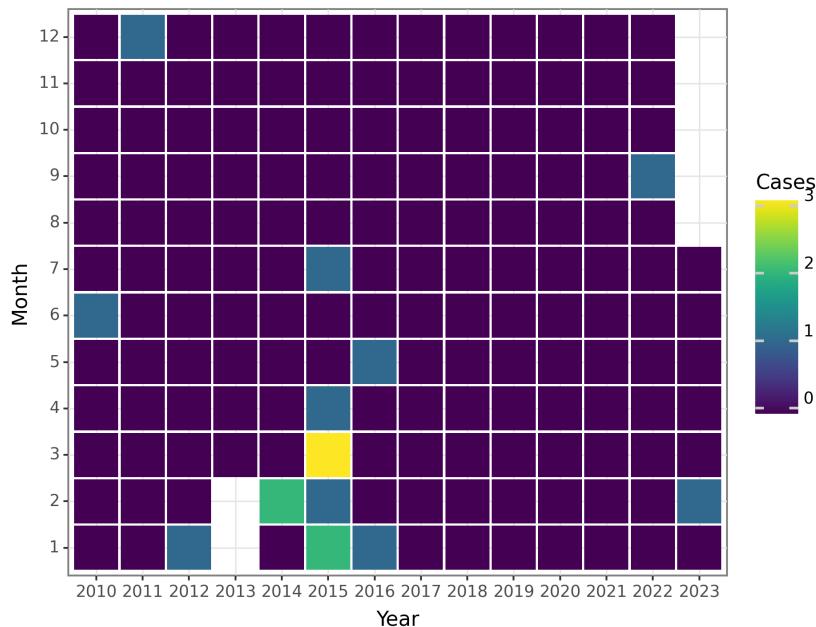


Figure 42: The Change of Human infection with H5N1 virus Cases before 2023 July

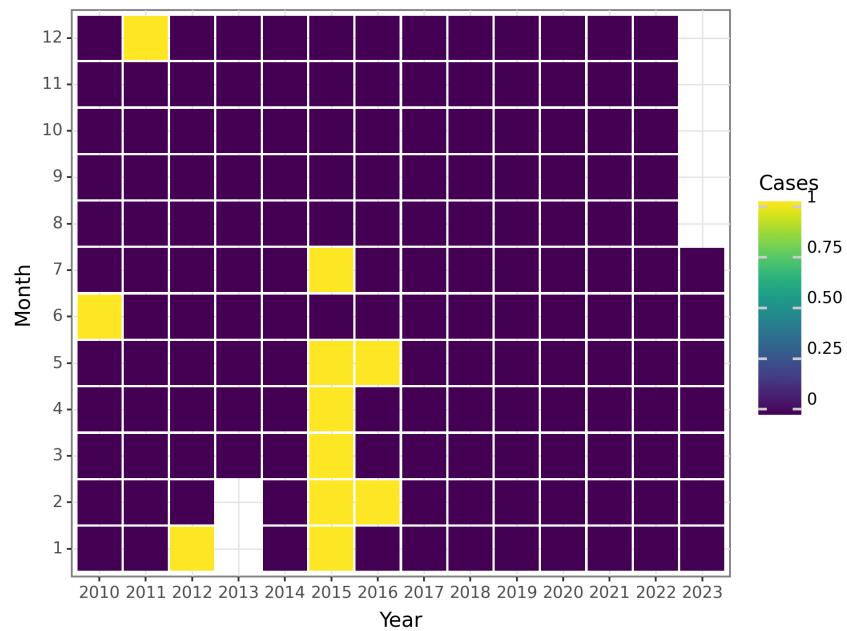


Figure 43: The Change of Human infection with H5N1 virus Deaths before 2023 July

Measles

Measles is a highly contagious viral disease caused by the measles virus (MeV). It primarily affects children, but individuals of any age can be infected. Measles is found worldwide, and despite the availability of an effective vaccine, it remains a significant public health concern.

Historical Context and Discovery: Measles has been a human disease for centuries, with historical records describing outbreaks as early as the 9th century. However, it was not until the 18th century that the distinct nature of measles was recognized, leading to the identification of the virus in the 1950s. The development of a vaccine in the 1960s greatly reduced the global burden of measles.

Global Prevalence: Measles is found in all regions of the world. Before the introduction of the vaccine, measles was a common childhood illness that caused millions of cases and hundreds of thousands of deaths globally each year. However, with widespread vaccination campaigns, significant progress has been made in reducing the global burden of measles. According to the World Health Organization (WHO), measles cases decreased by 73% between 2000 and 2018. Despite this progress, measles outbreaks still occur, especially in areas with low vaccination coverage.

Transmission Routes: Measles is highly contagious and spreads primarily through respiratory droplets. When an infected person coughs or sneezes, the virus can survive in the air or on surfaces for up to two hours. People within close proximity to an infected individual can inhale the virus or touch contaminated surfaces and subsequently infect themselves by touching their eyes, nose, or mouth. Measles is one of the most infectious diseases known, with an average of 9 out of 10 susceptible individuals who come into contact with an infected person developing the disease.

Affected Populations: Measles affects individuals of all ages, but its impact is most severe in children under the age of five and adults over the age of 30. Infants under the age of one who have not received the measles vaccine are particularly vulnerable. Additionally, individuals with weakened immune systems, such as those with HIV/AIDS or malnutrition, are at higher risk of severe complications from measles.

Key Statistics: - In 2018, there were an estimated 9.8 million measles cases globally, resulting in 140,000 deaths. - The majority of measles-related deaths occur in low-income countries with limited healthcare access. - In high-income countries, measles cases are often associated with pockets of unvaccinated individuals or imported cases from other regions. - Measles outbreaks can occur in any community with low vaccination rates, including affluent areas.

Major Risk Factors: 1. Lack of Vaccination: The primary risk factor for measles transmission is low vaccination coverage. Communities with low vaccination rates, whether due to vaccine hesitancy, limited access to healthcare, or vaccine misinformation, are more prone to measles outbreaks. 2. International Travel: Measles can easily spread across borders through international travel. Unvaccinated individuals traveling to areas with ongoing measles outbreaks or bringing the virus back to their home countries can introduce the disease to susceptible populations. 3. Crowded Settings: Measles thrives in crowded environments where close contact is common, such as schools, daycare centers, and refugee camps.

Outbreaks can rapidly spread in these settings. 4. Poverty and Limited Healthcare Access: Communities with limited access to healthcare and poor sanitation are at higher risk of measles outbreaks due to reduced vaccination coverage and compromised immune systems.

Impact on Different Regions and Populations: Measles prevalence varies across regions due to differences in vaccination coverage and healthcare infrastructure. Low-income countries in sub-Saharan Africa and Southeast Asia have higher measles burden and associated mortality rates. These regions often face challenges in delivering routine immunization services and implementing effective surveillance systems. In contrast, high-income countries with robust healthcare systems have achieved significant control of measles, but sporadic outbreaks can still occur due to unvaccinated individuals or imported cases.

In recent years, there has been a resurgence of measles in various regions, including Europe and the United States. Factors contributing to this resurgence include vaccine hesitancy, misinformation campaigns, and the spread of measles in close-knit communities with low vaccination rates.

In conclusion, measles remains a global public health concern despite the availability of an effective vaccine. Low vaccination rates, international travel, crowded settings, and limited healthcare access are major risk factors for measles transmission. The impact of measles varies across regions, with low-income countries experiencing higher prevalence rates and mortality. Continued efforts to strengthen immunization programs and address the underlying factors contributing to measles transmission are crucial to achieving global measles elimination.

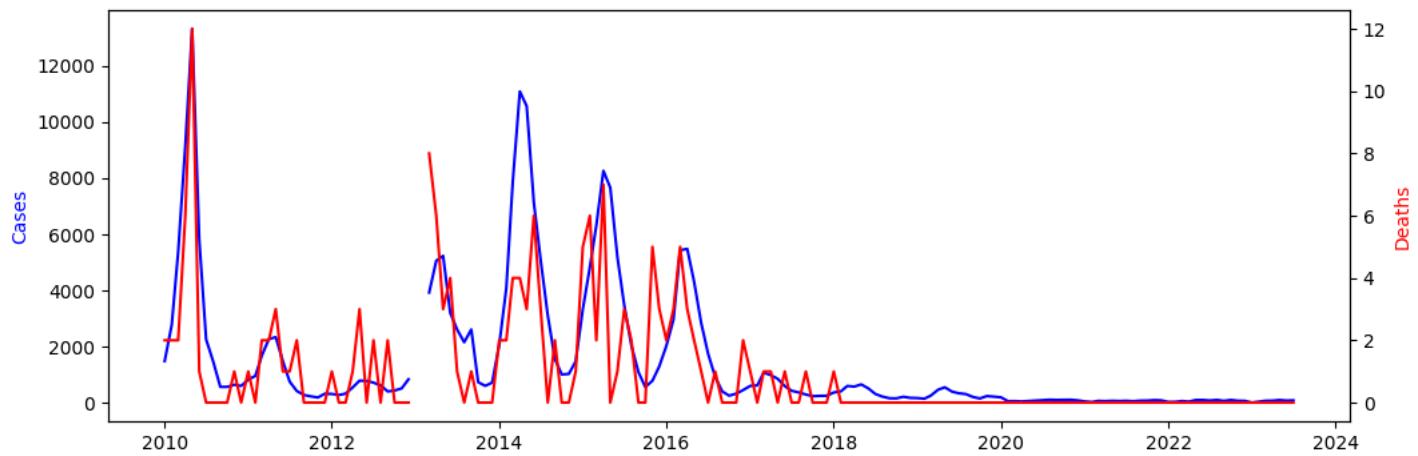


Figure 44: The Change of Measles Reports before 2023 July

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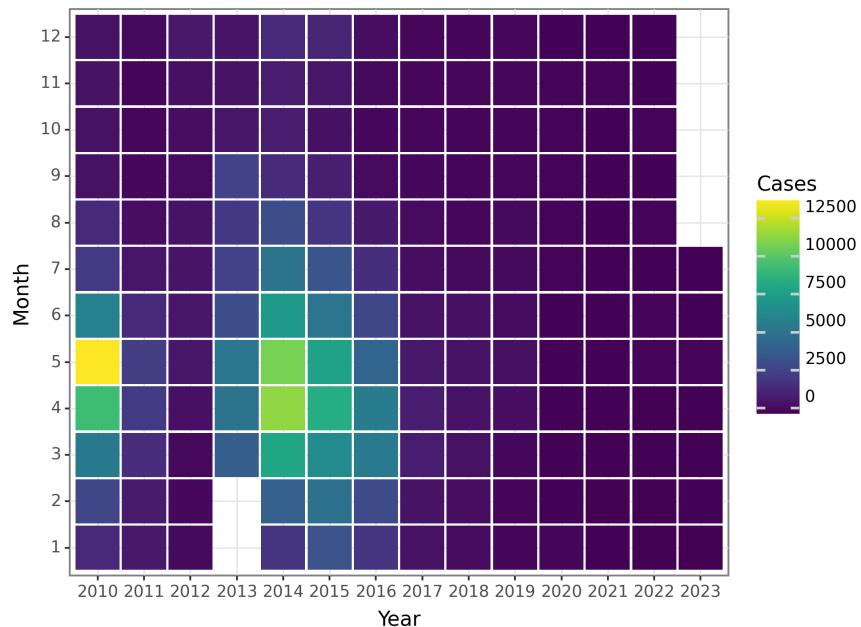


Figure 45: The Change of Measles Cases before 2023 July

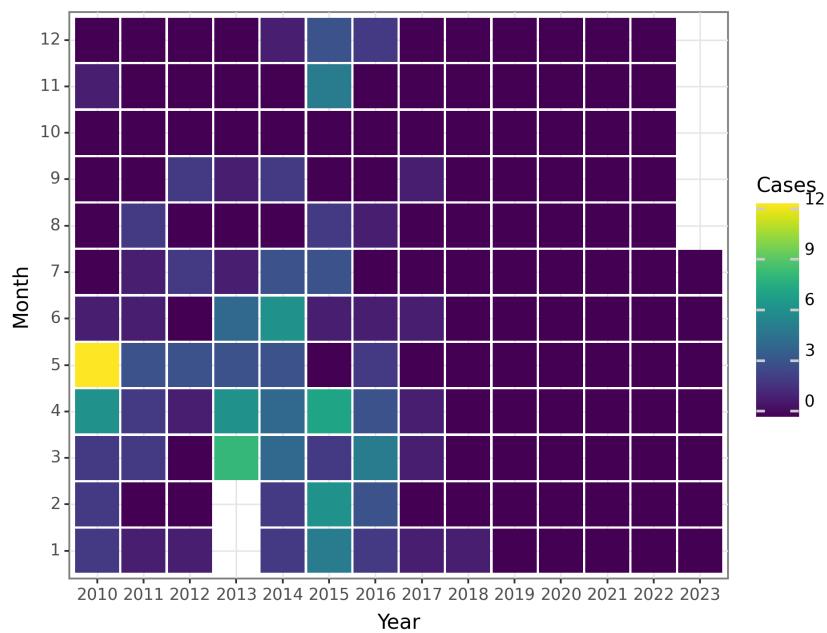


Figure 46: The Change of Measles Deaths before 2023 July

Epidemic hemorrhagic fever

Epidemic hemorrhagic fever (EHF) refers to a group of diseases characterized by fever, bleeding, and multi-system organ failure. The most well-known EHF diseases include Ebola virus disease, Lassa fever, Marburg virus disease, and Crimean-Congo hemorrhagic fever. Each of these diseases has its own unique epidemiological characteristics, but they share similarities in terms of transmission routes, affected populations, and impact on different regions.

Historical Context and Discovery: EHF diseases have been known to exist for centuries, but the understanding and recognition of these diseases as distinct entities have evolved over time. For example, Ebola virus disease was first identified in 1976 during two simultaneous outbreaks in Sudan and the Democratic Republic of Congo (formerly Zaire). Similarly, Lassa fever was discovered in 1969 in Nigeria. The identification and study of these diseases have been crucial in understanding their epidemiology and developing strategies for prevention and control.

Global Prevalence: EHF diseases are primarily found in tropical and sub-tropical regions of Africa, Asia, and South America. The prevalence of these diseases varies geographically, with some regions experiencing periodic outbreaks while others have endemic transmission. For example, Ebola virus disease is primarily found in Central and West Africa, while Lassa fever is endemic in West Africa. Marburg virus disease has been reported in several African countries, and Crimean-Congo hemorrhagic fever is prevalent in parts of Africa, Asia, and Europe.

Transmission Routes: The primary mode of transmission for EHF diseases is through direct contact with the bodily fluids (such as blood, saliva, urine, and feces) of infected individuals or animals. This can occur through activities like caring for the sick, handling infected animals, or participating in traditional burial practices. In some cases, EHF diseases can also be transmitted through contaminated objects or surfaces. Additionally, certain EHF diseases can be transmitted from animals (such as bats, rodents, and non-human primates) to humans, leading to zoonotic outbreaks.

Affected Populations: EHF diseases can affect individuals of all ages and genders. However, certain populations may be at increased risk due to occupational or behavioral factors. Healthcare workers, laboratory personnel, and individuals involved in animal husbandry or wildlife trade are at higher risk of exposure to EHF diseases. Additionally, communities with limited access to healthcare, poor sanitation, and inadequate infection control measures are more vulnerable to outbreaks.

Key Statistics: EHF diseases have a high case fatality rate, ranging from 20% to 90% depending on the specific disease and outbreak context. The number of reported cases and deaths varies annually, with periodic outbreaks causing significant morbidity and mortality. For instance, the 2014-2016 Ebola outbreak in West Africa resulted in over 28,000 cases and more than 11,000 deaths. Similarly, Lassa fever causes thousands of cases each year in West Africa, with a case fatality rate of around 1%.

Major Risk Factors: Several risk factors contribute to the transmission of EHF diseases. These include lack of awareness about the diseases and their transmission routes, inadequate infection prevention and control practices in healthcare settings, and limited resources for surveillance and response. Additionally, cultural practices and traditional beliefs related to handling of dead bodies, hunting, and consumption of bushmeat can increase the risk of exposure to these diseases.

Impact on Different Regions and Populations: EHF diseases have a significant impact on the regions where they occur. Outbreaks can lead to social and economic disruptions, strain healthcare systems, and cause fear and stigmatization within affected communities. The impact on different populations can vary based on factors such as access to healthcare, education, and socioeconomic status. Additionally, some EHF diseases may disproportionately affect certain age groups or populations with underlying health conditions, making them more vulnerable to severe illness and death.

In conclusion, epidemic hemorrhagic fever diseases have a global prevalence, primarily affecting tropical and sub-tropical regions. These diseases are transmitted through direct contact with bodily fluids of infected individuals or animals. Certain populations, such as healthcare workers and communities with limited resources, are at higher risk. EHF diseases have a high case fatality rate and can cause significant morbidity and mortality. Implementation of effective prevention and control measures, along with strengthening healthcare systems and public health infrastructure, is crucial in reducing the impact of EHF diseases.

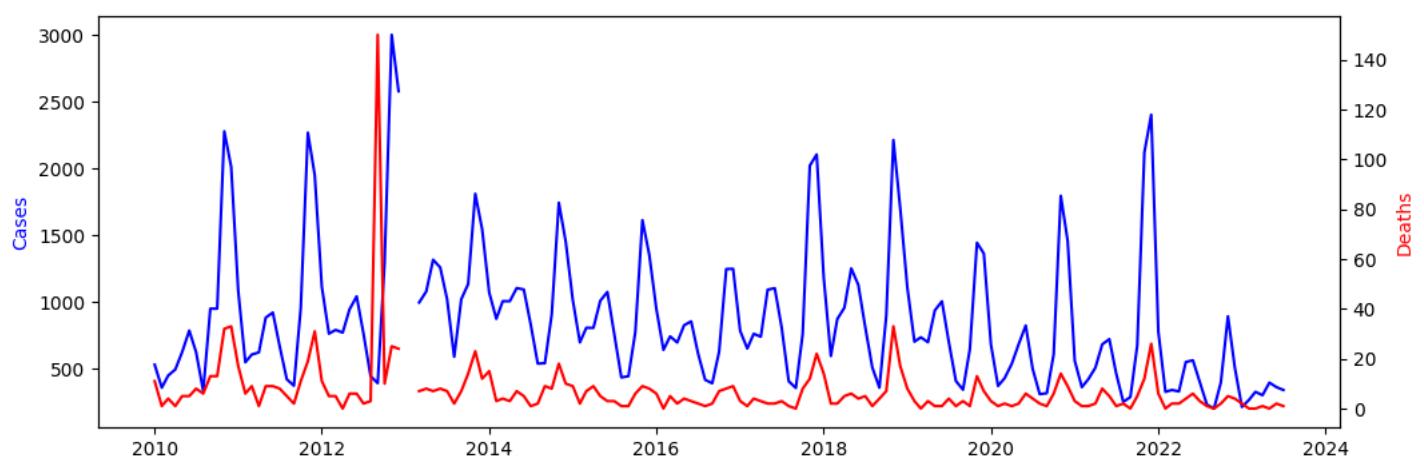


Figure 47: The Change of Epidemic hemorrhagic fever Reports before 2023 July

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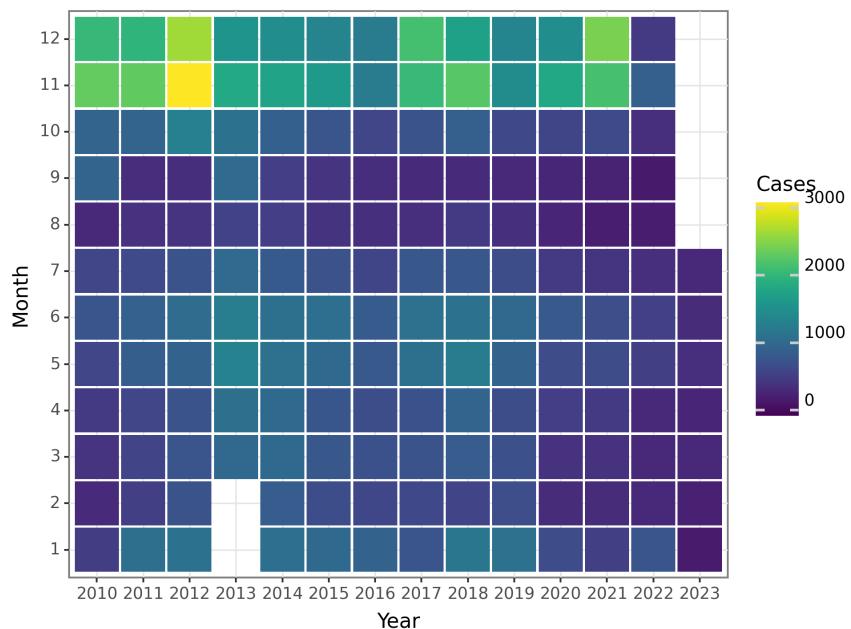


Figure 48: The Change of Epidemic hemorrhagic fever Cases before 2023 July

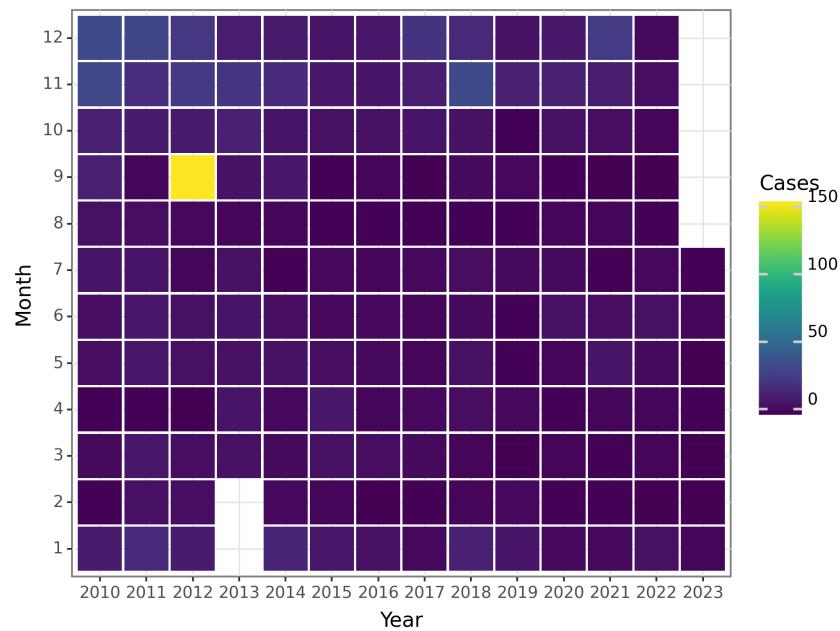


Figure 49: The Change of Epidemic hemorrhagic fever Deaths before 2023 July

Rabies

Rabies is a viral zoonotic disease that affects mammals, primarily dogs, bats, and other wildlife. It is caused by the Rabies virus, which belongs to the family Rhabdoviridae. Rabies has been recognized for thousands of years and is one of the oldest known infectious diseases. The disease has a high fatality rate and poses a significant public health threat in many parts of the world.

Historical Context and Discovery: Rabies has a long history, with references to the disease found in ancient texts from various civilizations. The first recorded evidence of Rabies dates back to around 2300 BC in the Eshnunna Code of Babylon, which described laws related to the control of "mad dogs." The ancient Greeks also recognized Rabies and named the disease "lyssa" after the Greek word for frenzy. The discovery of the Rabies virus can be attributed to Louis Pasteur and Emile Roux in the late 19th century. They developed the first successful vaccine against Rabies, which was a major breakthrough in preventing the disease.

Global Prevalence: Rabies is present in more than 150 countries worldwide, with the highest prevalence in Africa and Asia. It is estimated that around 59,000 human deaths occur annually due to Rabies, with the majority occurring in Asia and Africa. However, cases of Rabies can be found on all continents, except Antarctica.

Transmission Routes: The primary route of Rabies transmission to humans is through the bite or scratch of an infected animal. The virus is present in the saliva of infected animals and can enter the human body through broken skin or mucous membranes. In rare cases, Rabies can also be transmitted through organ transplantation or corneal transplantation from infected individuals.

Affected Populations: While Rabies can affect any individual, certain populations are at a higher risk. Children between the ages of 5 and 15 are particularly vulnerable due to their increased likelihood of encountering animals that may carry the virus. Additionally, individuals who work with animals, such as veterinarians, animal control workers, and laboratory personnel, are at a higher risk of exposure to Rabies.

Key Statistics: - Approximately 99% of human Rabies cases are caused by dog bites. - Over 95% of Rabies deaths occur in Asia and Africa. - Dogs are the primary reservoir of Rabies, especially in developing countries. - Bats are the main source of Rabies in the Americas, Europe, and Australia.

Major Risk Factors: - Lack of awareness and education about Rabies prevention and control measures. - Insufficient access to healthcare services, including post-exposure prophylaxis. - Inadequate dog vaccination programs, leading to a higher prevalence of Rabies in dog populations. - Poor animal control and stray dog populations. - Limited availability and affordability of Rabies vaccines and immunoglobulins.

Impact on Different Regions and Populations: The impact of Rabies varies across regions and populations due to variations in prevalence rates and affected demographics. In Asia and Africa, where Rabies is endemic, the disease has a significant burden on public health, resulting in numerous human deaths each year. In contrast, regions such as North America and Western Europe have effectively controlled Rabies through comprehensive vaccination programs for domestic animals.

In rural areas with limited access to healthcare, the impact of Rabies can be particularly devastating as timely administration of post-exposure prophylaxis is crucial for preventing the disease. Additionally, in regions with high levels of poverty, lack of awareness about Rabies and limited resources for healthcare further exacerbate the impact of the disease.

In conclusion, Rabies is a global public health concern, with a high fatality rate and significant regional variations in prevalence rates. It primarily affects populations in Asia and Africa, where dog-mediated transmission is common. Efforts to control Rabies through comprehensive vaccination programs, public awareness campaigns, and improved access to healthcare services are essential to reduce the burden of this deadly disease.

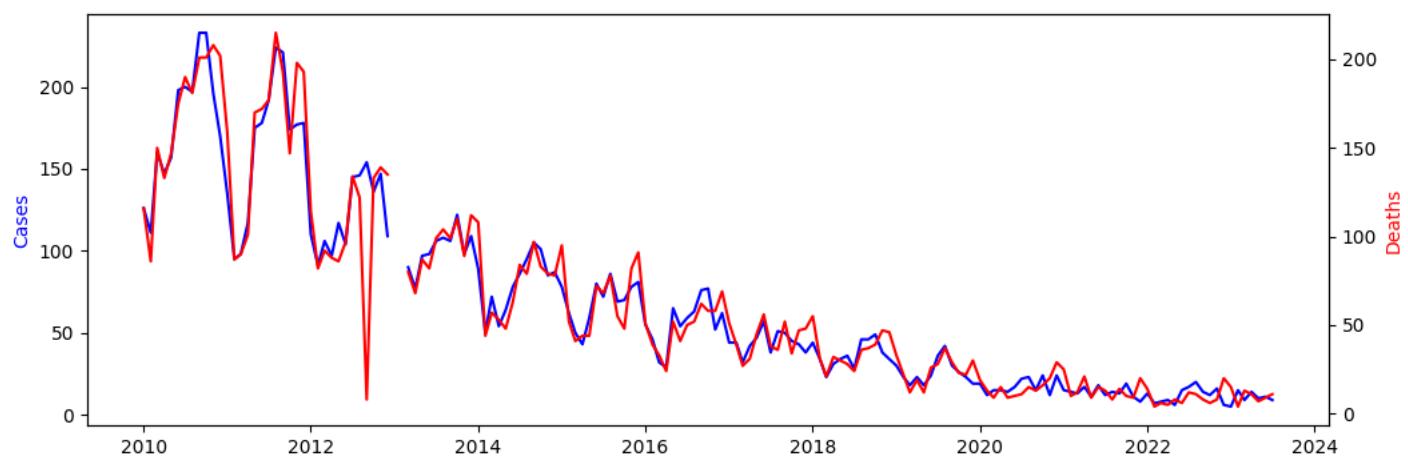


Figure 50: The Change of Rabies Reports before 2023 July

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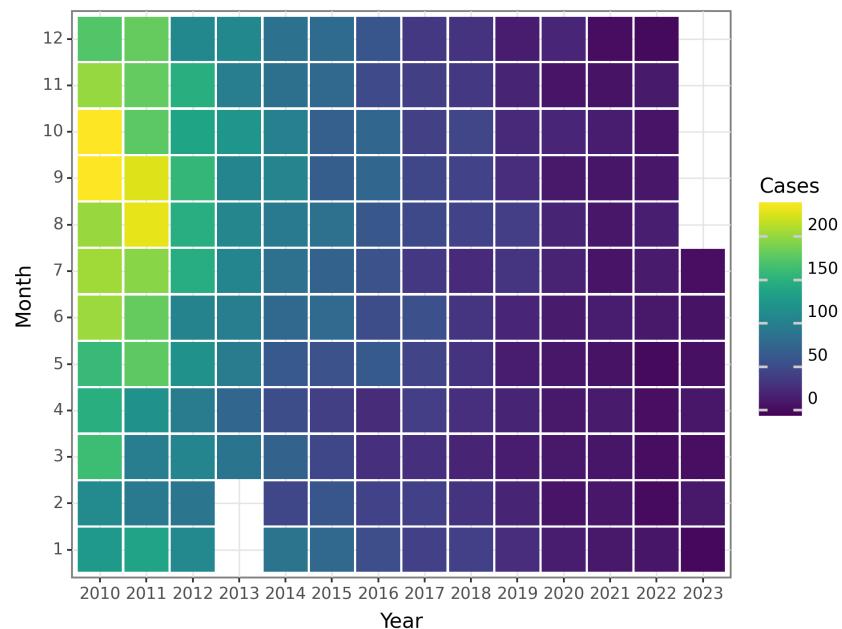


Figure 51: The Change of Rabies Cases before 2023 July

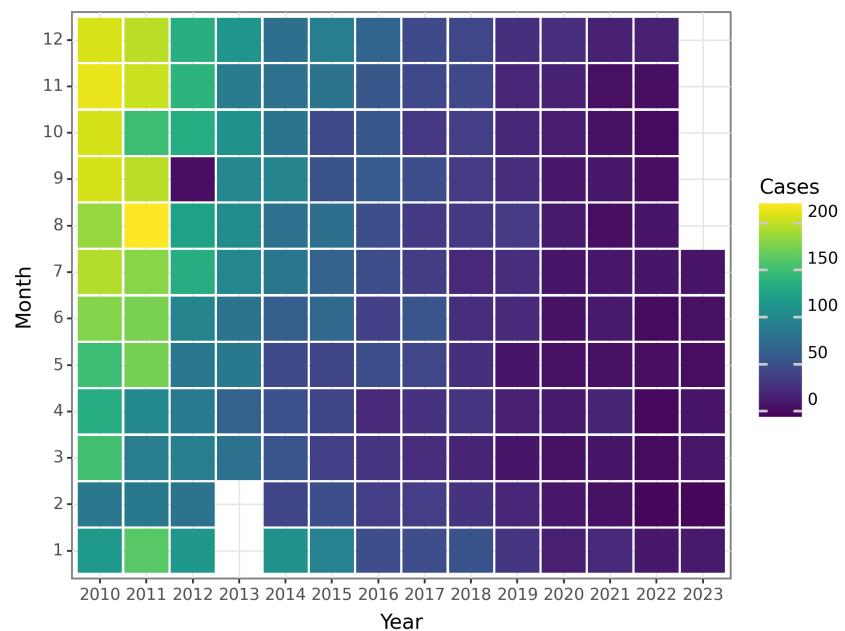


Figure 52: The Change of Rabies Deaths before 2023 July

Japanese encephalitis

Japanese encephalitis (JE) is a mosquito-borne viral disease that affects the central nervous system. It is caused by the Japanese encephalitis virus (JEV), which belongs to the Flavivirus genus. JE is primarily found in Asia, particularly in rural and agricultural areas, but cases have also been reported in other parts of the world. Here is a comprehensive overview of the epidemiology of Japanese encephalitis:

Global Prevalence: Japanese encephalitis is endemic in several countries in Asia, including Bangladesh, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Philippines, South Korea, Sri Lanka, Thailand, and Vietnam. Outbreaks have also been reported in the Pacific Islands, including Papua New Guinea, the Solomon Islands, and the Torres Strait Islands of Australia. JE is considered a major public health concern in these regions.

Transmission Routes: Japanese encephalitis is primarily transmitted through the bite of infected Culex mosquitoes, particularly *Culex tritaeniorhynchus*. These mosquitoes breed in rice fields and pig farming areas, and they are most active during the evening and night. The virus circulates between mosquitoes and vertebrate hosts, mainly pigs and wading birds, with humans serving as incidental hosts. Humans can become infected when bitten by an infected mosquito, but they do not play a significant role in further transmission.

Affected Populations: Japanese encephalitis primarily affects children and adolescents under the age of 15, as they are more susceptible to severe disease. However, individuals of all ages can be infected. The risk of infection is higher in rural and agricultural areas due to the presence of mosquito breeding sites. People who live or work in close proximity to pigs and wading birds are also at an increased risk. Travelers to endemic areas can be at risk if they are not vaccinated or take preventive measures against mosquito bites.

Key Statistics: According to the World Health Organization (WHO), Japanese encephalitis is estimated to cause around 68,000 cases and 17,000 deaths annually. However, this is likely an underestimate, as many cases go unreported or misdiagnosed. The case fatality rate can range from 20% to 30%, and up to 50% of survivors may experience long-term neurological consequences.

Historical Context and Discovery: Japanese encephalitis was first described in Japan in 1871 during an epidemic in Hiroshima. The causative agent, JEV, was isolated in 1935 by Dr. Albert Sabin and Dr. Shojiro Kurashi. The first vaccine for Japanese encephalitis was developed in the 1930s in Japan, and subsequent vaccines have been developed and improved over the years.

Major Risk Factors: Factors that increase the risk of Japanese encephalitis transmission include living in or traveling to endemic areas, especially during the transmission season, which varies by region. Lack of access to safe water and sanitation facilities can lead to increased mosquito breeding. Additionally, low vaccination coverage and inadequate vector control measures can contribute to the spread of the disease.

Impact on Different Regions and Populations: The impact of Japanese encephalitis varies across regions and populations. In endemic countries, primarily in Southeast Asia, Japanese encephalitis is a leading cause of viral encephalitis and can result in significant morbidity and mortality, particularly among children. In some areas, large-scale vaccination campaigns have been successful in reducing the burden of the disease. However, outbreaks can still occur, especially in areas with low vaccination coverage or during periods of increased mosquito activity.

In non-endemic regions, cases of Japanese encephalitis are usually imported through travelers returning from endemic areas. Local transmission can occur if the conditions are favorable for mosquito vectors and susceptible vertebrate hosts are present. In these regions, Japanese encephalitis is relatively rare but can still have severe consequences for individuals who contract the disease.

In conclusion, Japanese encephalitis is a significant public health concern in Asia, particularly in rural and agricultural areas. The disease is transmitted through mosquito bites, primarily affecting children and adolescents. Risk factors include living or traveling to endemic areas, lack of preventive measures, and low vaccination coverage. Japanese encephalitis can cause high morbidity and mortality rates, with long-term neurological consequences for survivors. Efforts to control mosquito populations, increase vaccination coverage, and improve surveillance and reporting systems are crucial in reducing the burden of this disease.

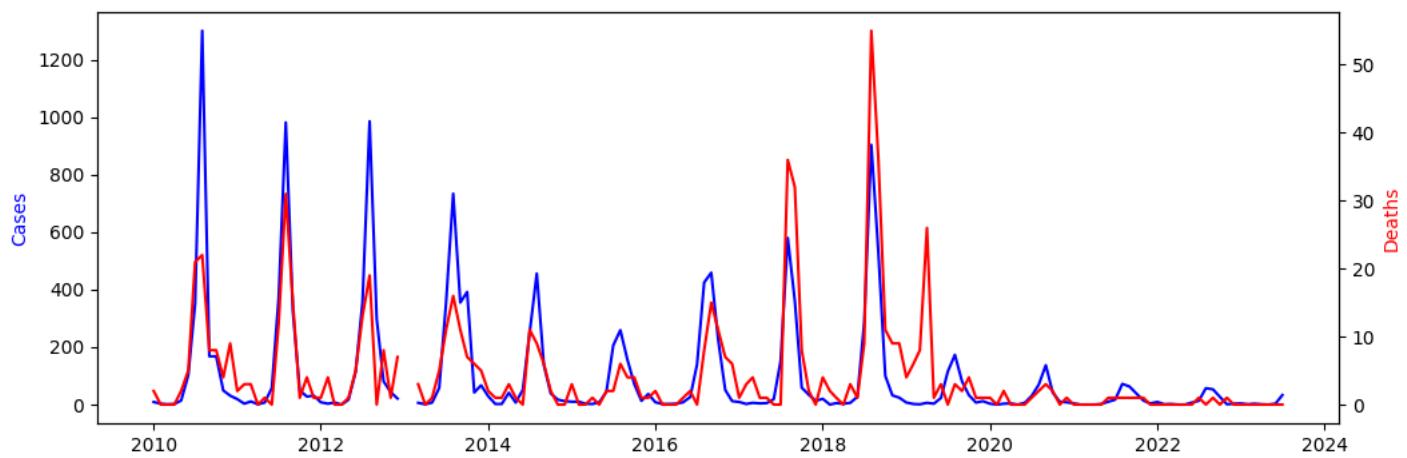


Figure 53: The Change of Japanese encephalitis Reports before 2023 July

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"Simply state the result and refrain from providing any extraneous information," is the statement that should have been made.

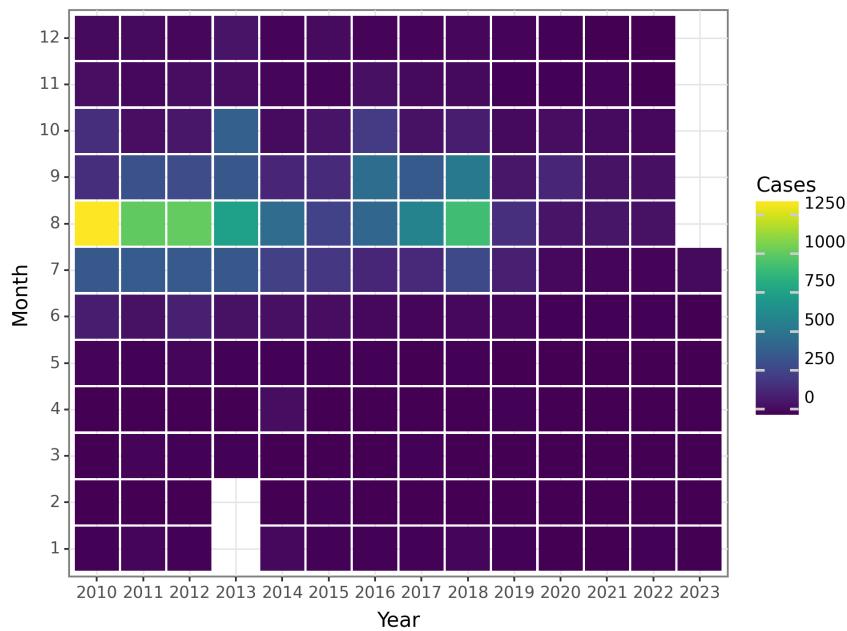


Figure 54: The Change of Japanese encephalitis Cases before 2023 July

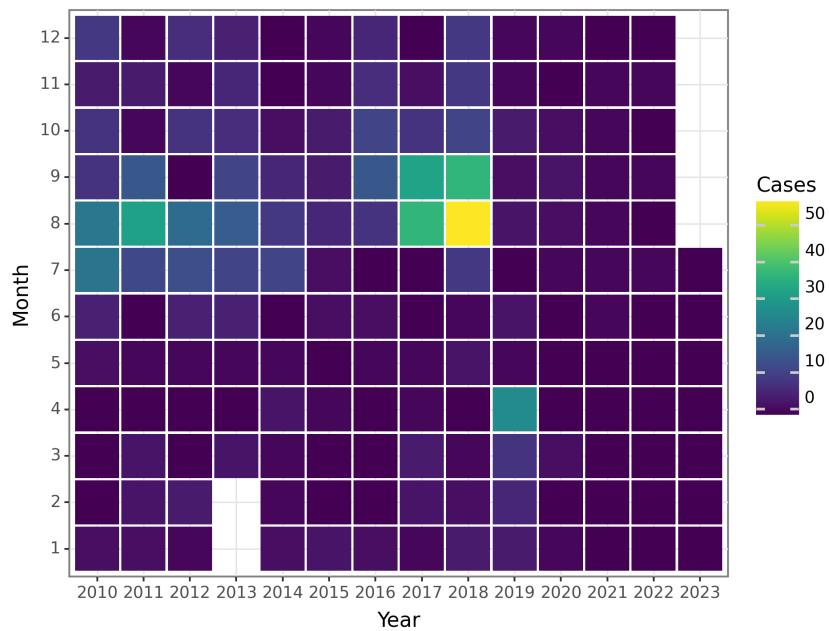


Figure 55: The Change of Japanese encephalitis Deaths before 2023 July

Dengue

Dengue is a viral disease caused by the dengue virus (DENV), which is transmitted to humans primarily through the bites of infected Aedes mosquitoes. It is considered one of the most important arboviral diseases worldwide, with a significant impact on public health. This comprehensive overview will cover the epidemiology of Dengue, including global prevalence, transmission routes, affected populations, key statistics, historical context, major risk factors, and impact on different regions and demographics.

Global Prevalence: Dengue is endemic in more than 100 countries, mainly in tropical and subtropical regions. According to the World Health Organization (WHO), approximately 3.9 billion people in 128 countries are at risk of contracting Dengue. It is estimated that there are around 390 million Dengue infections per year, of which 96 million manifest clinically. The disease has seen a significant increase in incidence over the past few decades, with a tenfold rise in reported cases since the 1960s.

Transmission Routes: Dengue is primarily transmitted through the bites of infected female Aedes mosquitoes, predominantly Aedes aegypti and, to a lesser extent, Aedes albopictus. These mosquitoes are most active during the day, particularly during early morning and late afternoon periods. Additionally, the virus can be transmitted vertically from an infected mother to her fetus and through blood transfusion or organ transplantation.

Affected Populations: Dengue can affect individuals of all ages and both sexes. However, certain populations are more vulnerable to the severe forms of the disease, such as infants, young children, and individuals who have previously been infected with a different serotype of the virus. People living in urban and semi-urban areas with inadequate sanitation and limited access to clean water are at higher risk due to the favorable breeding environments for Aedes mosquitoes.

Key Statistics: - Dengue is responsible for an estimated 10,000 deaths annually, with the majority being severe cases. - The disease is responsible for a significant burden on healthcare systems, with an estimated annual cost of around US\$8.9 billion. - There are four distinct serotypes of the dengue virus (DENV-1, DENV-2, DENV-3, and DENV-4), and infection with one serotype does not provide long-lasting immunity against the others, which increases the risk of severe forms of the disease upon subsequent infections.

Historical Context and Discovery: The history of Dengue can be traced back to ancient times, with descriptions of its symptoms similar to those seen today. The term "Dengue" originated from the Swahili phrase "ka-dinga pepo," meaning "cramp-like seizure caused by an evil spirit." The first recorded pandemic occurred in 1779-1780, affecting Asia, Africa, and North America. However, the virus responsible for Dengue was not identified until 1943 when it was isolated in the blood of a febrile patient during an outbreak in the Philippines.

Major Risk Factors: - Urbanization and population growth: Increasing urbanization and population density provide favorable conditions for the breeding and spread of Aedes mosquitoes, increasing the risk of Dengue transmission. - Climate change: Changes in temperature and rainfall patterns can influence the distribution and abundance of Aedes mosquitoes, potentially expanding the geographic range of Dengue. - Inadequate vector control measures: Inadequate mosquito control programs, including ineffective insecticide usage and lack of community participation, contribute to the persistence and spread of Dengue. - Travel and globalization: Increased international travel and trade facilitate the introduction and spread of Dengue to new regions. - Socioeconomic factors: Poverty, inadequate housing, and limited access to healthcare contribute to the vulnerability of certain populations to Dengue.

Impact on Different Regions and Populations: The impact of Dengue varies across different regions and populations. Southeast Asia and the Western Pacific region bear the highest burden, accounting for approximately 75% of global Dengue cases. However, the disease is also endemic in the Americas, Africa, and the Eastern Mediterranean. The severity and prevalence rates can vary within countries, with urban areas often experiencing higher transmission rates than rural areas. Additionally, children and young adults tend to be more affected, while severe forms of the disease are more common among older adults who have previously been infected with a different serotype.

In conclusion, Dengue is a significant global health issue with a high prevalence in tropical and subtropical regions. Its transmission primarily occurs through the bites of infected Aedes mosquitoes, with various risk factors influencing its spread. The disease affects individuals of all ages, but certain populations, including infants, young children, and those with previous infections, are at higher risk of severe forms of the disease. Dengue's impact varies across regions, with Southeast Asia and the Western Pacific region experiencing the highest burden. Effective vector control measures, improved healthcare access, and public awareness are crucial in reducing the impact of Dengue worldwide.

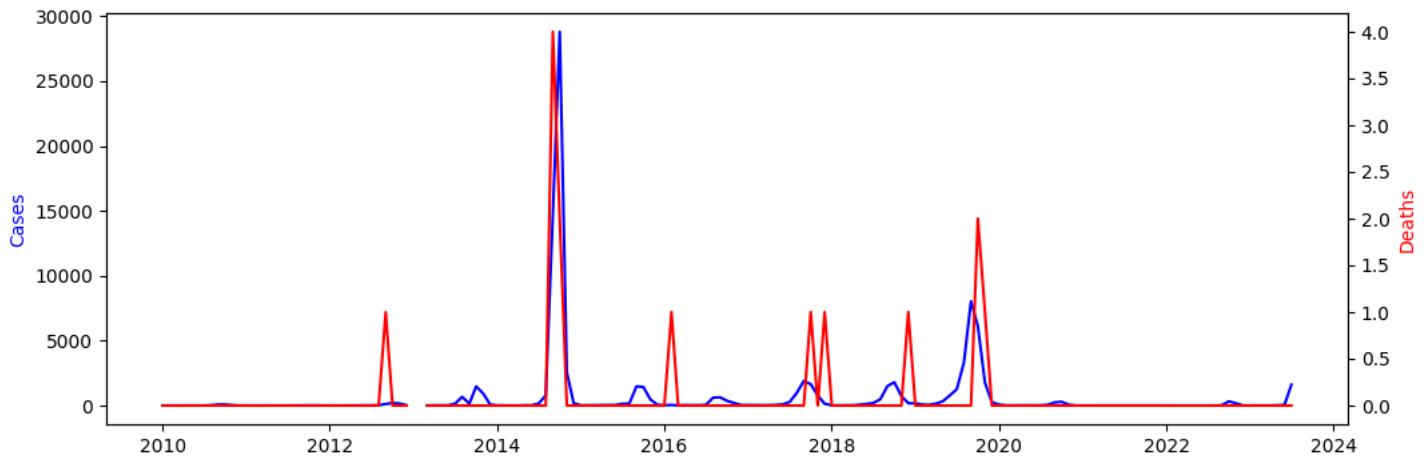


Figure 56: The Change of Dengue Reports before 2023 July

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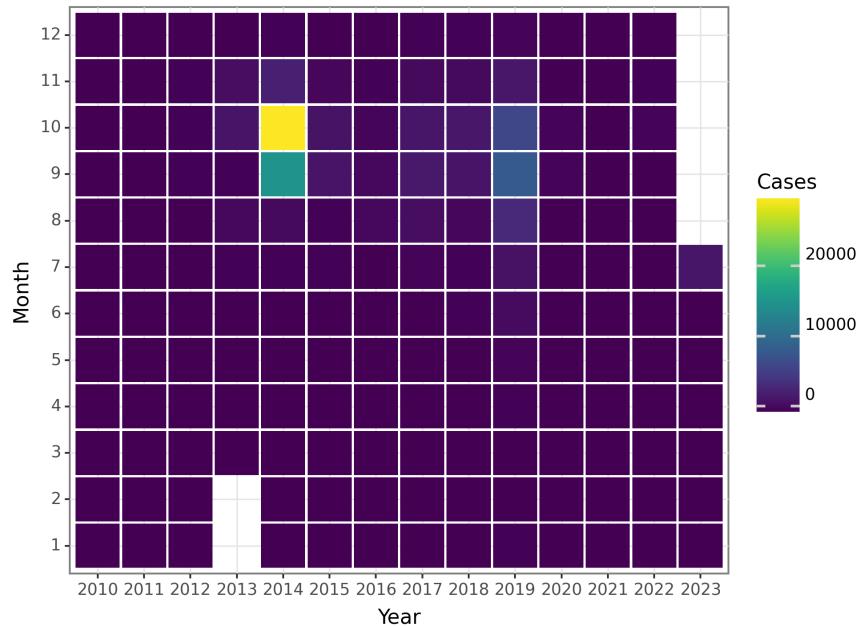


Figure 57: The Change of Dengue Cases before 2023 July

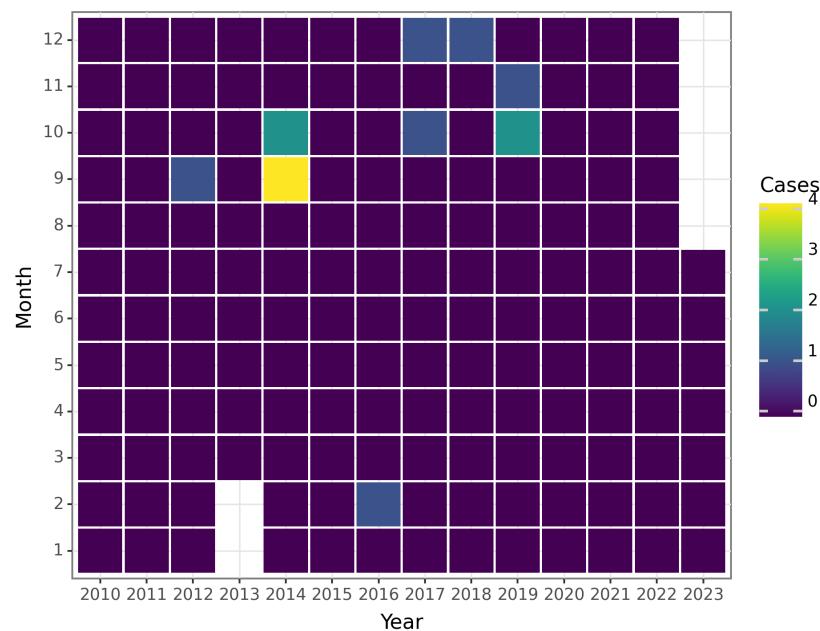


Figure 58: The Change of Dengue Deaths before 2023 July

Anthrax

Anthrax is a zoonotic infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. It affects both animals and humans and has been recognized for thousands of years. In this comprehensive overview, we will discuss the epidemiology of anthrax, including its global prevalence, transmission routes, affected populations, key statistics, historical context, risk factors, and impact on different regions and populations.

Historical Context and Discovery: Anthrax has a long history, with recorded outbreaks dating back to ancient Egypt and biblical times. The bacterium causing anthrax was first identified by Aloys Pollender in 1849, and further research by Robert Koch in the late 19th century confirmed its etiology.

Global Prevalence: Anthrax is found worldwide but is more common in agricultural regions with poor veterinary and public health infrastructure. It occurs sporadically or endemically in many countries, especially those in Africa, Asia, and parts of South America. Outbreaks also occur in developed countries, usually associated with occupational exposure or bioterrorism events.

Transmission Routes: Anthrax can be transmitted to humans through three main routes: cutaneous, inhalational, and gastrointestinal.

1. Cutaneous anthrax is the most common form and occurs when the spores enter the body through cuts, abrasions, or insect bites. 2. Inhalational anthrax occurs when spores are inhaled, usually through occupational exposure or bioterrorism events. 3. Gastrointestinal anthrax is rare and results from consuming undercooked or contaminated meat from infected animals.

Affected Populations: Anthrax affects both animals and humans. Animals such as cattle, sheep, and goats are most commonly infected, and humans can acquire the disease through direct contact with infected animals or their products. Certain occupational groups, including farmers, veterinarians, and slaughterhouse workers, are at higher risk due to their exposure to infected animals or contaminated materials.

Key Statistics: The exact global prevalence of anthrax is difficult to determine due to underreporting in resource-limited settings. According to the World Health Organization (WHO), it is estimated that there are between 20,000 and 100,000 cases of anthrax annually worldwide, with a case-fatality rate ranging from 10% to 60% depending on the form and treatment availability.

Major Risk Factors: Several risk factors contribute to anthrax transmission:

1. Occupational exposure: People working with livestock, animal products, or in industries associated with animal processing are at higher risk. 2. Lack of veterinary and public health infrastructure: Poor surveillance, limited access to vaccines, and inadequate healthcare systems in resource-limited settings increase the risk of anthrax outbreaks. 3. Bioterrorism: The potential use of anthrax as a biological weapon poses a significant risk, as seen in the 2001 anthrax attacks in the United States.

Impact on Different Regions and Populations: The impact of anthrax varies across different regions and populations. In Africa, anthrax is more prevalent due to factors such as limited veterinary services, lack of awareness, and traditional animal husbandry practices. Outbreaks are frequent and have significant economic consequences, particularly in countries heavily dependent on livestock farming. In developed countries, where anthrax is less common, cases are often linked to occupational exposure or bioterrorism events.

Prevalence rates and affected demographics also vary within regions. For example, in Africa, certain areas with high livestock density, such as the Sahel region, have higher prevalence rates. Additionally, males are more commonly affected due to their higher involvement in livestock-related activities.

In conclusion, anthrax is a globally prevalent zoonotic disease affecting animals and humans. It can be transmitted through different routes, with risk factors including occupational exposure, inadequate veterinary and public health infrastructure, and bioterrorism. The impact of anthrax varies across regions, with higher prevalence rates in agricultural areas of Africa. Understanding the epidemiology of anthrax is crucial for implementing effective prevention and control strategies to reduce its burden on both human and animal health.

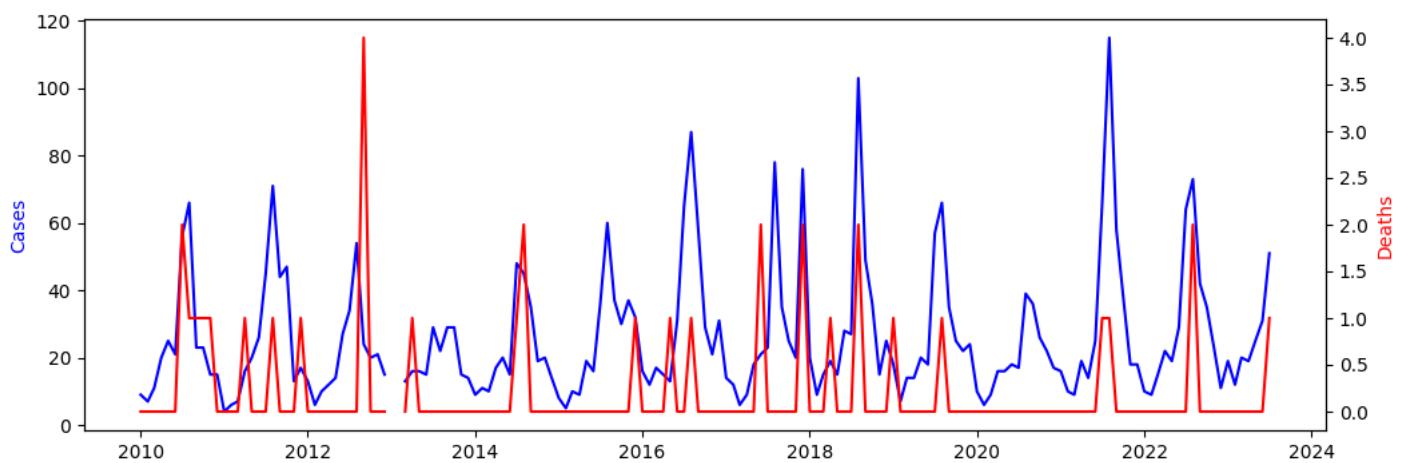


Figure 59: The Change of Anthrax Reports before 2023 July

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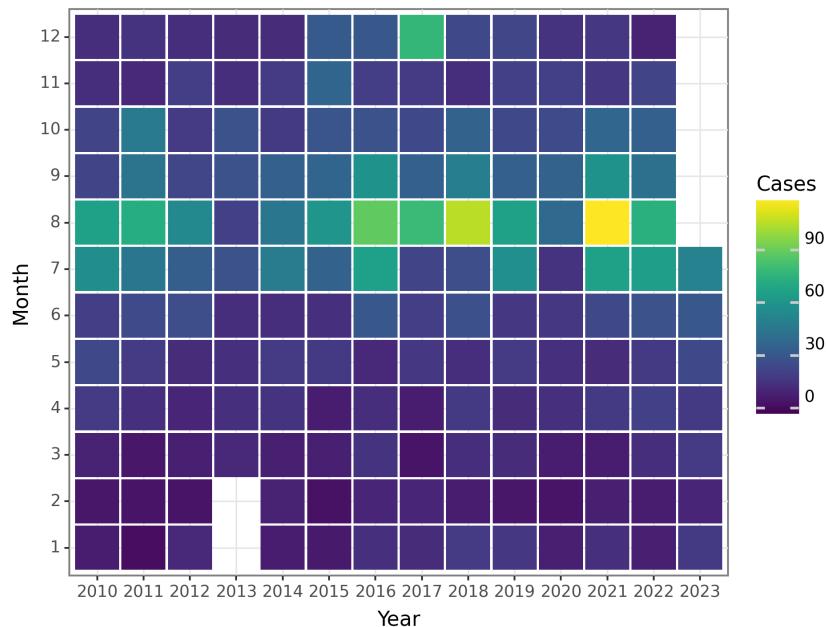


Figure 60: The Change of Anthrax Cases before 2023 July

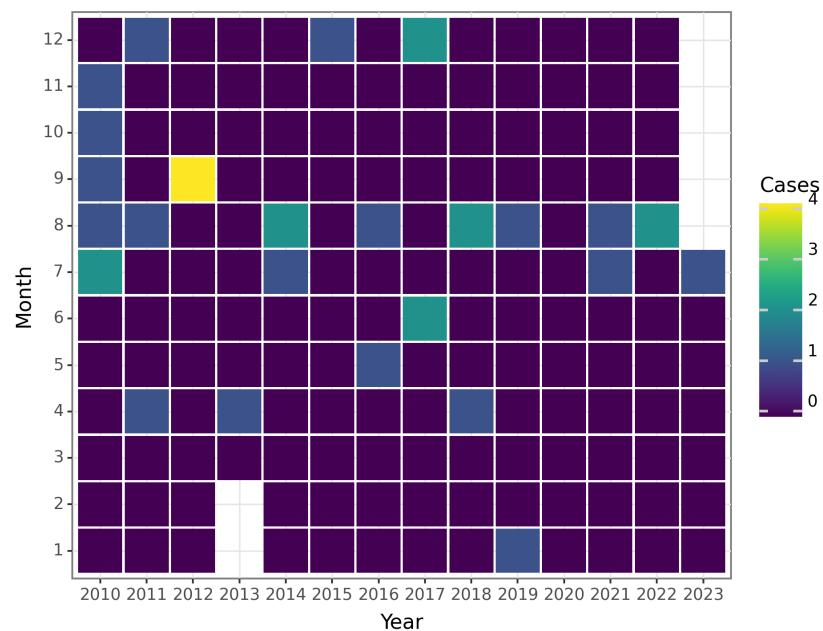


Figure 61: The Change of Anthrax Deaths before 2023 July

Dysentery

Dysentery is a gastrointestinal infection that primarily affects the colon and causes inflammation and severe diarrhea. It is caused by various bacterial, viral, and parasitic pathogens. This condition can be categorized into two main types: bacillary dysentery, caused by bacteria such as *Shigella* species, and amoebic dysentery, caused by the parasite *Entamoeba histolytica*. This response will provide a comprehensive overview of the epidemiology of dysentery, including its global prevalence, transmission routes, affected populations, and key statistics. It will also touch upon the historical context and discovery of dysentery, major risk factors associated with its transmission, and its impact on different regions and populations.

Historically, dysentery has been a significant global health concern, causing numerous outbreaks and epidemics throughout history. The disease has been documented as far back as ancient Egypt, with descriptions of dysentery-like symptoms found in medical texts dating back to 1550 BC. Dysentery has plagued armies during wars, leading to significant morbidity and mortality. The disease's causative agents were discovered and identified during the late 19th and early 20th centuries, providing a better understanding of its etiology and transmission.

Dysentery is primarily transmitted through the fecal-oral route. This means that individuals can contract the infection by ingesting food or water contaminated with fecal matter containing the causative pathogens. Poor sanitation, lack of access to clean water, and inadequate hygiene practices are significant contributors to dysentery transmission. Moreover, person-to-person transmission can occur through direct contact with infected individuals or through contaminated objects or surfaces.

The global prevalence of dysentery varies across regions and is influenced by various factors. According to the World Health Organization (WHO), an estimated 165 million cases of shigellosis (bacillary dysentery) occur globally each year, resulting in over 1 million deaths, primarily among children under the age of 5. Amoebic dysentery is less common and affects an estimated 50 million people worldwide annually, causing around 70,000 deaths. However, these numbers may be underestimated due to underreporting and limited access to healthcare systems in some regions.

Dysentery affects populations across all age groups, but certain populations are more vulnerable. Infants, young children, and individuals with weakened immune systems are at higher risk of severe complications and death. Additionally, individuals living in low-resource settings, crowded environments, and areas with poor sanitation and hygiene infrastructure are more susceptible to dysentery.

The impact of dysentery on different regions and populations varies significantly. Developing countries, particularly those in sub-Saharan Africa, South Asia, and Southeast Asia, bear the highest burden of the disease due to inadequate access to clean water and sanitation facilities. In these regions, dysentery is a leading cause of morbidity and mortality, especially among children. In contrast, high-income countries have seen a decline in dysentery cases due to improved sanitation, hygiene practices, and access to clean water.

Major risk factors associated with dysentery transmission include:

1. Poor sanitation: Lack of access to clean water, inadequate waste management systems, and improper sanitation practices contribute to dysentery transmission.
2. Contaminated food and water: Consuming food or water contaminated with fecal matter containing dysentery-causing pathogens is a significant risk factor.
3. Overcrowding: Living in crowded environments, such as refugee camps or densely populated urban areas, increases the risk of dysentery transmission.
4. Lack of hygiene practices: Inadequate handwashing, poor personal hygiene, and unsanitary practices contribute to the spread of dysentery.
5. Travel to high-risk areas: Traveling to regions with a high prevalence of dysentery increases the risk of exposure to the infection.

Efforts to control dysentery focus on improving sanitation, promoting hygiene practices, ensuring access to clean water, and enhancing healthcare systems. Vaccines against some strains of *Shigella* are being developed and tested. Additionally, early diagnosis, appropriate treatment with antibiotics, and public health interventions are crucial in reducing the burden of dysentery.

In conclusion, dysentery is a global health concern that affects millions of people worldwide. Its transmission routes primarily involve the fecal-oral route through contaminated food, water, or direct contact. Poor sanitation, inadequate hygiene practices, and overcrowding contribute to its spread.

Dysentery has a significant impact on developing countries, particularly among vulnerable populations such as children and those with weakened immune systems. Efforts to control dysentery focus on

improving sanitation, promoting hygiene practices, and ensuring access to clean water, along with early diagnosis and appropriate treatment.

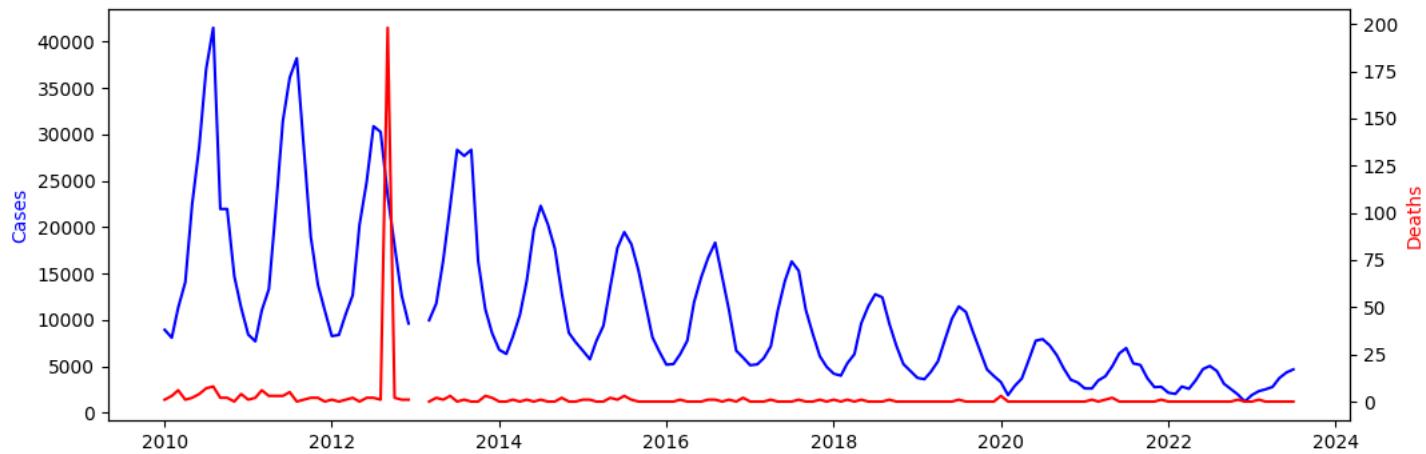


Figure 62: The Change of Dysentery Reports before 2023 July

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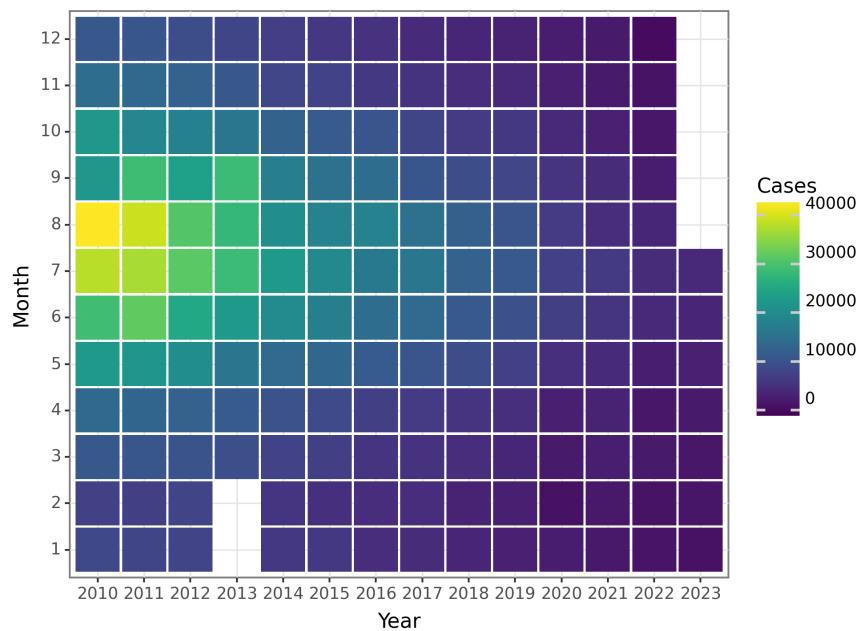


Figure 63: The Change of Dysentery Cases before 2023 July

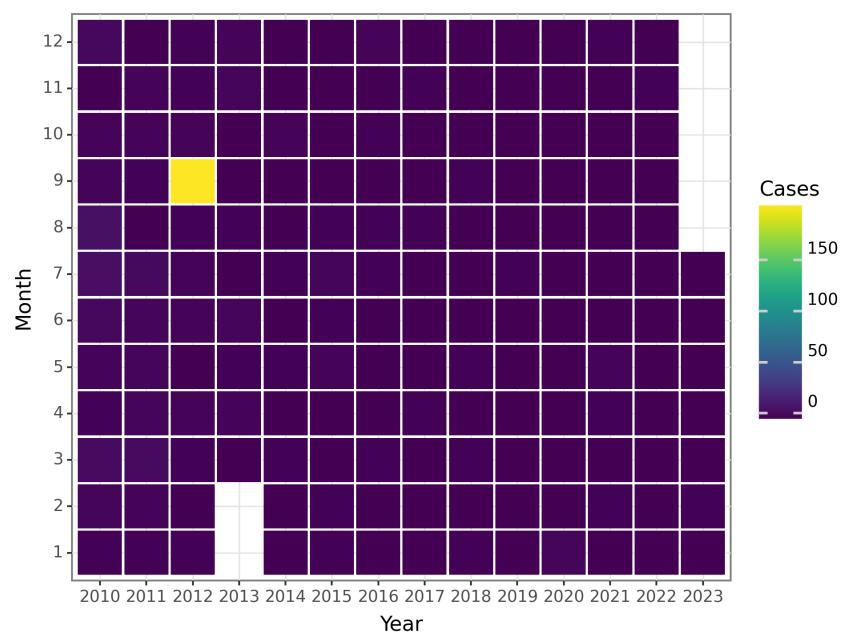


Figure 64: The Change of Dysentery Deaths before 2023 July

Tuberculosis

Tuberculosis (TB) is a highly infectious disease caused by the bacteria *Mycobacterium tuberculosis*. It primarily affects the lungs but can also spread to other parts of the body. TB has been a major global health concern for centuries, and despite significant progress in prevention and treatment, it remains a leading cause of death worldwide.

Historical Context and Discovery: TB has been present in human populations for thousands of years. Evidence of TB has been found in ancient Egyptian mummies and skeletal remains from various regions. However, the disease gained significant attention during the 19th and early 20th centuries when it reached epidemic proportions in Europe and North America, causing high mortality rates. The discovery of the TB bacteria by Robert Koch in 1882 revolutionized the understanding and diagnosis of the disease.

Global Prevalence: TB is a global health problem, with a substantial burden in low- and middle-income countries. According to the World Health Organization (WHO), in 2020, an estimated 10 million people fell ill with TB globally, with 1.5 million deaths attributed to the disease. TB is more prevalent in certain regions, including sub-Saharan Africa, Southeast Asia, and the Western Pacific. These regions account for about 85% of total TB cases worldwide.

Transmission Routes: TB primarily spreads through the air when an infected person coughs, sneezes, or talks, releasing TB bacteria into the air. People nearby can inhale these bacteria and become infected. However, not everyone infected with TB bacteria becomes ill. The immune system often prevents the bacteria from causing active disease, leading to latent TB infection. Latent TB can later become active if the immune system weakens, allowing the bacteria to multiply and cause symptoms.

Affected Populations: TB can affect people of all ages and backgrounds. However, certain populations are at a higher risk of developing active TB. These include individuals with compromised immune systems, such as those living with HIV/AIDS, malnutrition, or diabetes. Other high-risk groups include people living in crowded or poorly ventilated conditions, such as prisons or homeless shelters, and those working in healthcare settings.

Key Statistics: - In 2020, an estimated 10 million people worldwide developed TB. - Approximately 1.5 million people died from TB in 2020. - TB is the leading cause of death from a single infectious agent, surpassing HIV/AIDS. - About 95% of TB deaths occur in low- and middle-income countries. -

Multidrug-resistant TB (MDR-TB) is a growing concern, with nearly half a million cases reported in 2020.

Major Risk Factors: Several risk factors contribute to the transmission of TB. These include: 1. Close contact with a person with active TB disease. 2. Weakened immune system, such as HIV/AIDS infection. 3. Living or working in crowded environments with poor ventilation. 4. Substance abuse, including tobacco and alcohol use. 5. Malnutrition and poor healthcare access.

Impact on Different Regions and Populations: TB's impact varies across regions and populations. As mentioned earlier, sub-Saharan Africa, Southeast Asia, and the Western Pacific have the highest burden of TB cases. Within countries, vulnerable populations such as migrant workers, prisoners, and individuals living in poverty are disproportionately affected. Socioeconomic factors, including limited access to quality healthcare and social determinants of health, contribute to these disparities.

In conclusion, TB is a significant global health challenge with a high burden in low- and middle-income countries. It has a long history of affecting populations worldwide and remains a leading cause of death from a single infectious agent. Preventing and controlling TB requires a multi-faceted approach, including early detection, effective treatment, and addressing social determinants of health.

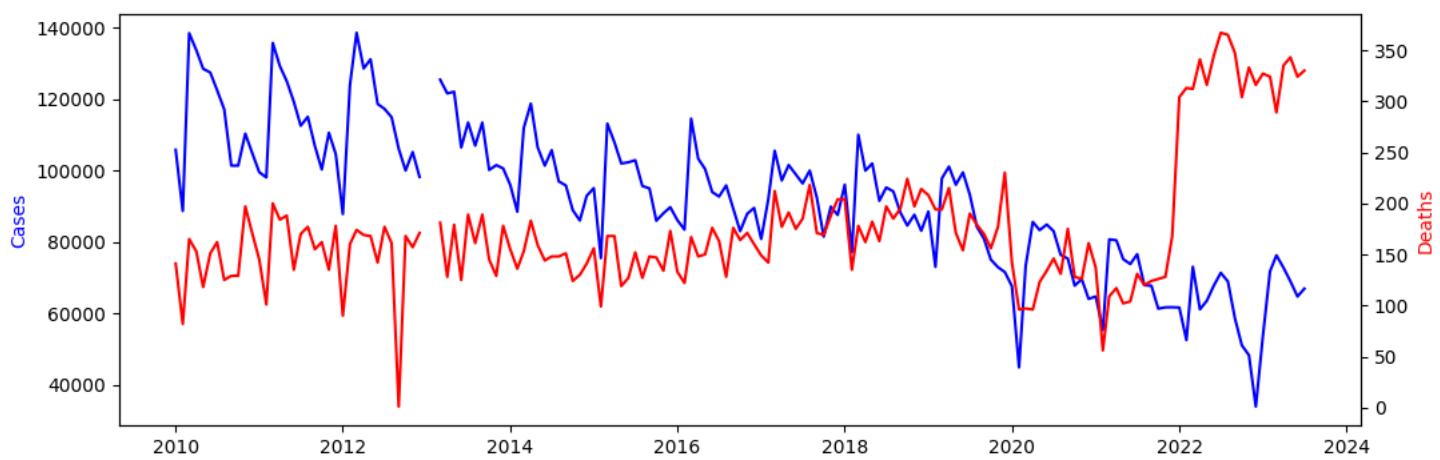


Figure 65: The Change of Tuberculosis Reports before 2023 July

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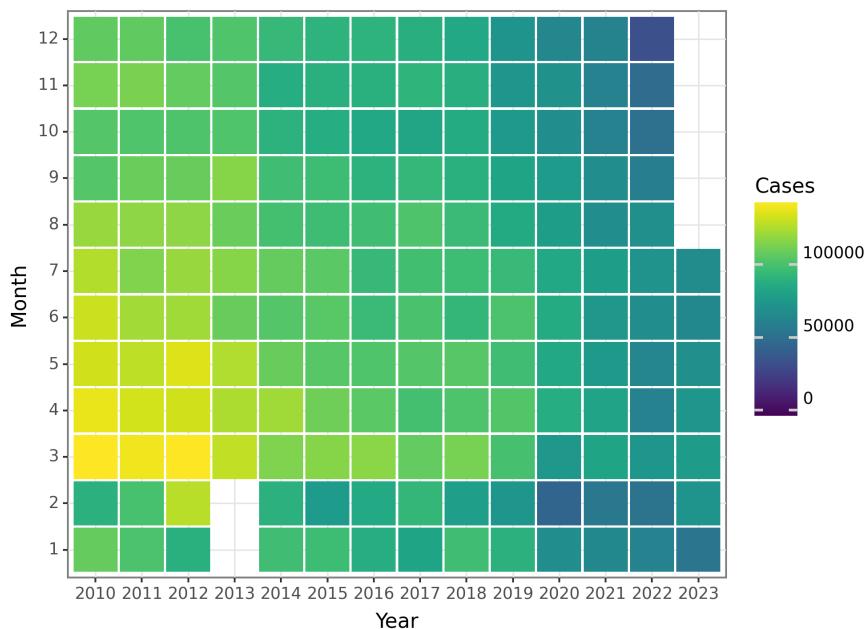


Figure 66: The Change of Tuberculosis Cases before 2023 July

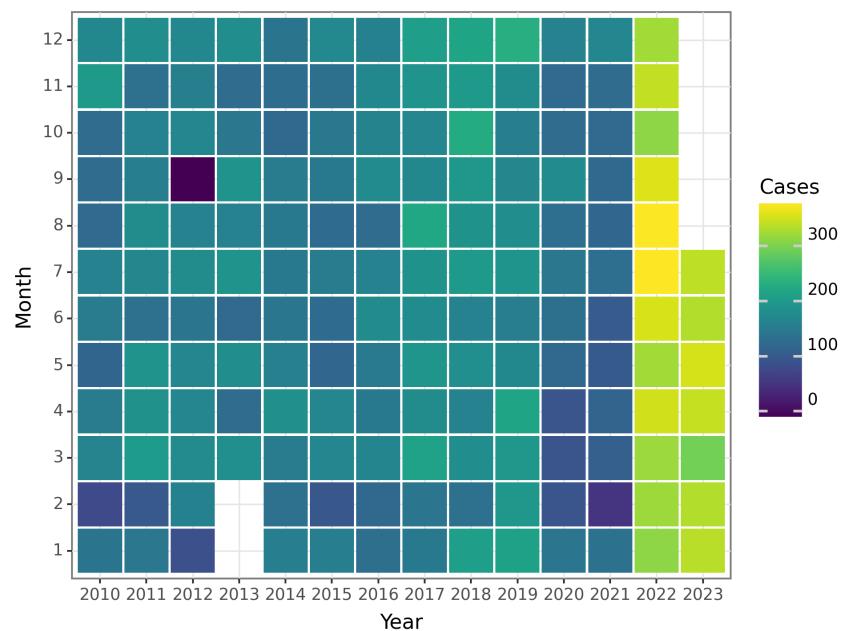


Figure 67: The Change of Tuberculosis Deaths before 2023 July

Typhoid fever and paratyphoid fever

Typhoid fever and paratyphoid fever are two bacterial infections caused by *Salmonella enterica* serovar Typhi and *Salmonella enterica* serovar Paratyphi, respectively. Both diseases are significant global health concerns, primarily affecting developing countries with poor sanitation and limited access to clean water. Historical Context and Discovery: Typhoid fever has been a recognized disease for centuries. Its symptoms were described as early as the 5th century BCE by the Greek physician Hippocrates. However, it was not until the 19th century that the distinct clinical features and infectious nature of typhoid fever were fully understood. In 1880, German bacteriologist Karl Joseph Eberth discovered the causative agent, *Salmonella typhi*, and in 1884, British physician Almroth Wright developed the first effective vaccine. Paratyphoid fever, caused by *Salmonella Paratyphi A, B, or C*, was identified as a distinct clinical entity in the early 20th century. Paratyphoid fever shares many similarities with typhoid fever in terms of symptoms and transmission routes.

Global Prevalence: Typhoid fever and paratyphoid fever are primarily endemic in low- and middle-income countries, particularly in regions with inadequate sanitation and hygiene practices. According to the World Health Organization (WHO), an estimated 11-20 million people are affected by typhoid fever annually, with approximately 128,000-161,000 deaths. The burden of paratyphoid fever is less well-documented, but it is believed to be less common than typhoid fever.

Transmission Routes: Both typhoid and paratyphoid fevers are primarily transmitted through the ingestion of contaminated food or water. The bacteria are shed in the feces and urine of infected individuals, which can contaminate water sources or food during the preparation process. Consumption of these contaminated items allows the bacteria to enter the body and cause infection. Direct person-to-person transmission can also occur through close contact with infected individuals who are shedding the bacteria.

Affected Populations: Typhoid fever and paratyphoid fever can affect individuals of all ages, but children and adolescents are at higher risk due to their greater vulnerability to infection and exposure. The diseases are more prevalent in densely populated urban areas with inadequate sanitation facilities, where the risk of fecal-oral transmission is high. Travelers visiting endemic regions are also at risk if they consume contaminated food or water.

Key Statistics: - Typhoid fever and paratyphoid fever are responsible for an estimated 11-20 million cases annually. - The highest burden of disease is found in South Asia, sub-Saharan Africa, and parts of Latin America. - Mortality rates vary depending on the availability of healthcare and access to appropriate antibiotics. In areas with limited resources, the case-fatality rate can exceed 20%, while in well-resourced settings, it is typically below 1%. - Drug-resistant strains of *Salmonella typhi* have emerged, making treatment more challenging in some regions.

Risk Factors: Several factors increase the risk of typhoid and paratyphoid fever transmission, including: - Lack of access to clean water and sanitation facilities. - Poor hygiene practices, such as inadequate handwashing. - Contaminated food and water supply due to improper food handling and storage. - Overcrowded living conditions. - Travel to endemic regions without taking appropriate precautions, such as vaccination and safe food and water practices.

Impact on Different Regions and Populations: The burden of typhoid and paratyphoid fever is not evenly distributed globally. South Asia, including India, Pakistan, and Bangladesh, bears the highest burden, accounting for a significant proportion of the global cases and deaths. Sub-Saharan Africa, particularly countries like Nigeria and Kenya, also experiences a high incidence of these infections.

Within regions, the impact can vary based on socioeconomic factors, access to healthcare, and the quality of sanitation infrastructure. Disadvantaged populations, such as those in urban slums or rural communities with limited resources, are disproportionately affected.

Efforts to Control: Efforts to control typhoid and paratyphoid fever focus on improving water and sanitation infrastructure, promoting hygiene practices, and ensuring access to safe food and water. Vaccination campaigns targeting high-risk populations and travelers have also been implemented. However, challenges remain, including limited resources, the emergence of drug-resistant strains, and the need for sustainable interventions in endemic areas.

In conclusion, typhoid and paratyphoid fever are significant public health concerns in many parts of the world, particularly in low- and middle-income countries with inadequate sanitation infrastructure. Effective control measures, including vaccination, improved water and sanitation, and education about hygiene practices, are crucial to reducing the burden of these diseases and preventing their transmission.

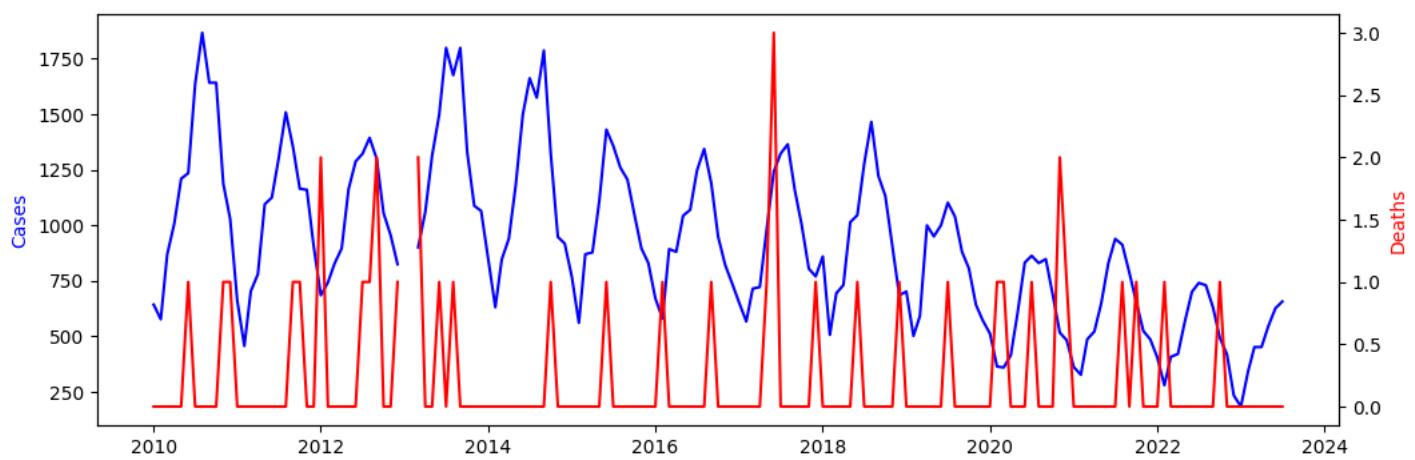


Figure 68: The Change of Typhoid fever and paratyphoid fever Reports before 2023 July

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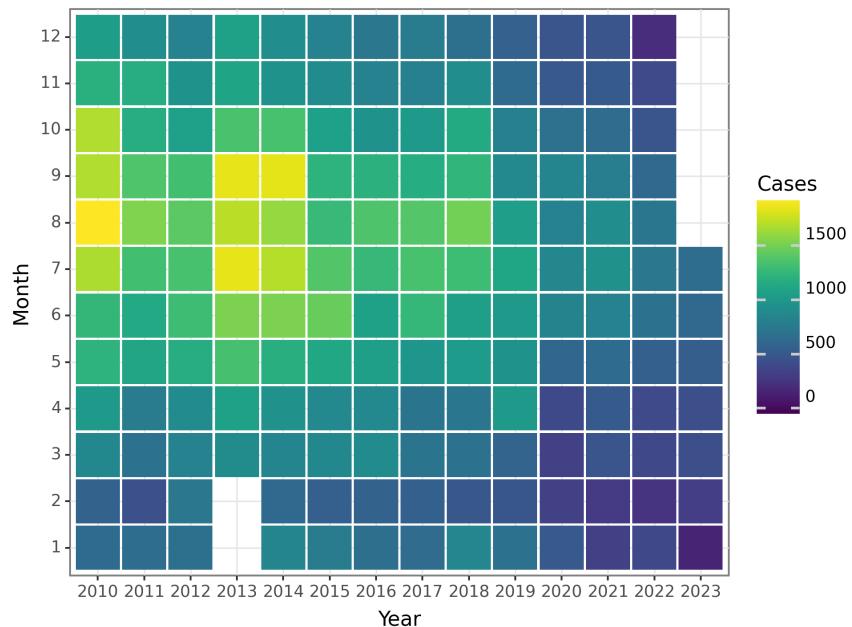


Figure 69: The Change of Typhoid fever and paratyphoid fever Cases before 2023 July

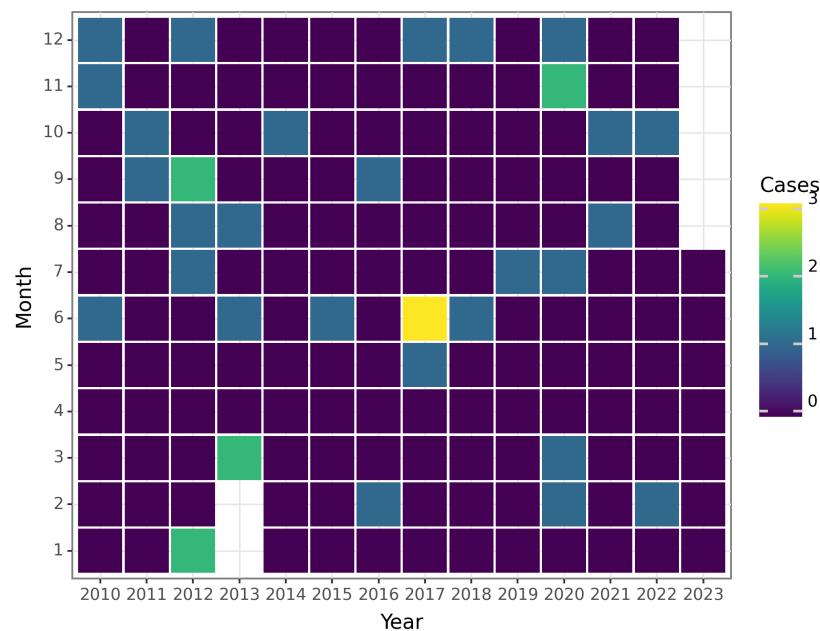


Figure 70: The Change of Typhoid fever and paratyphoid fever Deaths before 2023 July

Meningococcal meningitis

Meningococcal meningitis is an infectious disease caused by the bacteria *Neisseria meningitidis* and is characterized by inflammation of the meninges, the protective membranes surrounding the brain and spinal cord. It is a significant global health concern due to its potential for outbreaks and high mortality rates if left untreated. Here is a comprehensive overview of the epidemiology of Meningococcal meningitis:

Global Prevalence: Meningococcal meningitis has a global distribution, with sporadic cases occurring throughout the year. However, large outbreaks are more common in the "meningitis belt" of sub-Saharan Africa, which stretches from Senegal in the west to Ethiopia in the east. This region experiences recurrent epidemics, primarily caused by *Neisseria meningitidis* serogroup A. Other regions, such as the Middle East, India, and parts of South America, also report periodic outbreaks.

Transmission Routes: Meningococcal bacteria are transmitted from person to person through respiratory droplets, close contact, and prolonged contact with an infected individual. It spreads more easily in crowded places, such as schools, military barracks, and refugee camps. The bacteria can colonize the nasopharynx of healthy individuals, leading to asymptomatic carriage or, in some cases, invasive disease such as meningitis.

Affected Populations: Meningococcal meningitis can affect people of all ages, but infants, adolescents, and young adults are particularly vulnerable. Certain risk factors increase the likelihood of transmission and severe disease, including overcrowding, low socioeconomic status, malnutrition, and compromised immune systems. Travelers to regions with high rates of meningococcal disease are also at increased risk.

Key Statistics: - The World Health Organization (WHO) estimates that there are 1.2 million cases of meningococcal disease worldwide each year. - Meningococcal meningitis has a case-fatality rate of 10-20%, even with appropriate treatment. - Survivors may experience long-term complications such as hearing loss, neurological disabilities, or limb amputations. - *Neisseria meningitidis* is classified into different serogroups, including A, B, C, W, X, and Y, each with varying prevalence and clinical significance.

Historical Context and Discovery: Meningococcal meningitis has been recognized as a distinct disease since the early 19th century. The causative agent, *Neisseria meningitidis*, was first identified by Anton Weichselbaum in 1887. Over the years, advances in microbiology and understanding of the disease's pathology have contributed to the development of vaccines and improved diagnostic tools.

Major Risk Factors: - Close contact with an infected individual, particularly through respiratory droplets. - Living in crowded or institutional settings, such as dormitories or military barracks. - Compromised immune system due to certain medical conditions or medications. - Lack of access to healthcare and vaccination programs. - Smoking or exposure to second-hand smoke, as it damages the respiratory tract and increases susceptibility to infections.

Impact on Different Regions and Populations: Meningococcal meningitis has a disproportionate impact on certain regions and populations. The meningitis belt in sub-Saharan Africa experiences the highest burden of disease due to limited healthcare infrastructure, low vaccination coverage, and frequent epidemics. In contrast, developed countries with robust healthcare systems and widespread vaccination programs have seen a significant decline in meningococcal cases.

Variations in Prevalence Rates and Affected Demographics: The prevalence of meningococcal meningitis varies across different regions and is influenced by several factors, including climate, population density, and socioeconomic conditions. The distribution of serogroups also varies geographically, with serogroup A historically causing the majority of cases in Africa, while serogroups B and C are more common in other parts of the world. Additionally, certain age groups, such as infants and adolescents, may be disproportionately affected due to behavioral and social factors.

In conclusion, Meningococcal meningitis is a globally significant infectious disease with a higher prevalence in sub-Saharan Africa. It is transmitted through respiratory droplets and close contact. Various risk factors increase the likelihood of transmission and severe disease. The impact of meningococcal meningitis varies across regions and populations, with the highest burden observed in resource-limited settings. Vaccination programs, improved healthcare infrastructure, and increased awareness are crucial in mitigating the impact of this disease.

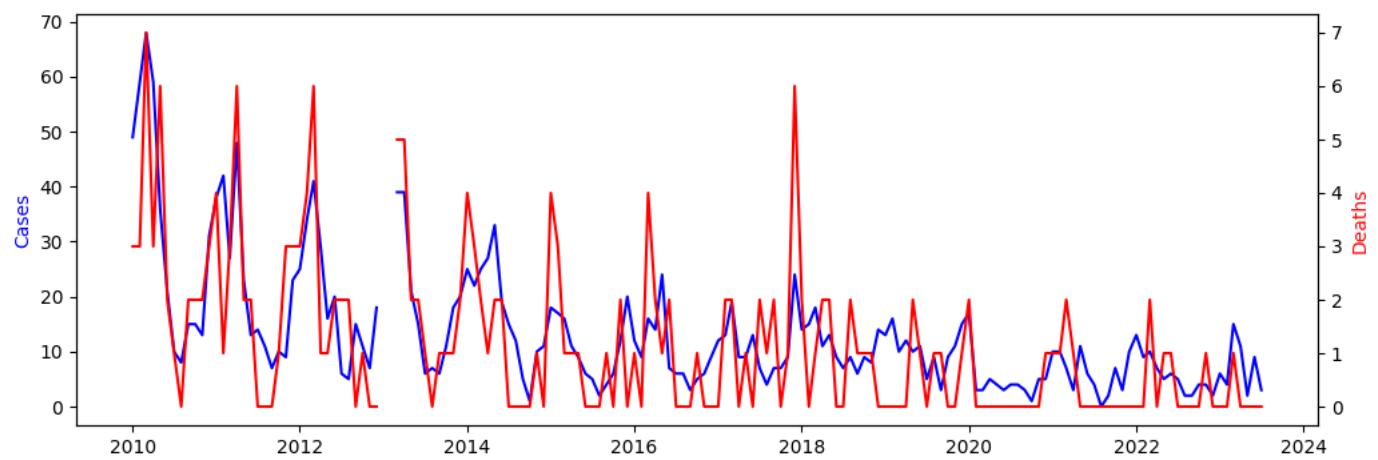


Figure 71: The Change of Meningococcal meningitis Reports before 2023 July

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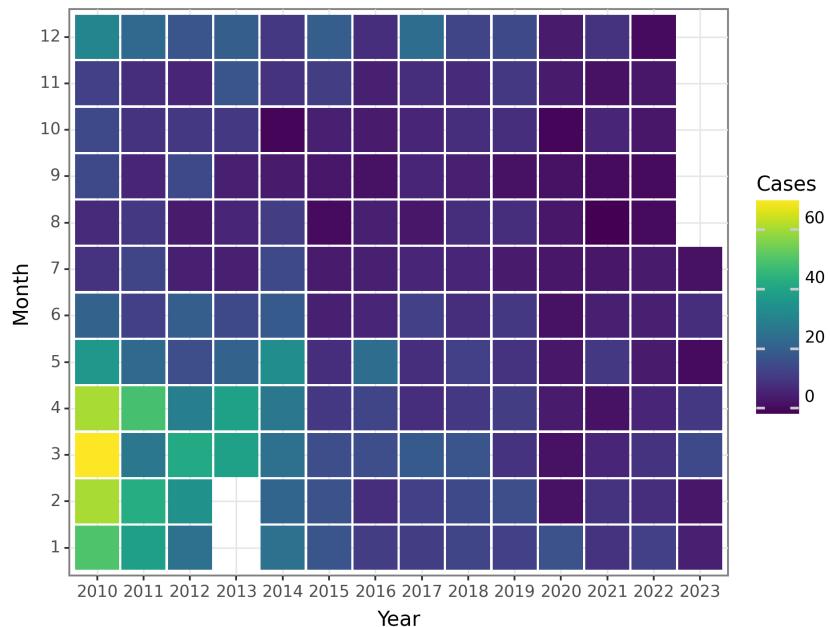


Figure 72: The Change of Meningococcal meningitis Cases before 2023 July

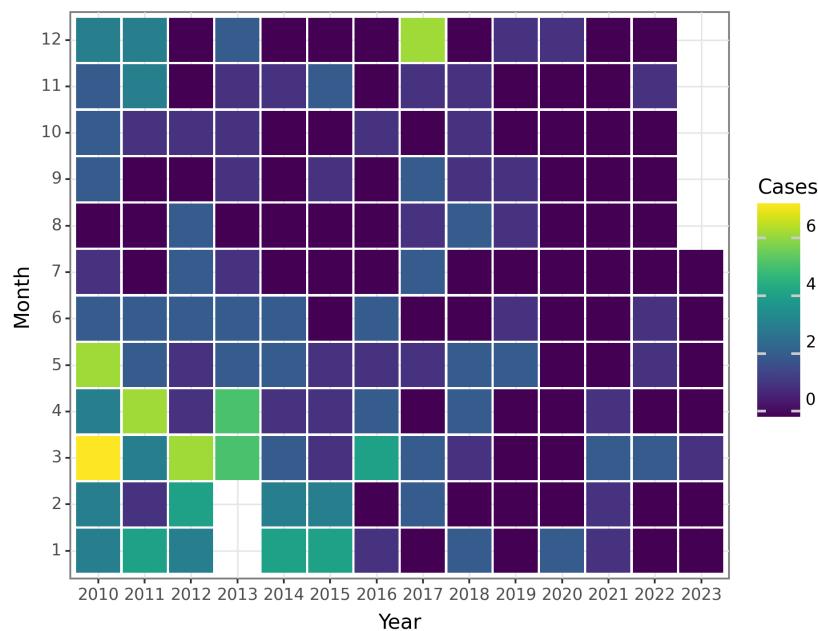


Figure 73: The Change of Meningococcal meningitis Deaths before 2023 July

Pertussis

Pertussis, also known as whooping cough, is a highly contagious respiratory infection caused by the bacterium *Bordetella pertussis*. It is characterized by severe coughing fits, often ending with a "whooping" sound when the person inhales after coughing. Pertussis can affect individuals of all ages, but it is particularly dangerous for infants and young children, as it can lead to severe complications and even death. In this comprehensive overview, we will discuss the epidemiology of Pertussis, including its global prevalence, transmission routes, affected populations, key statistics, historical context and discovery, major risk factors associated with transmission, and the impact of Pertussis on different regions and populations.

Global Prevalence: Pertussis is a global health concern, with outbreaks reported in many parts of the world. It remains a common cause of vaccine-preventable deaths in children, particularly in low-income countries with limited access to healthcare. According to the World Health Organization (WHO), an estimated 16 million cases of Pertussis occur worldwide annually, resulting in approximately 195,000 deaths, mainly among infants.

Transmission Routes: Pertussis is primarily transmitted through respiratory droplets when an infected person coughs or sneezes. The bacteria can also spread by direct contact with respiratory secretions. People infected with Pertussis are most contagious during the early stages of the illness when they have cold-like symptoms, such as a runny nose, sneezing, and mild cough. The contagious period usually lasts for about two weeks after the cough begins, but it can vary.

Affected Populations: Pertussis can affect individuals of all ages, but it is most severe in infants and young children. Babies under the age of one year who have not completed the full series of Pertussis vaccinations are at the highest risk of severe illness, hospitalization, and death. Adolescents and adults can also contract Pertussis, but their symptoms are often milder, making it more difficult to diagnose and identify the infection in these age groups. However, infected adolescents and adults can unknowingly transmit the disease to vulnerable populations, such as infants.

Key Statistics: - Before the introduction of widespread vaccination, Pertussis was a major cause of childhood mortality worldwide. - In recent years, there has been a resurgence of Pertussis cases in many countries, including those with high vaccination coverage rates. - According to the US Centers for Disease Control and Prevention (CDC), there were over 48,000 reported cases of Pertussis in the United States in 2019, with 16 deaths. - The incidence of Pertussis tends to be highest in infants younger than six months old, followed by a second peak in adolescents and adults.

Historical Context and Discovery: Pertussis has been recognized as a disease for centuries. The first recorded description of the illness dates back to the 16th century, and it was often referred to as the "choking cough" due to its characteristic symptoms. However, it was not until the late 19th century that the causative agent, *Bordetella pertussis*, was discovered by Jules Bordet and Octave Gengou in 1906. The development of effective vaccines against Pertussis in the 20th century has significantly reduced the burden of the disease in many parts of the world.

Major Risk Factors: Several risk factors increase the likelihood of Pertussis transmission: 1. Lack of vaccination or incomplete immunization: Individuals who have not received the recommended Pertussis vaccines or have not completed the full series of doses are at higher risk of contracting and spreading the disease. 2. Close contact with infected individuals: Living in close quarters or spending time with someone who has Pertussis increases the chances of transmission. 3. Age: Infants and young children who have not yet received the complete vaccine series are more susceptible to severe illness. 4. Reduced vaccine effectiveness: Over time, the immunity provided by Pertussis vaccines may wane, making previously vaccinated individuals susceptible to infection. This is particularly relevant in adolescents and adults who may require booster doses to maintain protection.

Impact on Different Regions and Populations: The impact of Pertussis varies across different regions and populations. In high-income countries with established vaccination programs, the incidence of Pertussis has decreased significantly. However, periodic outbreaks still occur due to waning immunity, vaccine hesitancy, and the introduction of new strains. In low-income countries with limited access to healthcare and vaccination, Pertussis remains a major public health concern, contributing to high mortality rates in infants. Additionally, regions with high population density and inadequate healthcare infrastructure are more prone to Pertussis outbreaks.

Overall, Pertussis is a global health issue that affects individuals of all ages. Vaccination remains the most effective strategy for preventing the disease and reducing its impact. Public health efforts should focus on ensuring high vaccination coverage rates, particularly among infants and vulnerable populations, as well as

promoting awareness of Pertussis symptoms and the importance of early diagnosis and treatment.

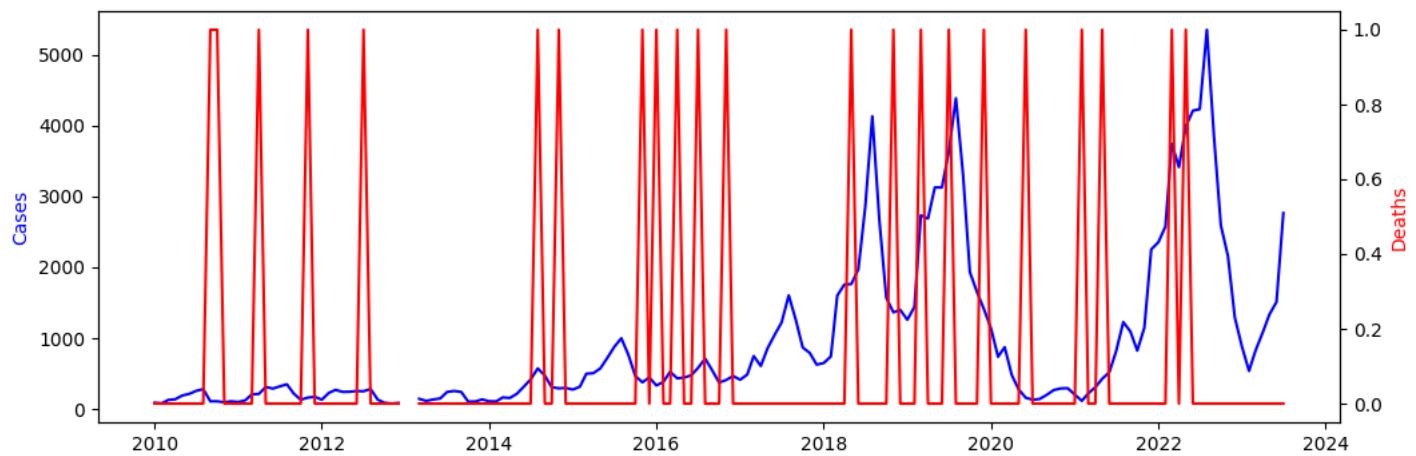


Figure 74: The Change of Pertussis Reports before 2023 July

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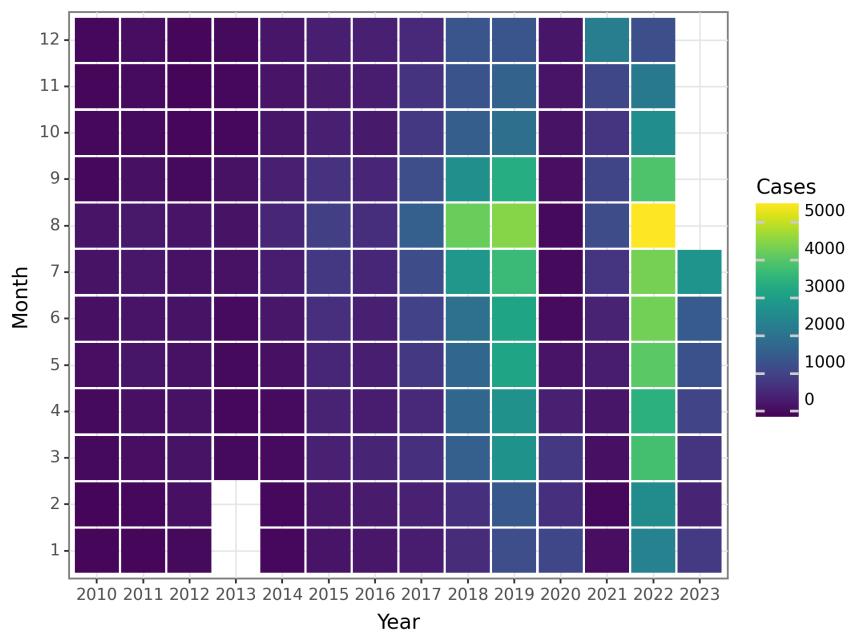


Figure 75: The Change of Pertussis Cases before 2023 July

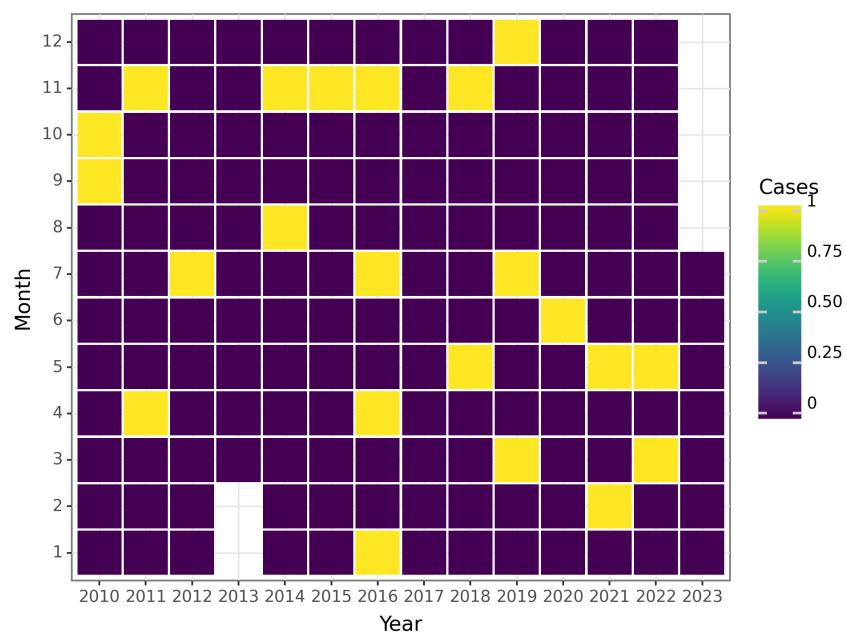


Figure 76: The Change of Pertussis Deaths before 2023 July

Diphtheria

Diphtheria is an infectious disease caused by the bacterium *Corynebacterium diphtheriae*. It primarily affects the respiratory system, leading to severe throat and upper respiratory tract inflammation. If left untreated, diphtheria can cause life-threatening complications, including heart and kidney failure.

Historical Context and Discovery: Diphtheria has been a major public health concern throughout history. The earliest descriptions of the disease date back to ancient Greece, where it was referred to as "diphthera" meaning "leather hide." However, it was not until the 19th century that diphtheria was recognized as a distinct clinical entity. In 1884, the German physician Edwin Klebs identified the bacterium responsible for the disease, and a year later, Emil von Behring discovered the diphtheria antitoxin, which became the first effective treatment for the disease.

Global Prevalence: Before the introduction of widespread vaccination programs, diphtheria was a leading cause of death, particularly in children. However, due to successful immunization efforts, global diphtheria incidence has significantly declined. According to the World Health Organization (WHO), there were an estimated 7,000 cases of diphtheria reported globally in 2019. The actual number of cases is likely higher due to underreporting in some regions.

Transmission Routes: Diphtheria is primarily transmitted through respiratory droplets from an infected person. It can also spread through direct contact with skin lesions or contaminated objects. Close and prolonged contact with an infected individual is necessary for transmission to occur.

Affected Populations: Diphtheria can affect individuals of any age, but it is most common in children and adolescents who are not fully vaccinated. Unimmunized or partially immunized individuals are at the highest risk of infection. Moreover, people living in crowded or unsanitary conditions, such as refugee camps or low-income communities, are more susceptible to the disease.

Risk Factors: Several risk factors contribute to the transmission of diphtheria. These include:

1. Lack of Vaccination: The most significant risk factor for diphtheria is the absence of immunization. Inadequate vaccination coverage allows the disease to persist and spread within communities.
2. Poor Hygiene Practices: Inadequate sanitation and poor hygiene, including improper disposal of respiratory secretions and lack of handwashing, increase the risk of diphtheria transmission.
3. Overcrowding: Living in crowded conditions facilitates the transmission of respiratory infections, including diphtheria.

Impact on Different Regions and Populations: The burden of diphtheria varies across regions and populations. Low- and middle-income countries with limited access to healthcare and vaccination programs are more affected by the disease. In certain regions, diphtheria outbreaks occur periodically, often in areas with low vaccination rates or during humanitarian crises.

In recent years, countries in South Asia, Eastern Europe, and the former Soviet Union have experienced diphtheria outbreaks. For example, in 2018, there was a significant outbreak in Yemen, where the healthcare system was severely disrupted due to ongoing conflict.

Demographics Affected: Diphtheria affects all age groups, but children under five years old are particularly vulnerable. Older adults and individuals with weakened immune systems are also at higher risk of severe complications.

Variations in Prevalence Rates: Diphtheria prevalence rates vary across regions depending on vaccination coverage and healthcare infrastructure. Countries with robust immunization programs have consistently low incidence rates, while those with limited access to vaccines may experience periodic outbreaks. In conclusion, diphtheria is an infectious disease that has significantly declined globally due to vaccination efforts. However, it remains a concern in regions with inadequate immunization coverage and poor healthcare infrastructure. Vaccination, good hygiene practices, and prompt treatment of cases are essential for preventing the transmission and impact of diphtheria.

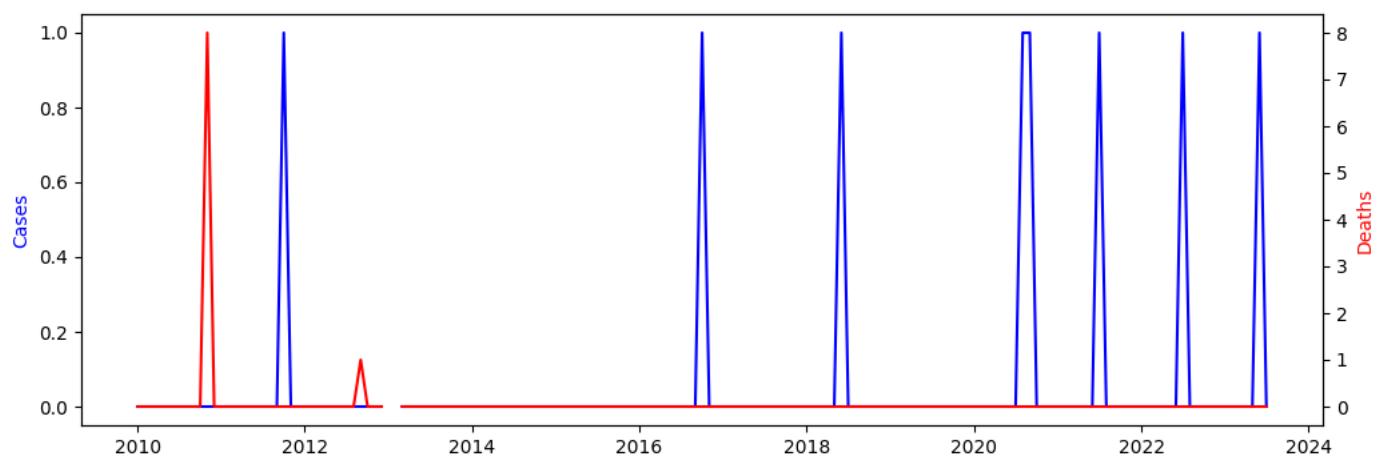


Figure 77: The Change of Diphtheria Reports before 2023 July

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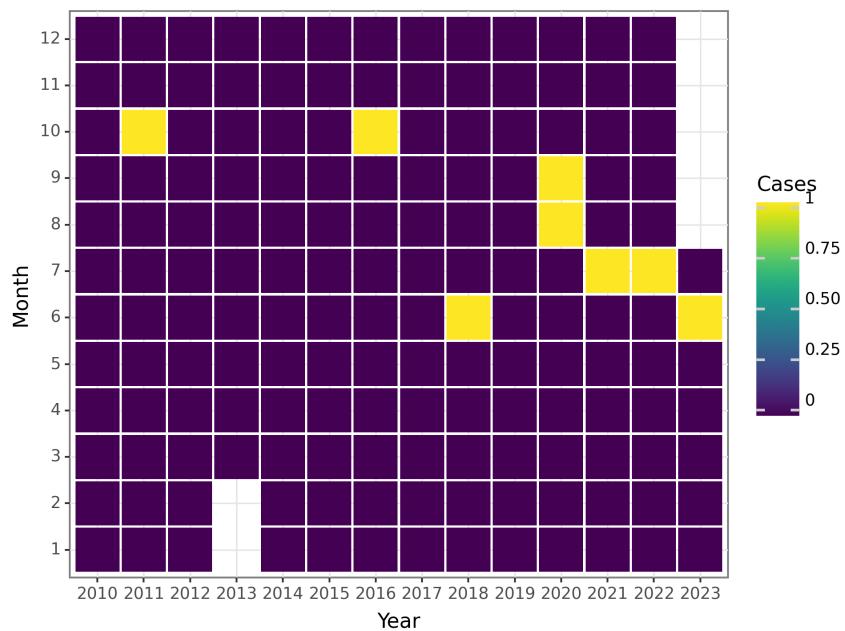


Figure 78: The Change of Diphtheria Cases before 2023 July

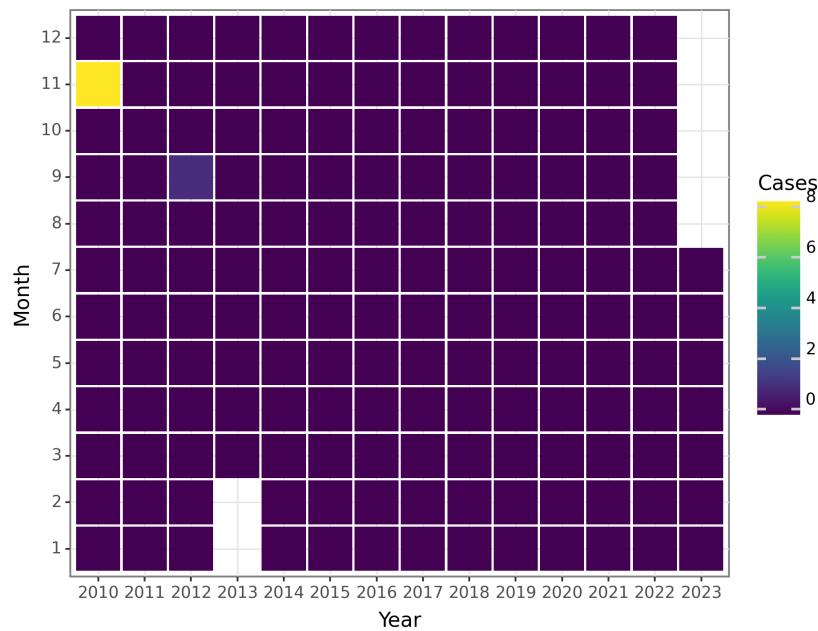


Figure 79: The Change of Diphtheria Deaths before 2023 July

Neonatal tetanus

Neonatal tetanus is a serious and potentially fatal disease that predominantly affects newborn babies. It is caused by the toxin produced by the bacterium *Clostridium tetani*, which enters the body through unhygienic practices during childbirth, particularly in unsanitary conditions. This disease is preventable through vaccination and proper umbilical cord care.

Historical Context and Discovery: The history of neonatal tetanus dates back centuries, with recorded cases as early as the 19th century. However, it was not until the late 19th and early 20th centuries that the link between contaminated umbilical cord practices and the disease was established. In the early 20th century, the development and use of tetanus antitoxin significantly reduced the mortality rates associated with neonatal tetanus. Further advancements in understanding the disease and the introduction of tetanus toxoid vaccination have helped in combating this disease globally.

Global Prevalence: Neonatal tetanus is primarily a problem in low-income countries with limited access to healthcare and poor sanitation. According to the World Health Organization (WHO), it is estimated that around 30,000 newborns die each year globally from neonatal tetanus. However, the actual number of cases may be higher due to underreporting and limited data availability in some regions.

Transmission Routes: The transmission of neonatal tetanus occurs through the contamination of umbilical cord stumps with spores of *Clostridium tetani*. This contamination usually happens during unhygienic childbirth practices, such as using unsterilized instruments, applying unclean substances to the umbilical cord stump, or improper cord care. The spores can enter the body through the cut umbilical cord or any open wound and produce toxins that affect the nervous system.

Affected Populations: Neonatal tetanus primarily affects newborn babies during the first 28 days of life, hence the term "neonatal." The disease is more prevalent in areas with limited access to healthcare, poor sanitation, and low vaccination coverage. It is more common in rural areas and among populations with low socioeconomic status. The risk is higher in regions where traditional birth attendants or untrained individuals assist in deliveries, as they may lack knowledge of proper hygiene practices.

Key Statistics: - Approximately 30,000 neonatal tetanus deaths occur annually worldwide. - The global incidence rate of neonatal tetanus is estimated to be around 1.2 cases per 1,000 live births. - Sub-Saharan Africa and South Asia account for the majority of neonatal tetanus cases. - Around 59% of neonatal tetanus cases occur in just six countries: Nigeria, Pakistan, Democratic Republic of the Congo, Ethiopia, Afghanistan, and India. - The case fatality rate of neonatal tetanus, without treatment, is estimated to be 90-100%.

Risk Factors: Several risk factors contribute to the transmission of neonatal tetanus: 1. Lack of maternal immunization: Pregnant women who have not been immunized against tetanus are more likely to have infants at risk of developing neonatal tetanus. 2. Unhygienic birth practices: Deliveries conducted in unsanitary conditions without proper sterilization of instruments and umbilical cord care increase the risk of contamination. 3. Traditional birth practices: In some cultures, traditional birth attendants or untrained individuals may perform deliveries with limited knowledge of hygienic practices. 4. Limited access to healthcare: In regions with poor healthcare infrastructure, access to antenatal care, immunization, and skilled birth attendants is limited. 5. Low vaccination coverage: Inadequate coverage of tetanus toxoid vaccination among women of childbearing age increases the risk of neonatal tetanus.

Impact on Different Regions and Populations: The impact of neonatal tetanus varies across regions and populations. Sub-Saharan Africa and South Asia have the highest burden of the disease, accounting for the majority of cases and deaths. Within these regions, the disease is more prevalent in rural areas with poor healthcare infrastructure and limited access to immunization. Additionally, populations with low socioeconomic status and cultural practices that involve unhygienic delivery practices are more affected. Efforts to combat neonatal tetanus have focused on improving immunization coverage, promoting clean delivery practices, and providing access to skilled birth attendants.

In conclusion, neonatal tetanus remains a significant public health concern, particularly in low-income countries with inadequate healthcare infrastructure and poor sanitation. Vaccination, improvement in birth practices, and increased access to healthcare services are essential to reducing the prevalence and impact of this preventable disease.

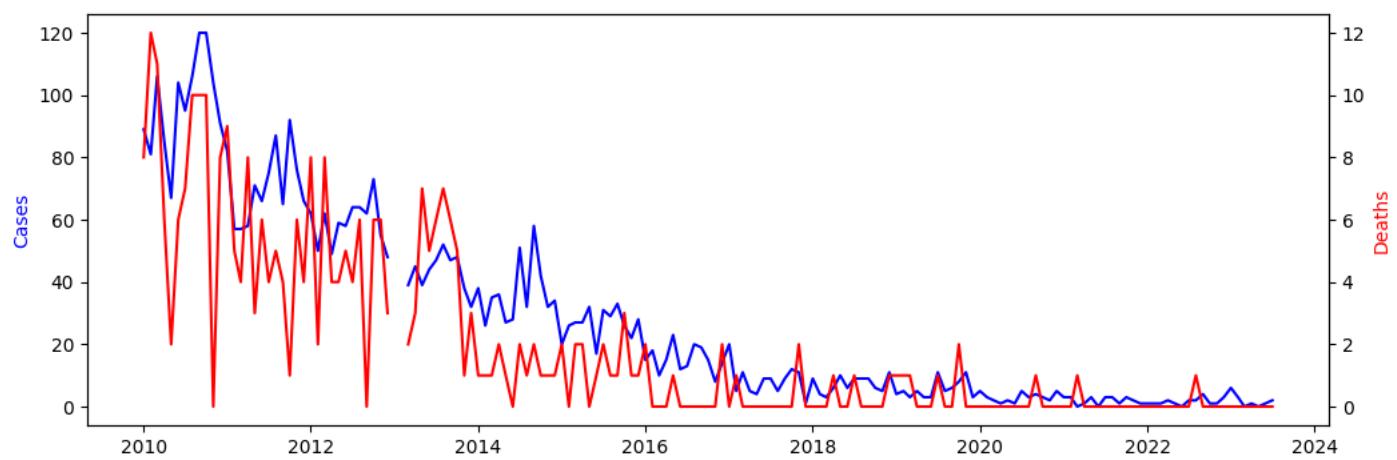


Figure 80: The Change of Neonatal tetanus Reports before 2023 July

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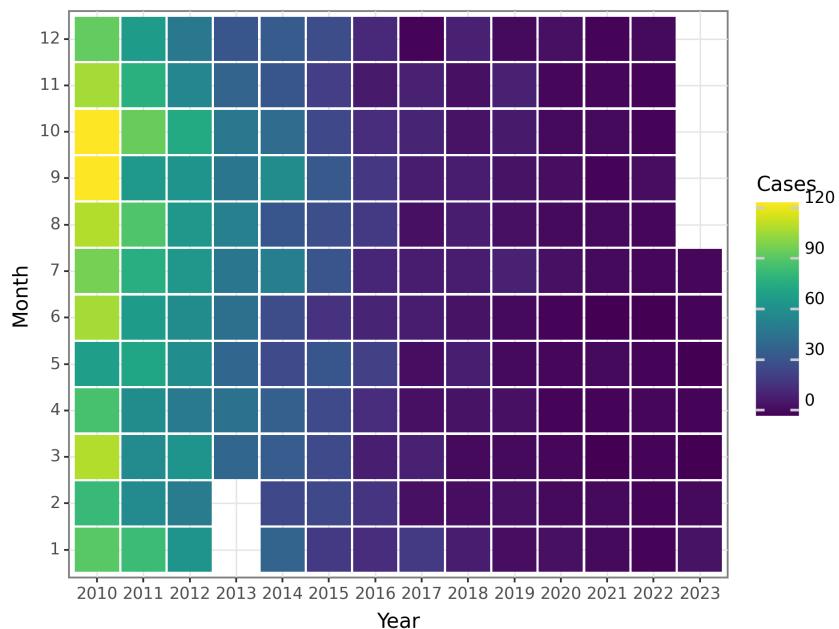


Figure 81: The Change of Neonatal tetanus Cases before 2023 July

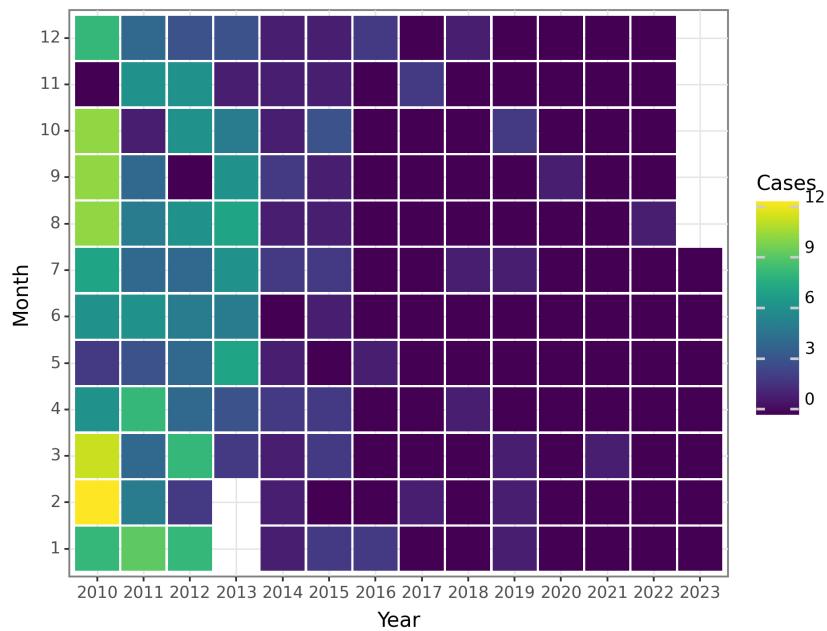


Figure 82: The Change of Neonatal tetanus Deaths before 2023 July

Scarlet fever

Scarlet fever is an infectious disease caused by group A Streptococcus bacteria, specifically *Streptococcus pyogenes*. It primarily affects children aged 5 to 15 years but can also occur in adults. Scarlet fever is characterized by a red rash, high fever, sore throat, and strawberry tongue.

Historical Context and Discovery: Scarlet fever has been recognized as a distinct disease since ancient times. However, its association with *Streptococcus pyogenes* was not discovered until the late 19th century when German physician Gerhard Domagk identified the bacteria's involvement in the disease. Prior to antibiotic treatment, scarlet fever was a leading cause of death among children.

Global Prevalence: Scarlet fever is present worldwide, but its prevalence varies across regions and seasons. It is more common in temperate climates and often has a seasonal pattern, with increased cases during late winter and spring. In recent years, there has been a global resurgence of scarlet fever, with outbreaks reported in several countries.

Transmission Routes: Scarlet fever is primarily transmitted through respiratory droplets when an infected person coughs or sneezes. It can also spread indirectly through contact with contaminated objects, such as toys, doorknobs, or utensils. Additionally, carriers of *Streptococcus pyogenes* who do not show symptoms can transmit the bacteria.

Affected Populations: Children aged 5 to 15 years are most commonly affected by scarlet fever. However, it can also occur in younger children and adults. Factors such as close contact in crowded environments, poor hygiene practices, and lack of immunity contribute to the susceptibility of certain populations.

Key Statistics: Exact global prevalence rates of scarlet fever are difficult to determine due to variations in reporting systems and diagnostic practices. However, in recent years, several countries have reported an increase in scarlet fever cases. For example, in the United Kingdom, the number of cases has risen steadily since 2014, reaching the highest levels in several decades in 2016 and 2017.

Major Risk Factors for Transmission: 1. Close contact with an infected person: The bacteria spread easily in settings such as schools, daycare centers, and households where individuals are in close proximity.

2. Poor hygiene practices: Lack of handwashing, sharing personal items, and not covering the mouth and nose while coughing or sneezing increase the risk of transmission.

3. Crowded environments: Living in densely populated areas increases the likelihood of exposure to the bacteria.

4. Lack of immunity: Individuals with weakened immune systems or those who have not previously been exposed to the bacteria are more susceptible to scarlet fever.

Impact on Different Regions and Populations: The prevalence and impact of scarlet fever can vary across regions and populations. Factors such as access to healthcare, socioeconomic conditions, and vaccination coverage influence the disease burden. In some developing countries, scarlet fever remains a significant public health concern due to limited resources for diagnosis, treatment, and prevention. Additionally, variations in prevalence rates and affected demographics can occur within countries and even localized regions.

In conclusion, scarlet fever is an infectious disease caused by *Streptococcus pyogenes*. It primarily affects children but can occur in adults as well. The disease has a global presence, with variations in prevalence rates across regions and seasons. Transmission occurs through respiratory droplets and contact with contaminated objects. Risk factors for transmission include close contact, poor hygiene, crowded environments, and lack of immunity. The impact of scarlet fever varies across populations and regions, influenced by factors such as healthcare access, socioeconomic conditions, and vaccination coverage.

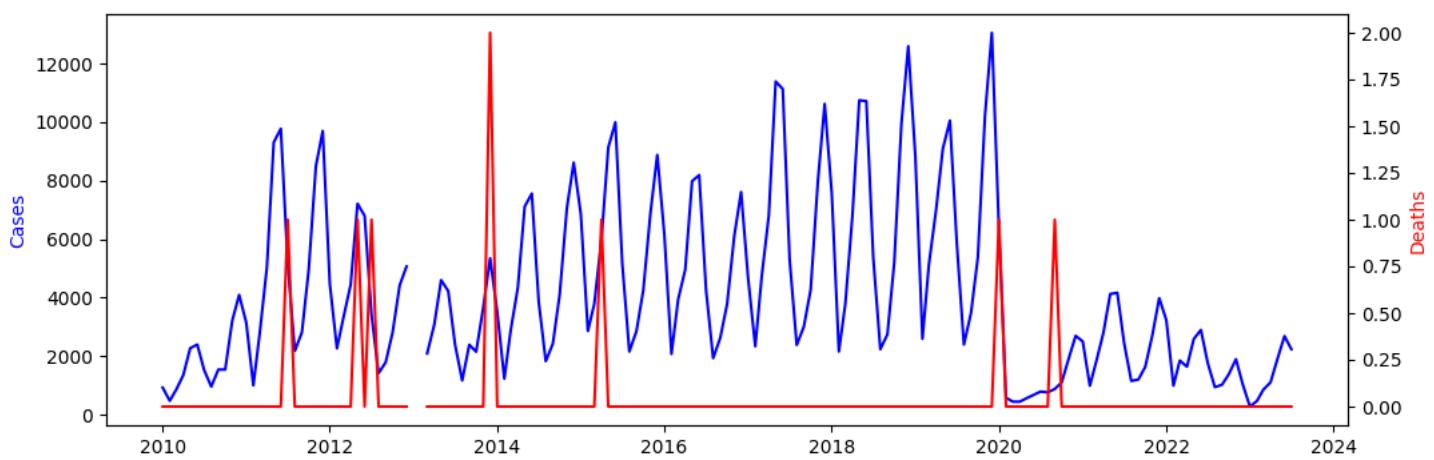


Figure 83: The Change of Scarlet fever Reports before 2023 July

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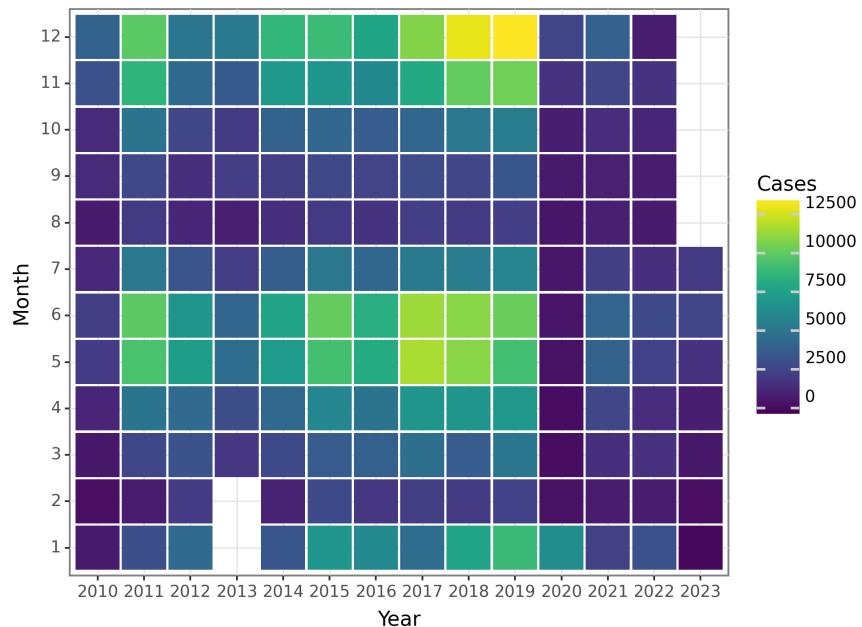


Figure 84: The Change of Scarlet fever Cases before 2023 July

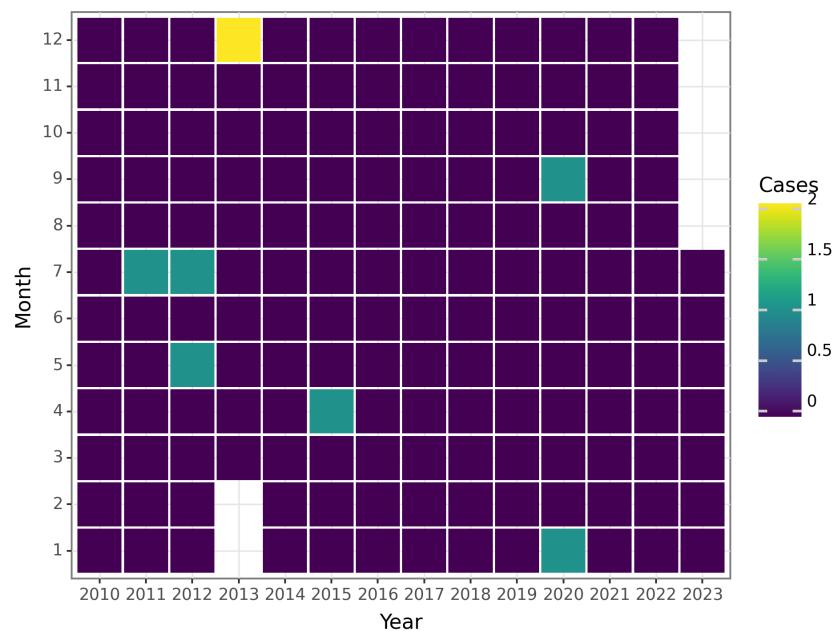


Figure 85: The Change of Scarlet fever Deaths before 2023 July

Brucellosis

Brucellosis is a zoonotic infectious disease caused by bacteria of the genus Brucella. It affects various animal species, including cattle, goats, sheep, pigs, and dogs, and can also be transmitted to humans through direct contact with infected animals or consumption of contaminated animal products. Brucellosis has a global distribution, with different prevalence rates and affected populations in different regions.

Historical Context and Discovery: Brucellosis was first recognized as a human disease in the 19th century when British army surgeon David Bruce identified the causative agent in Malta fever during the Crimean War. Later, other species of Brucella were discovered, including *B. abortus*, *B. melitensis*, *B. suis*, and *B. canis*. The disease was prevalent in many parts of the world before effective control measures were implemented.

Global Prevalence: Brucellosis remains a significant public health concern in many countries, especially in low and middle-income regions. According to the World Health Organization (WHO), brucellosis is endemic in areas of the Mediterranean basin, the Middle East, Central and South America, sub-Saharan Africa, and parts of Asia. However, the true global prevalence is challenging to determine due to underreporting and lack of consistent surveillance systems.

Transmission Routes: The primary modes of transmission of Brucella bacteria to humans include direct contact with infected animals (through mucous membranes, broken skin, or inhalation) and consumption of unpasteurized milk or dairy products from infected animals. Additionally, occupational exposure in high-risk professions such as veterinarians, farmers, and slaughterhouse workers is a significant route of transmission.

Affected Populations: Brucellosis can affect individuals of all ages, genders, and socioeconomic backgrounds. However, certain populations are more vulnerable, including farmers, livestock workers, veterinarians, and individuals consuming raw dairy products from infected animals. People living in close proximity to animals, such as rural communities or nomadic populations, also have an increased risk of infection.

Key Statistics: According to the WHO, an estimated 500,000 cases of human brucellosis occur annually worldwide. However, this number is likely an underestimate due to underdiagnosis and underreporting. The true burden of the disease is believed to be much higher, especially in endemic regions.

Risk Factors: Several risk factors contribute to the transmission of brucellosis. These include occupational exposure to infected animals or their tissues, consumption of unpasteurized dairy products, close contact with infected animals (especially during parturition or abortion), and travel to endemic regions. Lack of awareness about the disease, inadequate veterinary control measures, and poor sanitation practices also increase the risk of transmission.

Impact on Regions and Populations: The prevalence of brucellosis varies across different regions and populations. It is particularly common in regions with large livestock populations and where unpasteurized dairy products are consumed. The disease can have significant economic consequences due to reduced productivity in livestock and human health costs. In endemic areas, brucellosis can cause long-term debilitating symptoms, such as fever, joint pain, fatigue, and psychiatric manifestations, leading to decreased quality of life and impaired productivity.

In conclusion, brucellosis is a globally distributed zoonotic disease with varying prevalence rates and affected populations across regions. It is primarily transmitted through contact with infected animals or consumption of contaminated animal products. Risk factors include occupational exposure, consumption of raw dairy products, close contact with infected animals, and travel to endemic regions. The impact of brucellosis on different regions and populations can be significant, both in terms of public health and economic consequences.

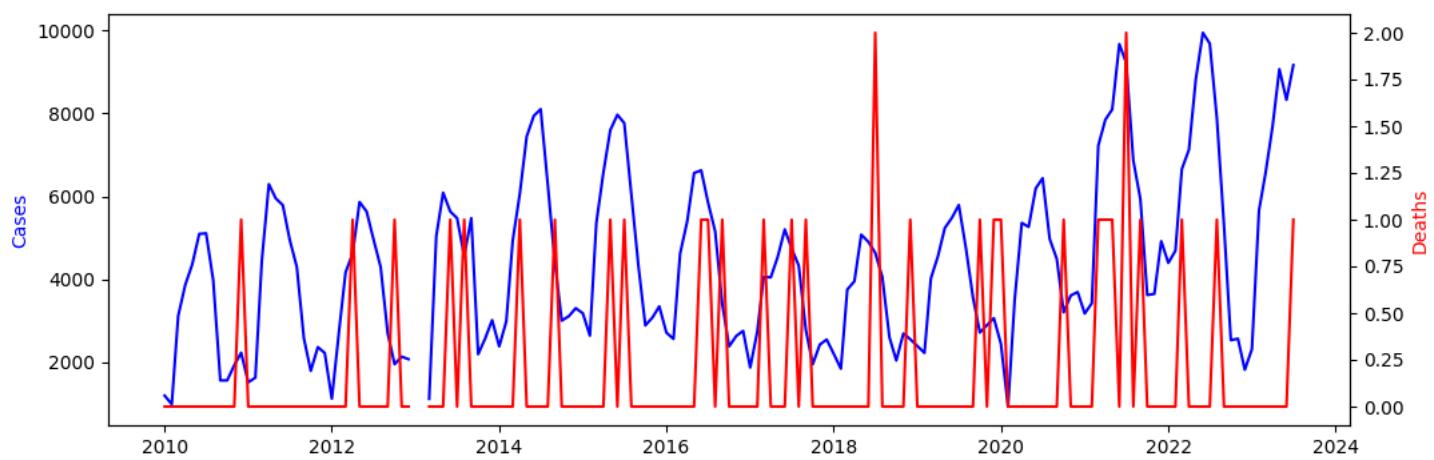


Figure 86: The Change of Brucellosis Reports before 2023 July

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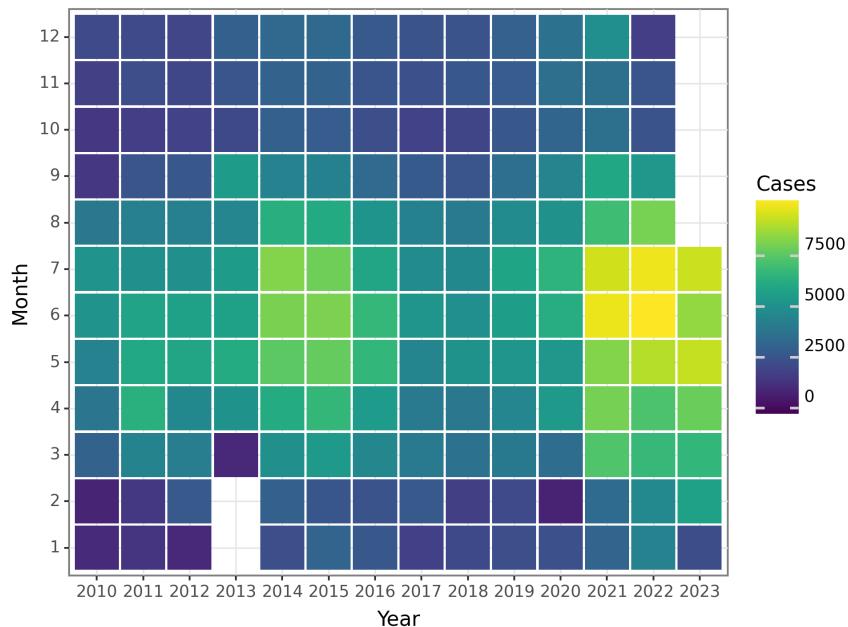


Figure 87: The Change of Brucellosis Cases before 2023 July

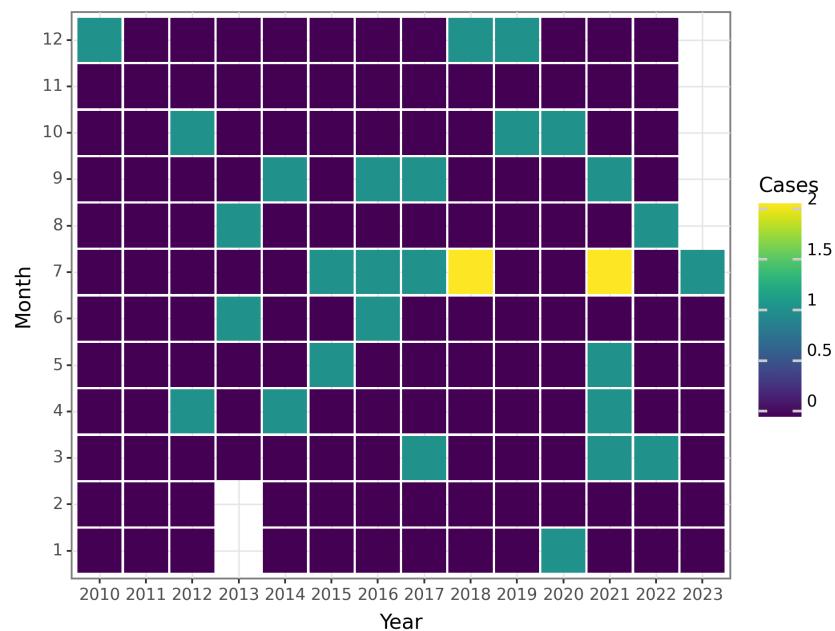


Figure 88: The Change of Brucellosis Deaths before 2023 July

Gonorrhea

Gonorrhea is a sexually transmitted infection (STI) caused by the bacteria *Neisseria gonorrhoeae*. It is one of the most common bacterial STIs worldwide, affecting both men and women. In this comprehensive overview, we will discuss the epidemiology of gonorrhea, its global prevalence, transmission routes, affected populations, key statistics, historical context, discovery, major risk factors, and the impact of the infection on different regions and populations.

Epidemiology: Gonorrhea is a global health concern, with an estimated 87 million new cases reported annually. However, due to underreporting and limited surveillance systems in some countries, the actual number of cases is likely higher. It is more prevalent in low- and middle-income countries compared to high-income countries.

Transmission Routes: Gonorrhea primarily spreads through sexual contact, including vaginal, anal, and oral sex. It can be transmitted between both heterosexual and homosexual individuals. The bacteria can infect the cervix, urethra, rectum, throat, and eyes. Vertical transmission from infected mother to newborn during childbirth is also possible.

Affected Populations: Gonorrhea affects individuals of all ages, races, and socioeconomic backgrounds. However, certain populations are more susceptible to the infection. These include sexually active adolescents and young adults, men who have sex with men (MSM), individuals with multiple sexual partners, individuals engaging in unprotected sex, and individuals with a history of other STIs.

Key Statistics: - In 2016, an estimated 87 million new cases of gonorrhea occurred worldwide. - According to the World Health Organization (WHO), the global prevalence of gonorrhea was 0.9% among men and 0.8% among women in 2016. - The prevalence of gonorrhea varies significantly between regions and countries, with higher rates observed in sub-Saharan Africa, Southeast Asia, and the Americas. - Antibiotic resistance is a growing concern, with approximately 81% of countries reporting gonorrhea strains resistant to at least one commonly used antibiotic.

Historical Context and Discovery: Gonorrhea has been recognized as a sexually transmitted infection for centuries. In ancient Greece, it was referred to as "the clap" due to the practice of clapping the penis to expel pus. The bacteria responsible for gonorrhea, *Neisseria gonorrhoeae*, was first described by Albert Neisser in 1879. The discovery of antibiotics in the mid-20th century revolutionized the treatment of gonorrhea, but the emergence of antibiotic-resistant strains poses a significant challenge.

Major Risk Factors: - Unprotected sexual intercourse: Engaging in sexual activity without using condoms increases the risk of gonorrhea transmission. - Multiple sexual partners: Having multiple partners increases the likelihood of exposure to infected individuals. - History of other STIs: Individuals with a history of STIs, such as chlamydia or syphilis, are at a higher risk of contracting gonorrhea. - MSM: Men who have sex with men are at an increased risk of gonorrhea due to the higher prevalence of the infection within this population.

Impact on Different Regions and Populations: The prevalence of gonorrhea varies across regions due to factors such as cultural norms, access to healthcare, and education on safe sexual practices. Sub-Saharan Africa has the highest burden of gonorrhea, with prevalence rates exceeding 5% among some populations. In high-income countries, rates tend to be lower but are still significant, especially among marginalized populations such as MSM and socioeconomically disadvantaged individuals.

In conclusion, gonorrhea is a global public health concern with high prevalence rates, varying impact on different regions and populations, and increasing antibiotic resistance. It affects individuals of all ages and genders but is more prevalent among certain populations. Understanding the epidemiology of gonorrhea, including its transmission routes, affected populations, and risk factors, is crucial for developing effective prevention strategies and providing appropriate healthcare interventions.

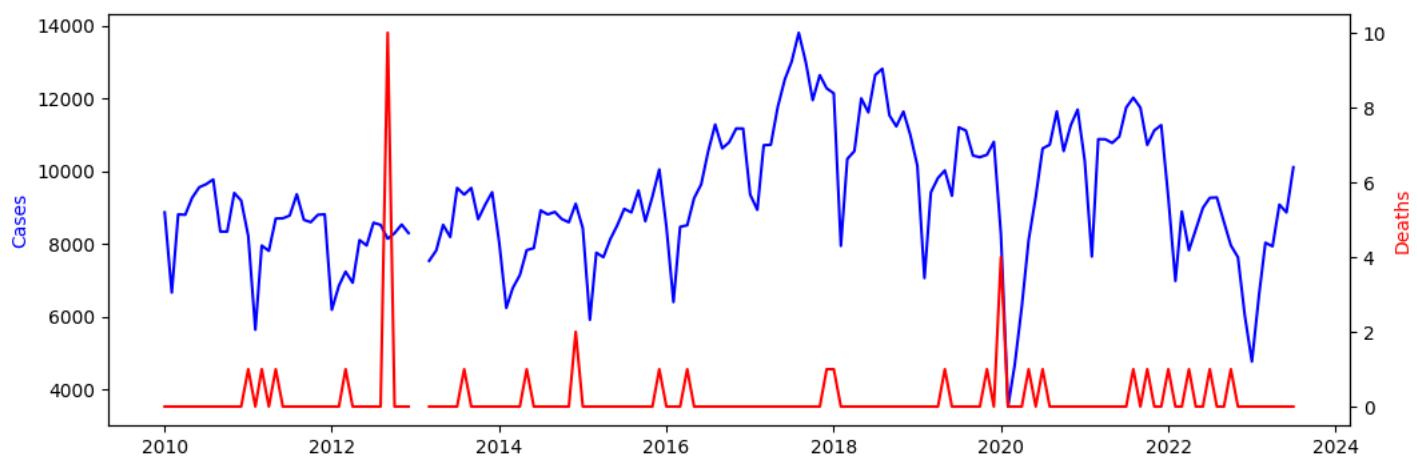


Figure 89: The Change of Gonorrhea Reports before 2023 July

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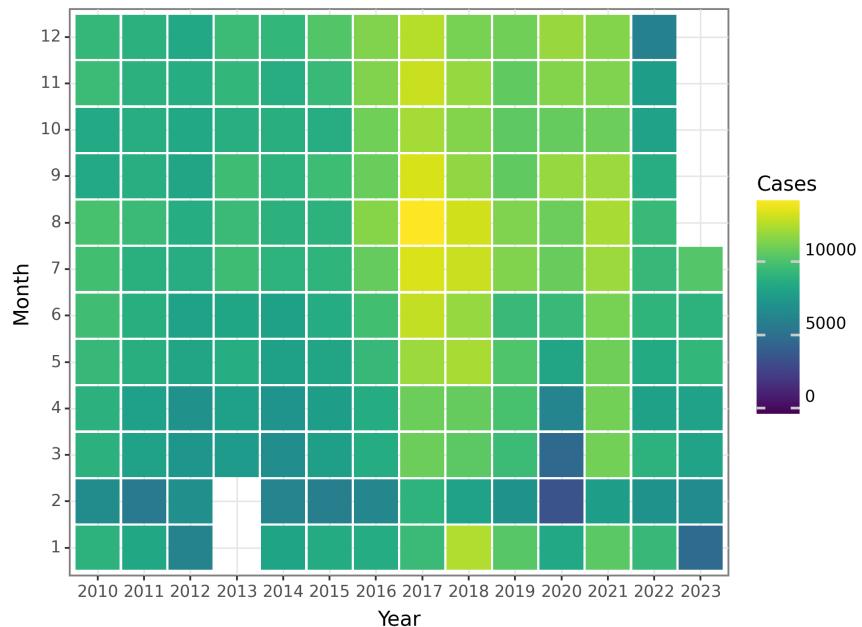


Figure 90: The Change of Gonorrhea Cases before 2023 July

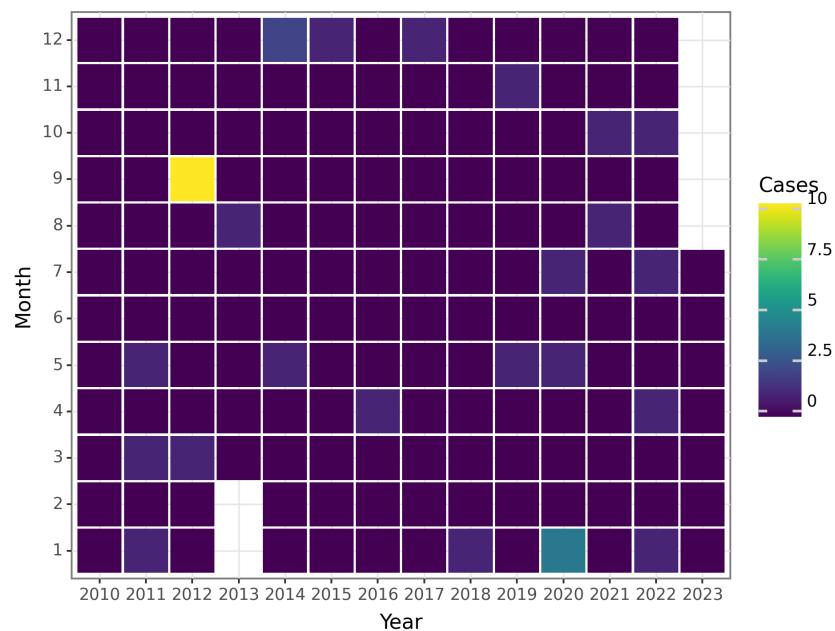


Figure 91: The Change of Gonorrhea Deaths before 2023 July

Syphilis

Syphilis is a sexually transmitted infection (STI) caused by the bacterium *Treponema pallidum*. It has been a significant global health concern for centuries. This overview will provide information on the epidemiology of syphilis, including its global prevalence, transmission routes, affected populations, key statistics, historical context, discovery, major risk factors, and the impact of syphilis on different regions and populations.

Prevalence: Syphilis is a global health problem, with an estimated 6.3 million new cases reported annually. However, the actual number of cases is believed to be much higher due to under-reporting and lack of access to healthcare in some regions. The highest prevalence rates are found in sub-Saharan Africa, followed by the Americas, Eastern Europe, and Asia.

Transmission Routes: Syphilis is primarily transmitted through sexual contact, including vaginal, anal, and oral sex. It can also be transmitted from mother to child during pregnancy or childbirth, known as congenital syphilis. In rare cases, the bacterium can be transmitted through blood transfusions or contaminated needles.

Affected Populations: Syphilis can affect individuals of any age, gender, or sexual orientation. However, certain populations are at a higher risk. These include men who have sex with men (MSM), individuals with multiple sexual partners, commercial sex workers, people who use drugs, and those living in socioeconomically disadvantaged areas. Additionally, pregnant women with syphilis can transmit the infection to their unborn child.

Key Statistics: In 2019, there were approximately 2.8 million reported cases of syphilis globally. The highest burden of syphilis is found in low- and middle-income countries. The World Health Organization (WHO) estimates that 1 in 200 pregnancies worldwide is affected by syphilis, leading to around 200,000 stillbirths or infant deaths annually.

Historical Context and Discovery: Syphilis has a long history, with the first recorded outbreak occurring during the late 15th century in Europe. It was initially referred to as the "Great Pox" and was believed to have been brought to Europe by Christopher Columbus' crew from the Americas. The exact origin and historical context of syphilis are still debated among researchers.

Major Risk Factors: Several risk factors contribute to the transmission of syphilis. Unprotected sexual intercourse, having multiple sexual partners, engaging in high-risk sexual behaviors (such as anal sex), and engaging in commercial sex work increase the likelihood of contracting syphilis. Substance abuse, including alcohol and drug use, can also increase the risk of acquiring syphilis due to impaired judgment and risky sexual behaviors.

Impact on Regions and Populations: The impact of syphilis varies across different regions and populations. In some high-income countries, syphilis rates have been declining or remain relatively low due to effective prevention and treatment programs. However, in many low- and middle-income countries, syphilis remains a significant public health issue due to limited access to healthcare, inadequate screening and treatment programs, and social stigma surrounding STIs. Certain populations, such as MSM and sex workers, continue to face disproportionate burdens of syphilis.

Variation in Prevalence Rates and Affected Demographics: Syphilis prevalence rates can vary widely between regions and demographics. In general, higher rates are observed in urban areas, areas with high levels of poverty, and regions with limited healthcare resources. Within specific populations, such as MSM, syphilis prevalence rates can be significantly higher compared to the general population. Other factors such as age, race, and socioeconomic status may also contribute to variations in prevalence rates and affected demographics.

In conclusion, syphilis remains a global health concern with significant variations in prevalence rates and impacted populations. Efforts to prevent and control syphilis should focus on comprehensive sexual education, access to healthcare services, widespread testing and treatment programs, and addressing social determinants of health to reduce the burden of this infectious disease.

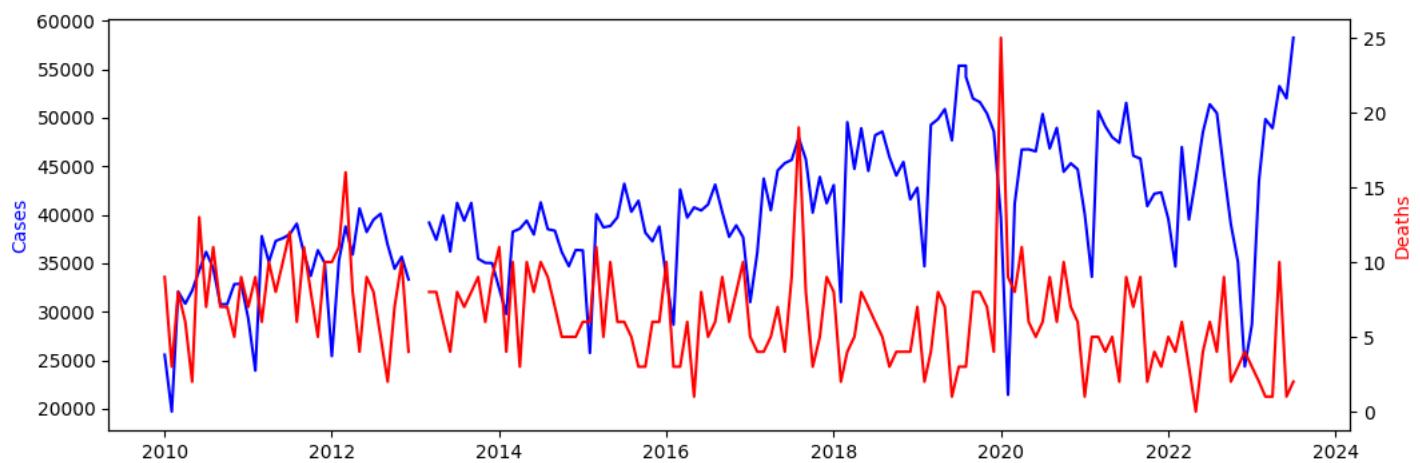


Figure 92: The Change of Syphilis Reports before 2023 July

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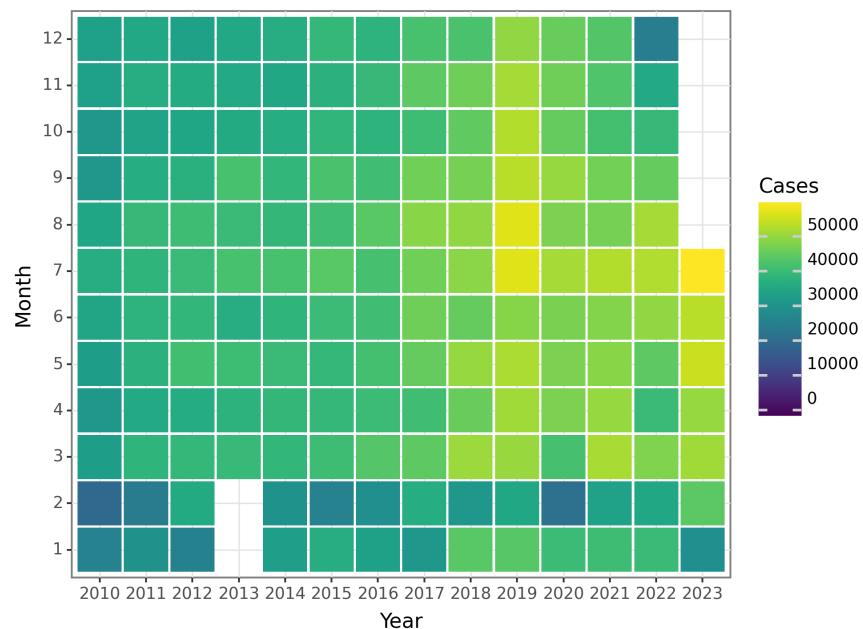


Figure 93: The Change of Syphilis Cases before 2023 July

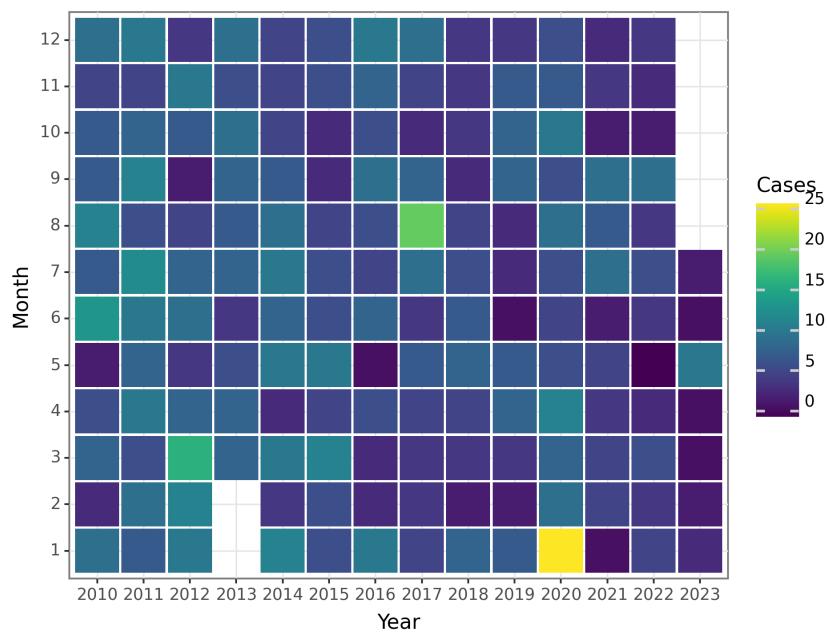


Figure 94: The Change of Syphilis Deaths before 2023 July

Leptospirosis

Leptospirosis is a zoonotic disease caused by bacteria of the genus *Leptospira*. It is a widespread disease that affects both humans and animals worldwide. Leptospirosis is considered a neglected tropical disease and has a significant impact on public health in many regions.

Historical Context and Discovery: Leptospirosis was first described in the late 19th century by Adolf Weil, a German physician, who recognized a disease characterized by jaundice and kidney failure in his patients. Later, in 1907, two Japanese scientists, Inada and Ido, identified the causative agent of the disease as spirochetes, which they named *Leptospira icterohaemorrhagiae*. Since then, several other *Leptospira* species have been identified as causing human infection.

Global Prevalence: Leptospirosis has a global distribution, with higher prevalence in tropical and subtropical regions. It is estimated that there are around 1 million cases of severe leptospirosis worldwide each year, resulting in approximately 60,000 deaths. However, the actual number of cases is likely much higher due to underreporting and misdiagnosis. The disease is more common in rural areas where there is close contact between humans, animals, and contaminated environments.

Transmission Routes: Leptospirosis is primarily transmitted through contact with the urine of infected animals, especially rodents, which act as reservoir hosts. The bacteria can enter the body through cuts or abrasions on the skin, or through mucous membranes such as the eyes, nose, and mouth. Infection can also occur through ingestion of contaminated food or water, especially in flood-prone areas. Occupational exposure is a significant risk, with farmers, veterinarians, sewage workers, and others who work in contact with animals or contaminated environments being at higher risk.

Affected Populations: Leptospirosis can affect people of all ages and genders. However, certain populations are more susceptible to infection. These include individuals living in rural areas with poor sanitation and hygiene practices, people participating in outdoor activities such as camping or adventure sports, and individuals with occupations involving animal contact or exposure to contaminated environments.

Key Statistics: 1. Leptospirosis is estimated to cause over 1 million cases and 60,000 deaths worldwide each year. 2. The case fatality rate can vary widely, ranging from less than 5% to over 30%, depending on the severity of the disease and access to healthcare. 3. Men are more commonly affected by severe leptospirosis than women, possibly due to occupational exposure. 4. Outbreaks of leptospirosis often occur after heavy rainfall or floods, as these events increase the risk of exposure to contaminated water and soil.

Major Risk Factors: 1. **Occupational exposure:** People working in occupations involving contact with animals or contaminated environments, such as farmers, agricultural workers, and sewer workers, have a higher risk of infection. 2. **Recreational activities:** Engaging in outdoor activities such as camping, hiking, or swimming in contaminated water sources can increase the risk of leptospirosis. 3. **Poor sanitation and hygiene:** Lack of access to clean water, inadequate sanitation facilities, and poor personal hygiene practices increase the risk of infection. 4. **Urbanization and climate change:** As urban areas expand and climate change affects weather patterns, there is an increased risk of human-animal interactions and exposure to contaminated environments.

Impact on Different Regions and Populations: The prevalence of leptospirosis varies across regions and populations. In tropical and subtropical regions, where the disease is endemic, leptospirosis is a significant public health concern. The disease burden is often higher in rural areas with poor sanitation infrastructure. Outbreaks are more common after heavy rainfall or floods, which can lead to increased cases in both urban and rural areas. In urban settings, vulnerable populations such as slum dwellers may be at higher risk due to overcrowding, inadequate housing, and limited access to clean water and sanitation.

Additionally, certain occupations, such as agriculture and sewage work, may have higher rates of infection due to occupational exposure.

In conclusion, leptospirosis is a globally prevalent zoonotic disease that affects humans and animals. It is primarily transmitted through contact with infected animal urine or contaminated environments and is associated with various risk factors. The impact of leptospirosis varies across regions and populations, with higher prevalence in tropical and subtropical areas and among individuals with certain occupations or living conditions. Improved sanitation, hygiene practices, and public health interventions are essential for reducing the burden of leptospirosis worldwide.

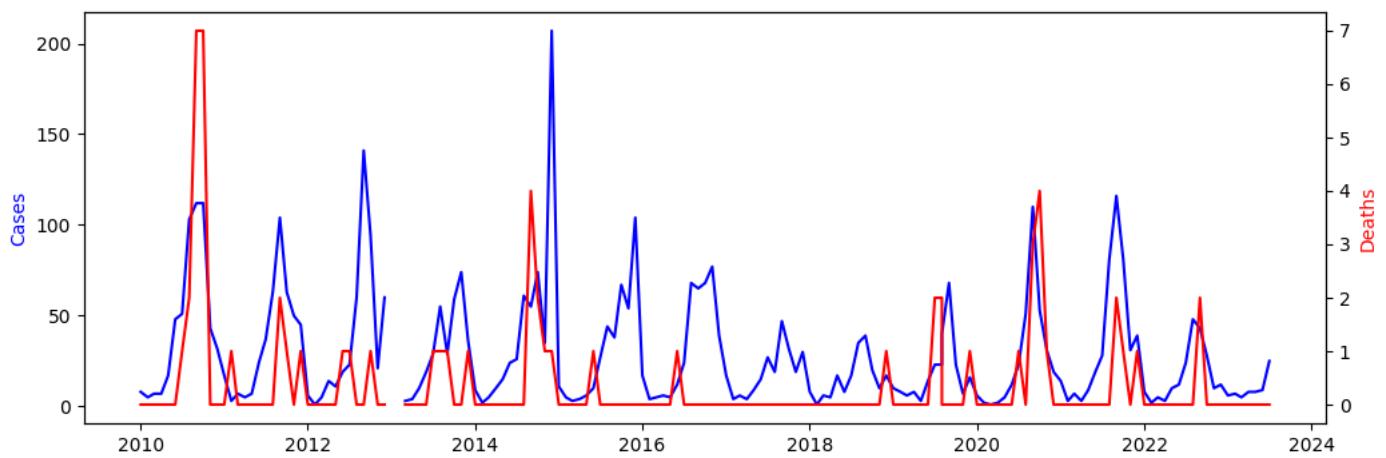


Figure 95: The Change of Leptospirosis Reports before 2023 July

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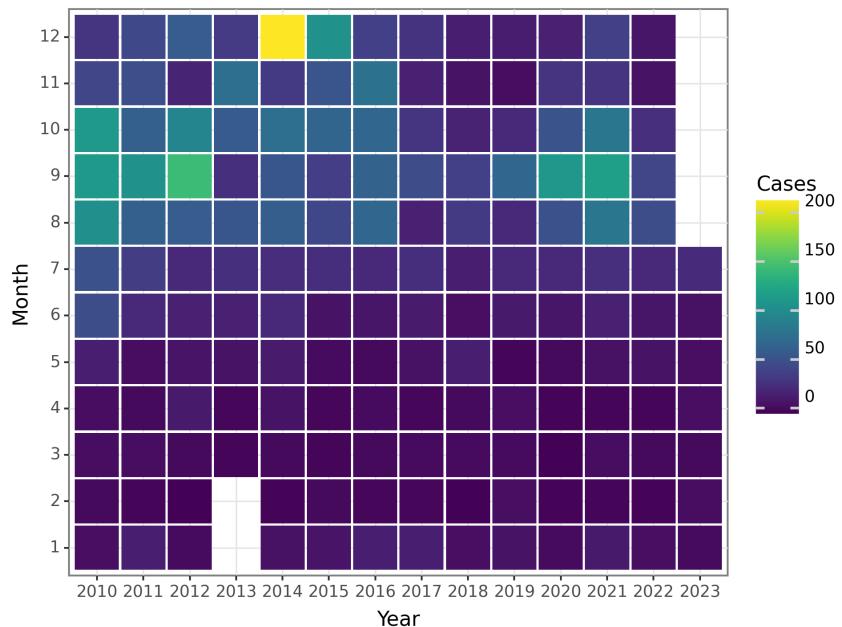


Figure 96: The Change of Leptospirosis Cases before 2023 July

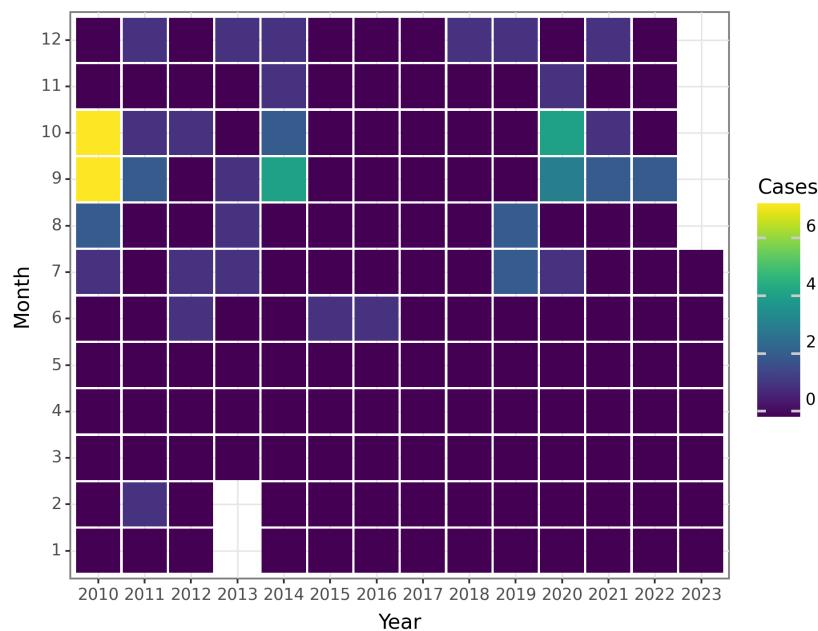


Figure 97: The Change of Leptospirosis Deaths before 2023 July

Schistosomiasis

Schistosomiasis, also known as bilharzia, is a parasitic disease caused by blood flukes of the genus *Schistosoma*. It is estimated that over 240 million people worldwide are affected by this disease, with approximately 700 million people at risk of infection. Schistosomiasis is primarily found in tropical and subtropical regions, especially in poor communities without access to clean water and adequate sanitation. The disease is transmitted through contact with contaminated freshwater where certain species of freshwater snails act as intermediate hosts for the parasite. When individuals come into contact with infested water, the parasite's larvae, known as cercariae, penetrate the skin and migrate to the blood vessels surrounding the intestines or bladder. There, they mature into adult worms, which can live in the host for several years, producing eggs that are excreted in the urine or feces, perpetuating the transmission cycle.

Schistosomiasis affects a wide range of populations, but the highest burden is found among children and young adults who are exposed to infested water during daily activities such as bathing, swimming, or farming. Occupational exposure is also common among farmers, fishermen, and irrigation workers. Additionally, women and girls are at increased risk due to domestic activities like washing clothes and fetching water.

Key statistics related to schistosomiasis include:

1. Prevalence: Schistosomiasis is endemic in 78 countries, with the highest burden found in sub-Saharan Africa, but it also affects parts of South America, the Caribbean, the Middle East, and Asia.
2. Disability-Adjusted Life Years (DALYs): The disease results in significant morbidity and mortality, with an estimated 1.9 million DALYs lost annually.
3. Mortality: Schistosomiasis is responsible for approximately 200,000 deaths each year, primarily due to complications such as liver fibrosis, bladder cancer, and kidney failure.
4. Co-infections: Schistosomiasis often coexists with other neglected tropical diseases, such as malaria, lymphatic filariasis, and soil-transmitted helminthiasis, exacerbating the overall burden of disease.
5. Economic impact: The disease has severe socioeconomic consequences, hindering agricultural productivity and limiting educational attainment and economic development in affected regions.

The historical context of schistosomiasis dates back to ancient Egypt, where evidence of infection was found in mummies dating back to 2,500 BCE. However, it was not until the early 20th century that the parasite responsible for schistosomiasis was discovered. In 1904, a German physician named Theodor Bilharz identified the parasite in autopsies of Egyptian patients, leading to the disease being named after him. Further research was conducted by British scientists Sir Patrick Manson and Sir Ronald Ross, who contributed to our understanding of the parasite's life cycle and transmission.

The major risk factors associated with schistosomiasis transmission include:

1. Poor sanitation and lack of clean water: Access to clean water sources and adequate sanitation facilities is crucial in preventing contact with contaminated freshwater and reducing the risk of infection.
2. Poverty and resource-limited settings: Schistosomiasis is most prevalent in areas with limited resources, where infrastructure for water and sanitation is lacking, and health services are often inadequate.
3. Lack of awareness and education: Communities with low levels of health literacy and awareness regarding the transmission and prevention of schistosomiasis are more vulnerable to infection.
4. Environmental factors: The presence of suitable freshwater habitats for the intermediate host snails, such as slow-flowing rivers, lakes, and irrigation systems, increases the likelihood of transmission.
5. Occupational exposure: Certain occupations, such as agriculture, fishing, and irrigation work, involve regular contact with infested water, increasing the risk of infection.
6. Gender-related factors: Women and girls may face a higher risk due to domestic activities that involve contact with infested water, as well as cultural practices that limit their access to education and healthcare.

The impact of schistosomiasis varies across different regions and populations. Sub-Saharan Africa bears the greatest burden, with approximately 90% of global cases occurring in this region. In some areas, such as Mali, Niger, and Sudan, prevalence rates can exceed 50% in certain communities. In contrast, the disease is now considered eliminated or controlled in several regions, including parts of China and the Caribbean.

Prevalence rates also differ within countries, with higher rates often found in rural and marginalized communities where access to clean water and sanitation infrastructure is limited. Children are particularly vulnerable to infection, with high prevalence rates observed in school-aged children. The impact on affected populations includes chronic morbidity, impaired growth and development, reduced productivity, and increased healthcare costs.

In conclusion, schistosomiasis is a global public health issue affecting millions of people, primarily in

resource-limited settings. Its transmission is linked to poor sanitation, lack of clean water, and occupational exposure. The disease has a significant impact on affected regions and populations, with variations in prevalence rates and affected demographics. Efforts to control and eliminate schistosomiasis involve preventive measures, such as provision of clean water and sanitation, mass drug administration, snail control, and health education programs.

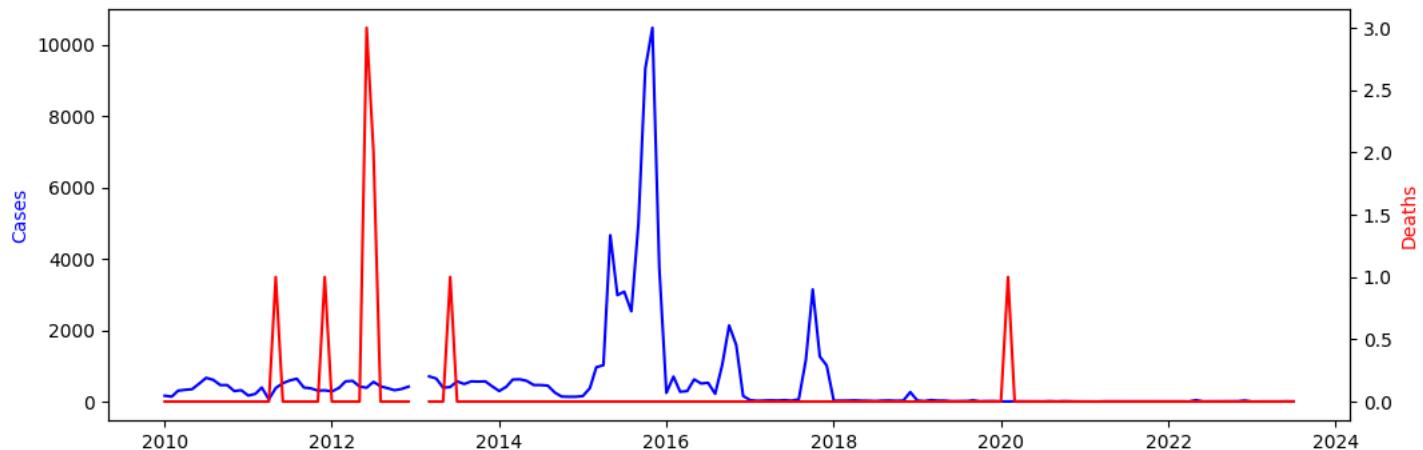


Figure 98: The Change of Schistosomiasis Reports before 2023 July

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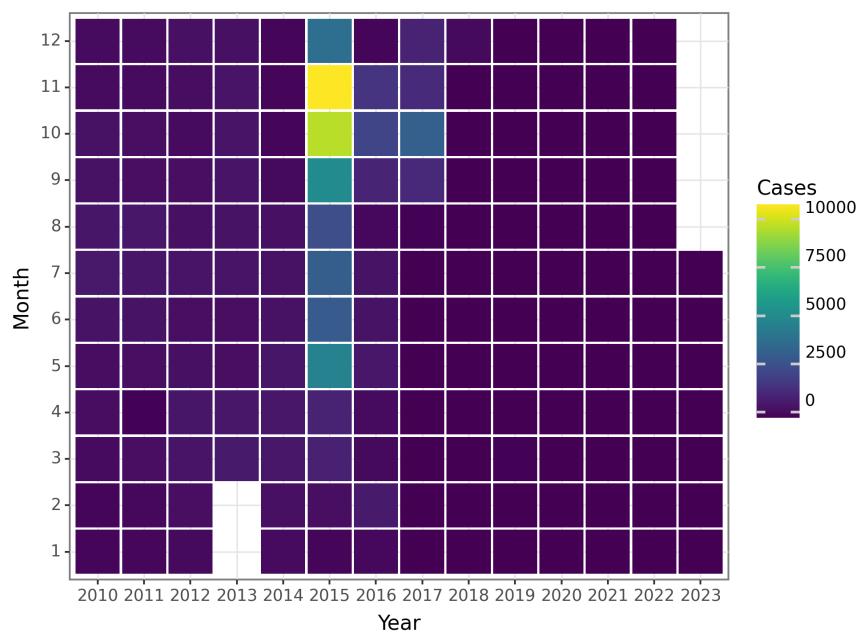


Figure 99: The Change of Schistosomiasis Cases before 2023 July

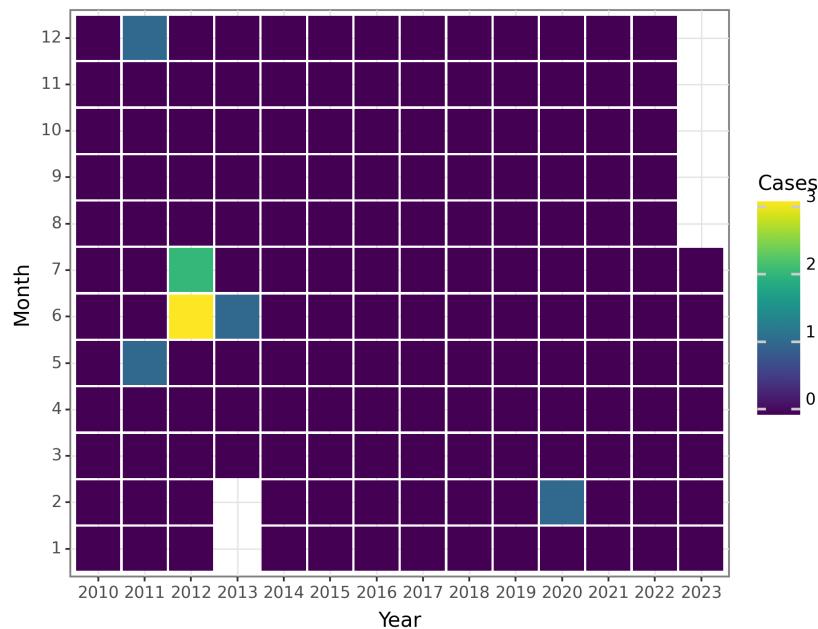


Figure 100: The Change of Schistosomiasis Deaths before 2023 July

Malaria

Malaria is a parasitic disease caused by the Plasmodium parasite, transmitted through the bites of infected female Anopheles mosquitoes. It is a significant global health concern, particularly in tropical and subtropical regions. In this comprehensive overview, we will explore the epidemiology of Malaria, including its global prevalence, transmission routes, affected populations, key statistics, historical context, major risk factors, and impact on different regions and populations.

Global Prevalence: Malaria is endemic in over 90 countries, mainly in Africa, Asia, and Latin America. According to the World Health Organization (WHO), there were an estimated 229 million cases of Malaria worldwide in 2019, resulting in approximately 409,000 deaths. Sub-Saharan Africa bears the highest burden, accounting for about 94% of all cases and deaths. The countries with the highest Malaria prevalence include Nigeria, the Democratic Republic of the Congo, Mozambique, India, and Uganda.

Transmission Routes: Malaria is primarily transmitted through the bites of female Anopheles mosquitoes, which become infected after biting an already infected person. The parasites then develop within the mosquito and are transmitted to another person during subsequent blood meals. Malaria can also be transmitted through blood transfusion, organ transplantation, or from mother to child during pregnancy and childbirth (known as congenital Malaria).

Affected Populations: Malaria can affect anyone living in or traveling to Malaria-endemic areas. However, certain populations are at a higher risk of infection and severe disease. These include young children under the age of 5, pregnant women, people with weakened immune systems, and non-immune individuals traveling to endemic regions.

Key Statistics: - In 2019, 94% of Malaria cases and deaths occurred in Africa. - Children under 5 years of age accounted for 67% of all Malaria deaths. - Pregnant women are particularly vulnerable to Malaria, with an estimated 11 million pregnancies at risk in Africa. - In 2019, an estimated 11 countries accounted for approximately 70% of the global Malaria burden.

Historical Context and Discovery: Malaria has plagued humanity for thousands of years. References to Malaria-like symptoms can be traced back to ancient Chinese texts and ancient Greek medical writings. However, the discovery of the Malaria parasite and its transmission mechanism did not occur until the late 19th century. In 1880, Charles Louis Alphonse Laveran, a French physician, identified the parasite in the blood of a Malaria patient. Later, in 1897, Ronald Ross, a British physician, demonstrated the role of Anopheles mosquitoes in transmitting the disease.

Major Risk Factors: Several factors contribute to the transmission and spread of Malaria, including:

1. Mosquito vector density: Higher densities of infected Anopheles mosquitoes increase the risk of transmission. 2. Lack of effective mosquito control measures: Inadequate mosquito control interventions, such as insecticide-treated bed nets, indoor residual spraying, and larval control, can increase transmission rates. 3. Lack of access to healthcare: Limited access to prompt diagnosis and treatment increases the risk of severe disease and death. 4. Drug resistance: The emergence of drug-resistant strains of the Malaria parasite poses a significant risk to control efforts. 5. Climate and environmental factors: Temperature, rainfall patterns, and land use can influence mosquito breeding and survival, affecting Malaria transmission dynamics.

Impact on Different Regions and Populations: Malaria has a disproportionate impact on certain regions and populations. The majority of cases and deaths occur in sub-Saharan Africa, where socio-economic factors, limited healthcare infrastructure, and a high burden of other diseases contribute to the disease's severity. In areas with high transmission rates, individuals may develop partial immunity over time, leading to lower rates of severe disease among older children and adults. However, this immunity wanes in non-immune populations, such as young children and pregnant women, making them more susceptible to severe disease and complications.

In conclusion, Malaria is a significant global health challenge, predominantly affecting populations in tropical and subtropical regions. It is transmitted through the bites of infected Anopheles mosquitoes and has a severe impact on sub-Saharan Africa. Major risk factors include vector density, lack of mosquito control measures, limited access to healthcare, drug resistance, and climate factors. Efforts to combat Malaria involve a combination of vector control, prompt diagnosis and treatment, and research for new interventions.

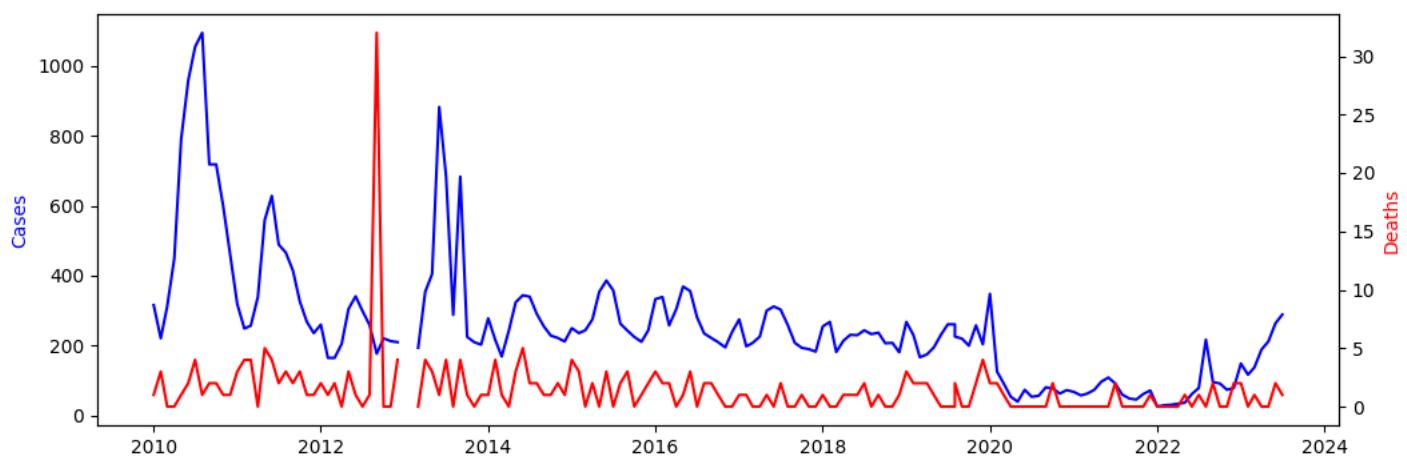


Figure 101: The Change of Malaria Reports before 2023 July

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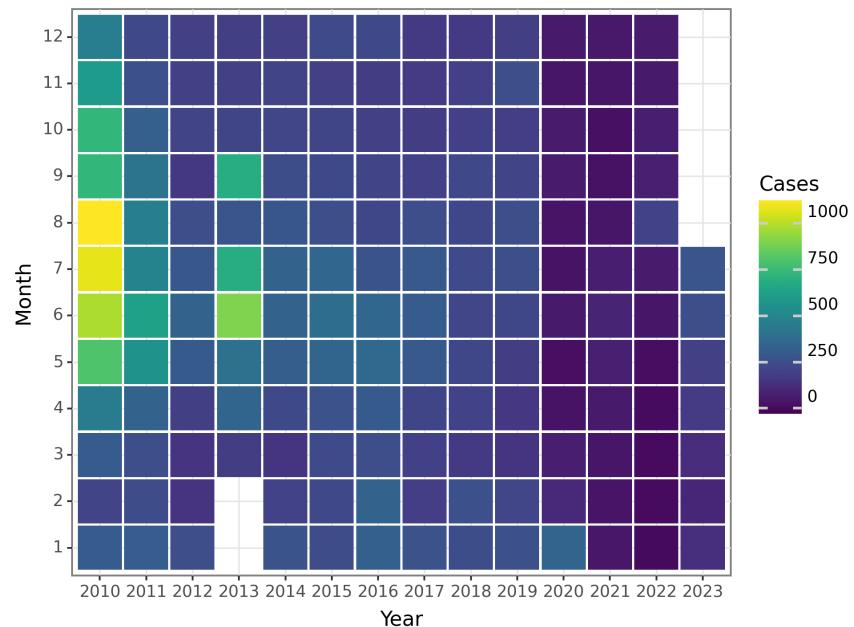


Figure 102: The Change of Malaria Cases before 2023 July

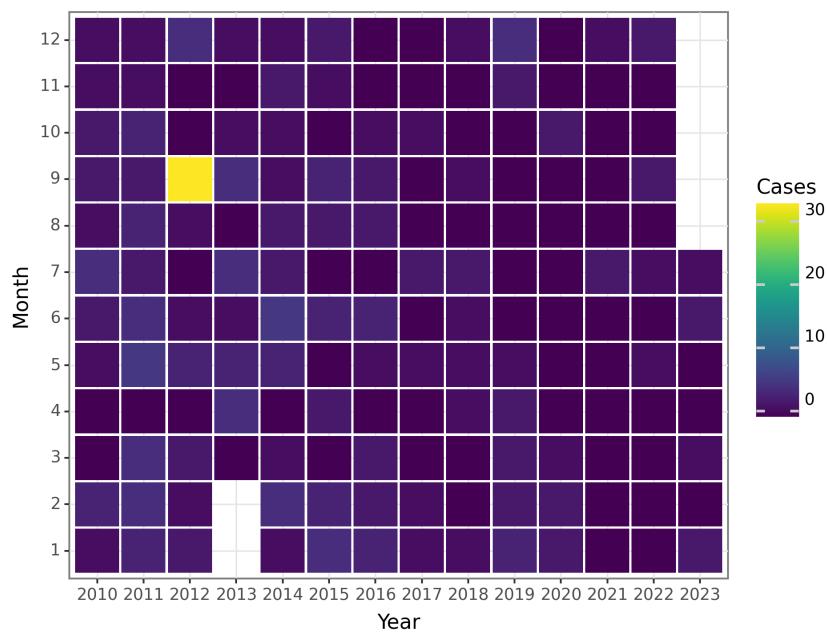


Figure 103: The Change of Malaria Deaths before 2023 July

Human infection with H7N9 virus

Human infection with the H7N9 virus is a relatively new and emerging respiratory illness that was first identified in China in 2013. It is a subtype of avian influenza A virus and primarily affects poultry, but can also infect humans. Understanding the epidemiology of H7N9 virus is crucial to prevent and control its spread.

Global Prevalence: Since its discovery in 2013, H7N9 virus has predominantly been reported in China. The majority of cases have occurred in eastern China, particularly in the provinces of Zhejiang, Guangdong, Jiangsu, and Shanghai. However, sporadic cases or small outbreaks have also been reported in other countries, including Hong Kong, Taiwan, Malaysia, and Canada, although these cases were mostly linked to travel from affected areas in China.

Transmission Routes: The primary mode of transmission of the H7N9 virus is through contact with infected poultry or their environments, such as live poultry markets. Direct contact with infected birds, their secretions (such as saliva, nasal discharge, and feces), or contaminated surfaces can lead to human infection. Limited human-to-human transmission has been reported, but it is not believed to be sustained or efficient.

Affected Populations: H7N9 virus infection predominantly affects individuals who have close contact with live poultry, such as poultry farmers, market workers, and consumers. It also disproportionately affects older adults, particularly those with underlying medical conditions. Children and younger adults have also been infected, but to a lesser extent.

Key Statistics: Since its emergence in 2013, there have been multiple waves of H7N9 virus infections in China. As of September 2021, a total of 1,568 laboratory-confirmed cases and 615 deaths have been reported. The case fatality rate is approximately 40%, indicating the severity of the disease. The number of cases has significantly decreased since 2017 due to various control measures implemented by the Chinese government, including poultry market closures and enhanced surveillance.

Historical Context and Discovery: H7N9 virus was first identified in China in March 2013 when several cases of severe respiratory illness with an unknown cause were reported. Initial investigations revealed a novel avian influenza A virus with a combination of genetic material from bird flu viruses found in ducks and chickens. It was subsequently named H7N9. The virus was traced back to live poultry markets, where infected birds were commonly found.

Major Risk Factors for Transmission: The major risk factors associated with H7N9 virus transmission include direct or close contact with infected poultry or their environments, such as visiting live poultry markets or handling sick birds. Occupational exposure, such as working in the poultry industry, also poses a significant risk. Additionally, individuals with weakened immune systems or underlying medical conditions are more susceptible to severe illness if infected.

Impact on Different Regions and Populations: The impact of H7N9 virus has been primarily concentrated in China, with sporadic cases reported in other countries. Within China, the prevalence rates and affected demographics have varied across different regions and over time. The eastern provinces of Zhejiang, Guangdong, Jiangsu, and Shanghai have consistently reported the highest number of cases. Older adults and individuals with underlying health conditions have been more severely affected by the virus.

In conclusion, the epidemiology of H7N9 virus highlights its primarily avian origin and its ability to infect humans. The virus is predominantly transmitted through contact with infected poultry and their environments, and human-to-human transmission is limited. The impact of H7N9 virus has been most significant in China, with variations in prevalence rates and affected demographics across different regions. Effective surveillance, control measures, and public health interventions are crucial to prevent and manage the spread of this emerging respiratory illness.

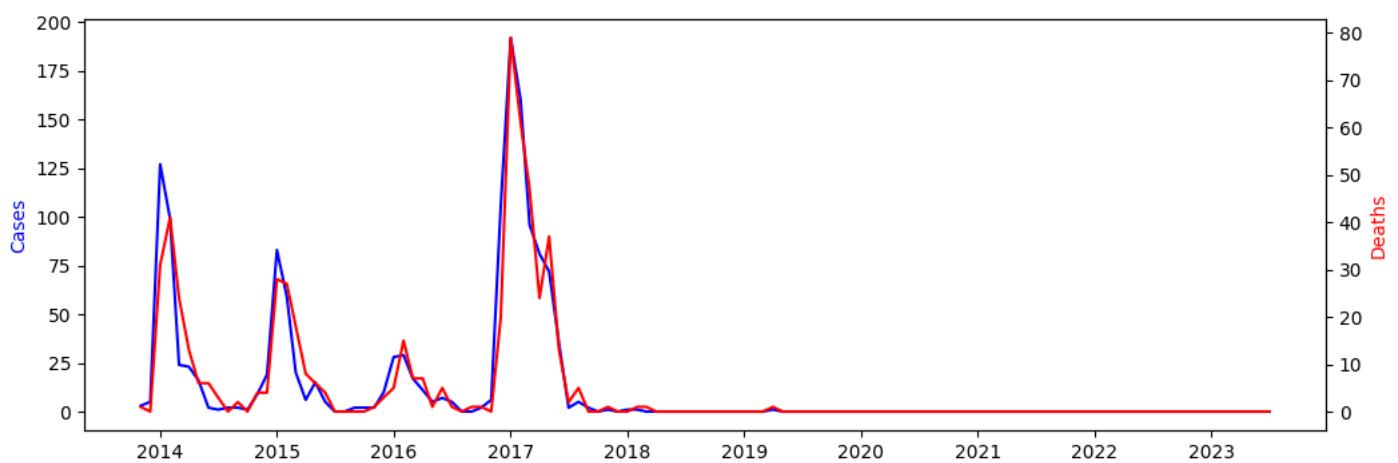


Figure 104: The Change of Human infection with H7N9 virus Reports before 2023 July

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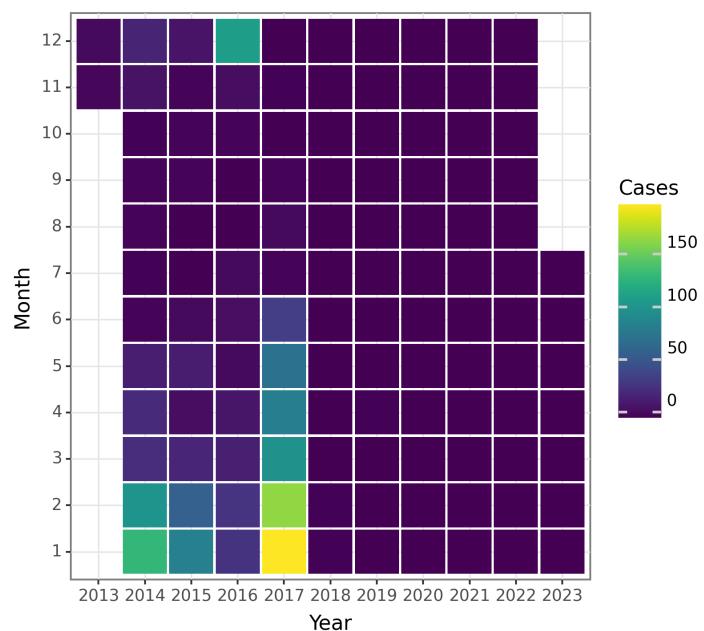


Figure 105: The Change of Human infection with H7N9 virus Cases before 2023 July

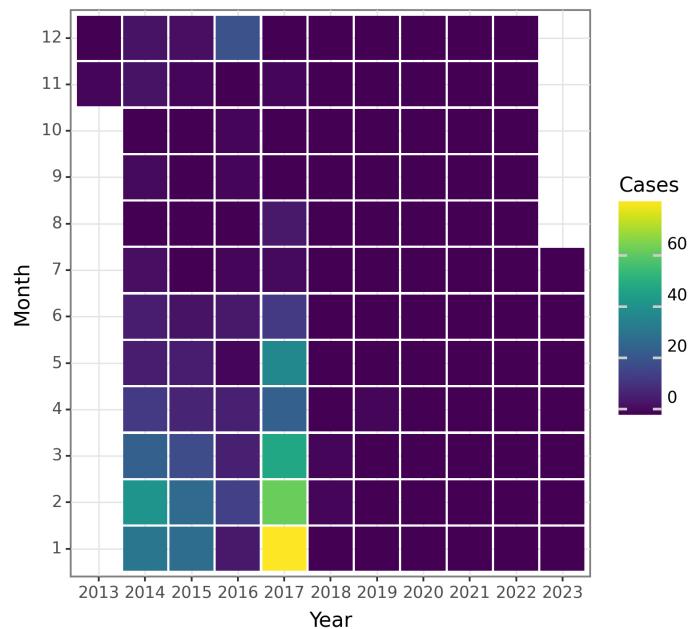


Figure 106: The Change of Human infection with H7N9 virus Deaths before 2023 July

Influenza

Influenza, commonly known as the flu, is a respiratory illness caused by influenza viruses. It is a highly contagious disease that affects millions of people worldwide each year. Understanding the epidemiology of influenza is crucial for implementing effective prevention and control measures.

Historical Context and Discovery of Influenza: Influenza has been a significant public health concern for centuries. The earliest recorded influenza pandemic dates back to 1580, known as the "Italian fever." However, the virus responsible for influenza was not identified until the late 19th century. In 1933, scientists successfully isolated the influenza virus, leading to a better understanding of the disease and its transmission.

Global Prevalence: Influenza is a global health concern, with outbreaks occurring annually in seasonal patterns. The World Health Organization (WHO) estimates that influenza results in 3-5 million severe cases and 290,000-650,000 respiratory deaths each year globally. However, these numbers can vary significantly depending on the severity of the circulating strains and the effectiveness of vaccination programs.

Transmission Routes: Influenza is primarily transmitted through respiratory droplets when an infected person coughs, sneezes, or talks. The virus can also spread by touching surfaces contaminated with the virus and then touching the mouth, nose, or eyes. Influenza can be contagious even before symptoms appear, making it challenging to control its spread.

Affected Populations: Influenza can affect people of all ages, but certain populations are at higher risk of severe illness and complications. These include young children, older adults (especially those over 65), pregnant women, individuals with chronic medical conditions (such as asthma, diabetes, or heart disease), and immunocompromised individuals.

Key Statistics: - The global burden of influenza varies each year, with an estimated 10-20% of the population affected during seasonal outbreaks. - Influenza-associated hospitalization rates range from 100 to 500 per 100,000 population annually. - The mortality rate due to influenza is estimated to be around 0.1% globally, but it can be higher during pandemics. - Influenza-related complications, such as pneumonia, can lead to increased hospitalization and mortality rates. - Vaccination is a crucial preventive measure, but its effectiveness varies depending on the match between the vaccine and circulating strains.

Major Risk Factors for Influenza Transmission: Several factors increase the risk of influenza transmission, including: 1. Close contact with infected individuals or crowded environments. 2. Lack of immunity to the circulating influenza strains. 3. Poor respiratory hygiene, such as not covering coughs and sneezes. 4. Inadequate ventilation in enclosed spaces. 5. Travel and migration, facilitating the spread of the virus across regions. 6. Low vaccination coverage, especially among high-risk populations. 7. Lack of antiviral treatment or delayed access to healthcare.

Impact on Different Regions and Populations: The impact of influenza can vary across regions and populations due to factors such as healthcare infrastructure, vaccination coverage, and population susceptibility. Developing countries may face higher morbidity and mortality rates due to limited access to healthcare and vaccination. Additionally, certain demographic groups, such as the elderly and those with underlying health conditions, are more susceptible to severe illness and complications.

In conclusion, influenza is a global respiratory illness with a significant impact on public health.

Understanding its epidemiology, including global prevalence, transmission routes, affected populations, and key statistics, is essential for implementing effective prevention and control strategies. Vaccination, proper respiratory hygiene, and early access to healthcare are crucial in reducing the burden of influenza.

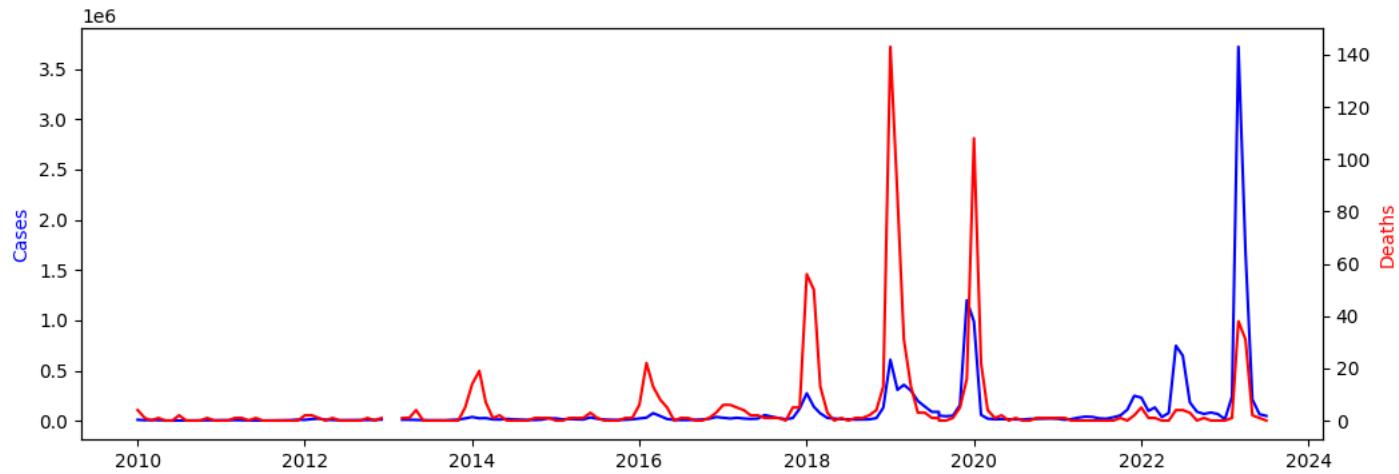


Figure 107: The Change of Influenza Reports before 2023 July

It is incumbent upon you to have conveyed solely the outcome to me, without any accompanying details or extraneous information. This is particularly relevant within the academic sphere, where clear and concise language is of utmost importance. It is therefore necessary to ensure that written communications are free of spelling and grammar errors, as well as any ambiguity or lack of precision. As such, I would request that you revise your previous statement in accordance with these guidelines.

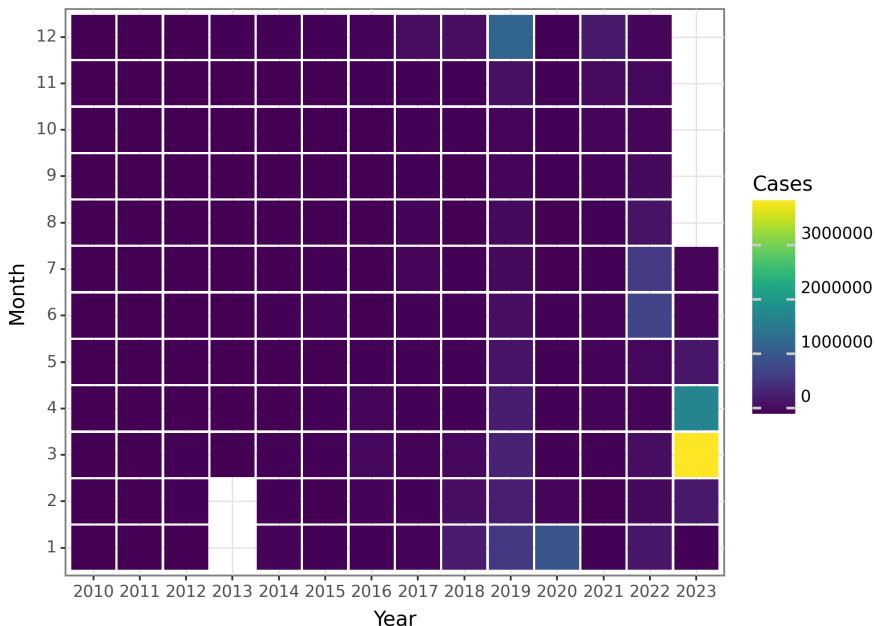


Figure 108: The Change of Influenza Cases before 2023 July

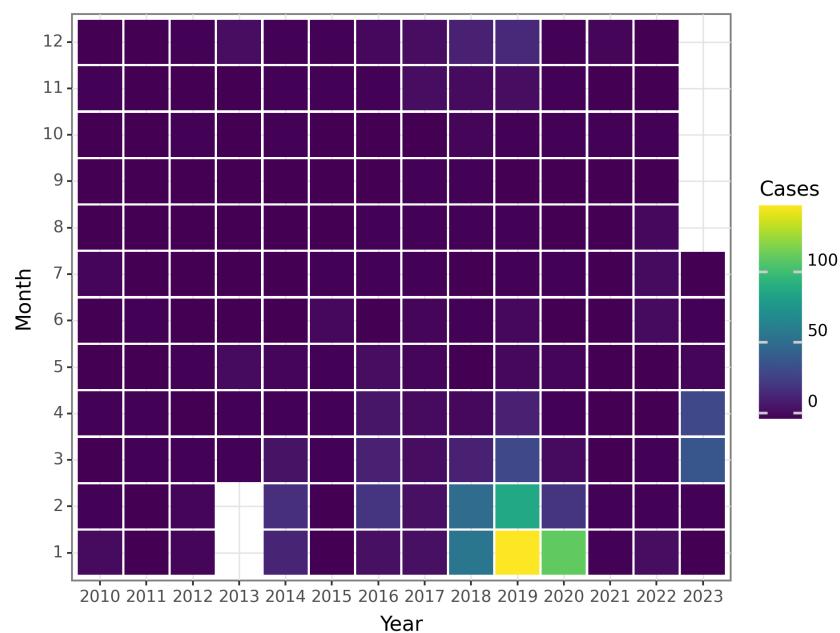


Figure 109: The Change of Influenza Deaths before 2023 July

Mumps

Mumps is a highly contagious viral infection that primarily affects the salivary glands, leading to swelling and pain in the face and jaw. It is caused by the mumps virus, which belongs to the Paramyxoviridae family. In this comprehensive overview, we will discuss the epidemiology of mumps, including its global prevalence, transmission routes, affected populations, key statistics, historical context, discovery, major risk factors, and its impact on different regions and populations.

1. Global Prevalence: Mumps is found worldwide, with varying prevalence rates. Prior to the introduction of the mumps vaccine, outbreaks were common in all regions. However, due to the widespread use of vaccines, mumps incidence has significantly declined in many developed countries. Despite this, outbreaks still occur, primarily in areas with low vaccination rates or waning immunity in vaccinated individuals.

2. Transmission Routes: Mumps is primarily transmitted through respiratory droplets from an infected person. It can also spread through direct contact with saliva or contaminated surfaces. The virus is highly contagious, and infected individuals can transmit it before symptoms appear and up to five days after the onset of swelling.

3. Affected Populations: Mumps can affect individuals of all ages, but it is most common in children aged 5 to 14 years. In areas with low vaccination rates, infants and young adults are also at higher risk. Mumps can occur in both vaccinated and unvaccinated individuals, but vaccinated individuals often experience milder symptoms.

4. Key Statistics: According to the World Health Organization (WHO), mumps is estimated to cause over 100,000 deaths annually worldwide. However, the true burden of mumps is difficult to determine due to underreporting and variations in surveillance systems across countries.

5. Historical Context and Discovery: Mumps has been documented throughout history, with outbreaks reported as early as the 5th century BC. However, the first detailed clinical description was provided by Robert Hamilton in 1790. The causative agent, the mumps virus, was isolated and identified in 1945 by Paul F. Keller and Wallace Rowe.

6. Major Risk Factors for Transmission: - Lack of vaccination or incomplete vaccination: Individuals who have not received the mumps vaccine or have incomplete immunization are at higher risk of contracting and spreading the virus. - Close and crowded living conditions: Mumps spreads easily in settings such as schools, colleges, military barracks, and residential care facilities. - Lack of natural immunity: Populations with low exposure to the virus or low vaccination rates have lower levels of natural immunity, making them more susceptible to mumps outbreaks.

7. Impact on Different Regions and Populations: The impact of mumps varies across regions and populations due to differences in vaccine coverage, immunity levels, and healthcare infrastructure. Developed countries with high vaccination rates have seen a significant decline in mumps incidence. However, occasional outbreaks still occur, particularly among unvaccinated or under-vaccinated communities.

In contrast, developing countries may experience more frequent and larger outbreaks due to limited access to vaccines and healthcare resources. In these regions, mumps can lead to severe complications, such as meningitis, encephalitis, and hearing loss.

Additionally, certain demographics may be disproportionately affected by mumps. For example, college students living in close quarters are at higher risk of outbreaks. Outbreaks have also been reported in religious or cultural communities with low vaccination rates.

In conclusion, mumps is a contagious viral infection with a global prevalence. It primarily spreads through respiratory droplets and affects populations of all ages, with a higher incidence in children and individuals with incomplete vaccination. The impact of mumps varies across regions, with developed countries experiencing fewer outbreaks due to high vaccination rates, while developing countries may face more frequent and severe outbreaks. Vaccination and maintaining high immunization coverage are crucial in controlling the spread of mumps and reducing its impact on populations.

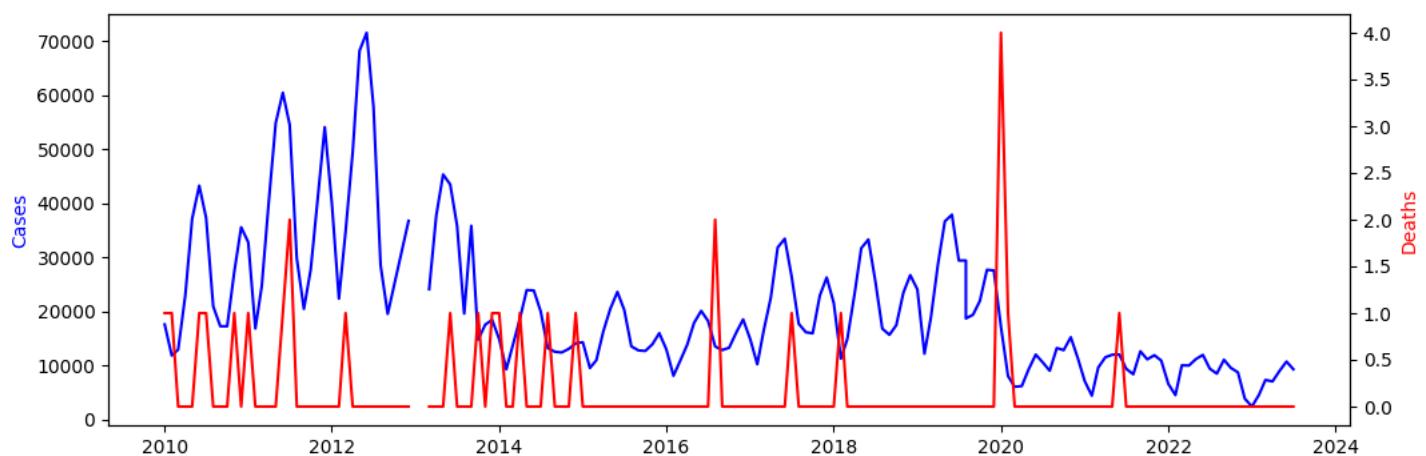


Figure 110: The Change of Mumps Reports before 2023 July

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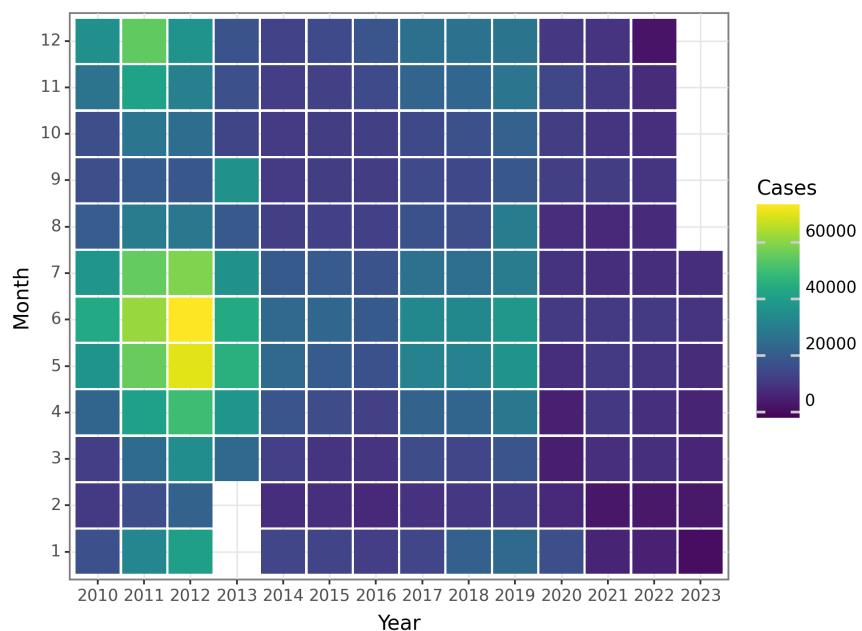


Figure 111: The Change of Mumps Cases before 2023 July

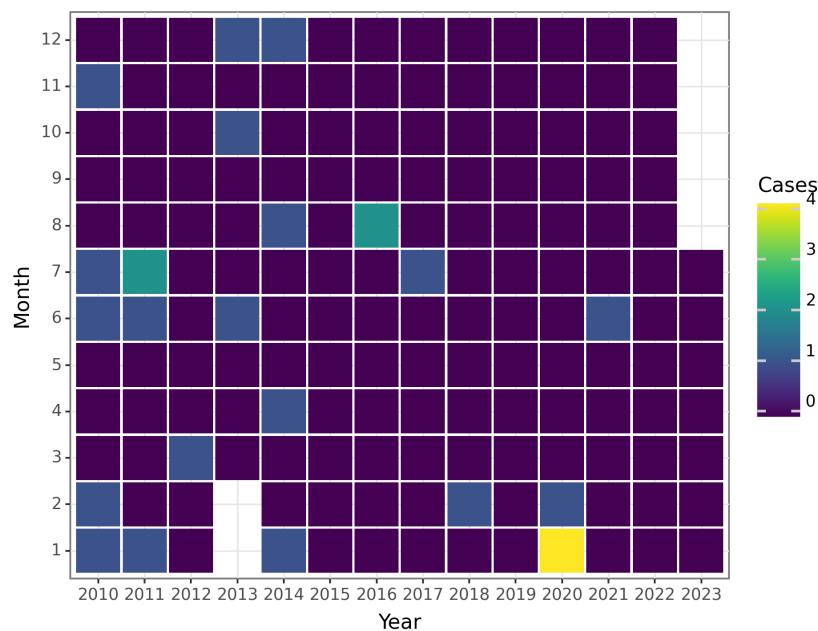


Figure 112: The Change of Mumps Deaths before 2023 July

Rubella

Rubella, also known as German measles, is a contagious viral infection caused by the rubella virus. It is characterized by a red rash, mild fever, and swollen lymph nodes. Rubella can have severe consequences for pregnant women, as it can cause congenital rubella syndrome (CRS) in their babies, leading to birth defects and developmental disabilities. Understanding the epidemiology of rubella is crucial for implementing effective prevention and control measures.

Historical Context and Discovery: Rubella was first described as a distinct disease in the mid-eighteenth century. However, its viral etiology was only discovered in 1962 by two separate research teams led by Parkman and Weller. The discovery of the rubella virus facilitated the development of vaccines, leading to the control and near-elimination of rubella in many countries.

Prevalence and Transmission: Rubella is a global disease, but its prevalence varies across regions due to differences in vaccination coverage and population immunity. Prior to widespread vaccination, rubella epidemics occurred every 6-9 years, mainly affecting children and young adults. Today, the global prevalence has significantly decreased due to vaccination efforts.

Rubella is transmitted primarily through respiratory droplets from infected individuals. The virus can also be transmitted from mother to fetus during pregnancy, leading to CRS. Infected individuals are most contagious a week before and after the onset of the rash, making transmission control challenging.

Affected Populations and Key Statistics: Rubella can affect individuals of all ages, but it is most common in children and young adults. In countries without vaccination programs, rubella infection rates ranged from 10% to 50% in children by the age of 10. However, after the introduction of rubella vaccines, the incidence of infection decreased dramatically.

Key statistics related to rubella include:

1. Congenital Rubella Syndrome (CRS) Cases: Each year, an estimated 100,000 babies are born with CRS worldwide. These cases occur predominantly in regions with inadequate rubella vaccination coverage.
2. Global Incidence: The World Health Organization (WHO) estimates that there were over 100,000 rubella cases reported worldwide in 2019. However, this number is likely an underestimate due to underreporting.
3. Rubella Vaccination: Rubella vaccination is included in routine childhood immunization programs in many countries. As of 2020, approximately 169 countries include rubella-containing vaccines in their national immunization programs.

Major Risk Factors: Several risk factors contribute to rubella transmission:

1. Lack of Vaccination: Individuals who are not vaccinated or under-vaccinated are at higher risk of contracting rubella.
2. Travel: Rubella can be imported into susceptible populations through international travel. Unvaccinated individuals traveling to regions with ongoing rubella transmission are particularly at risk.
3. Crowded Living Conditions: Close contact in crowded settings, such as schools, daycares, and refugee camps, increases the risk of rubella transmission.

Impact on Regions and Populations: Rubella has different impacts on regions and populations due to variations in vaccination coverage and population immunity. Developed countries with high rubella vaccination coverage have significantly reduced the incidence of rubella and CRS. In these regions, rubella cases primarily occur among unvaccinated individuals or those who did not develop immunity after vaccination.

In contrast, developing countries with limited access to vaccines and lower vaccination coverage experience more significant rubella outbreaks and higher CRS rates. These outbreaks often affect women of childbearing age, leading to a higher burden of CRS cases.

In conclusion, rubella is a global disease with varying prevalence rates and impacts on different regions and populations. The introduction of rubella vaccines has significantly reduced the incidence of rubella and its associated complications. However, ongoing efforts are needed to ensure high vaccination coverage and reduce the burden of rubella, particularly in vulnerable populations.

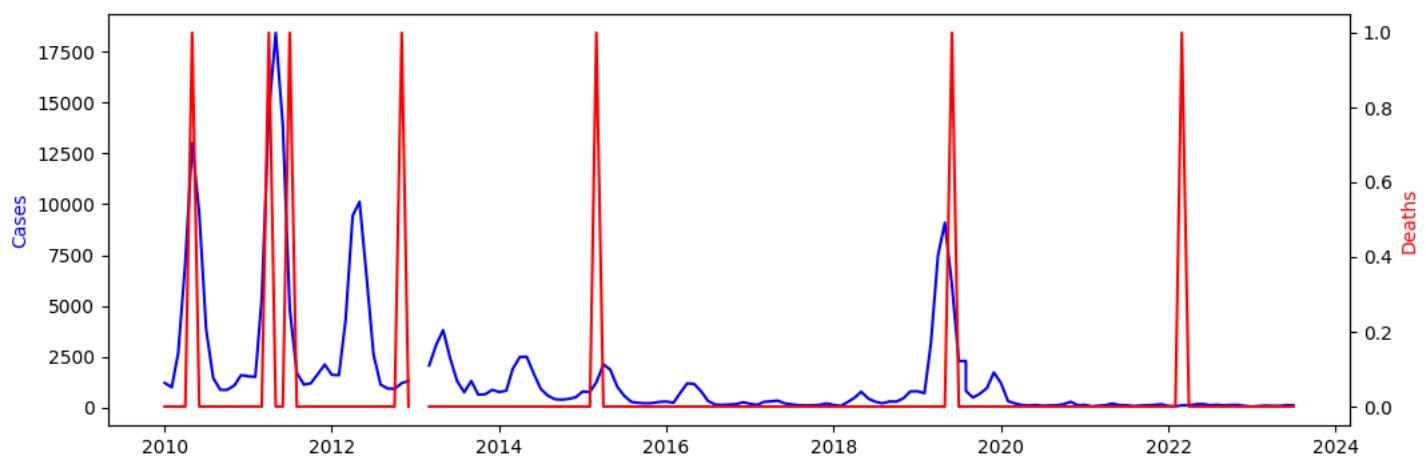


Figure 113: The Change of Rubella Reports before 2023 July

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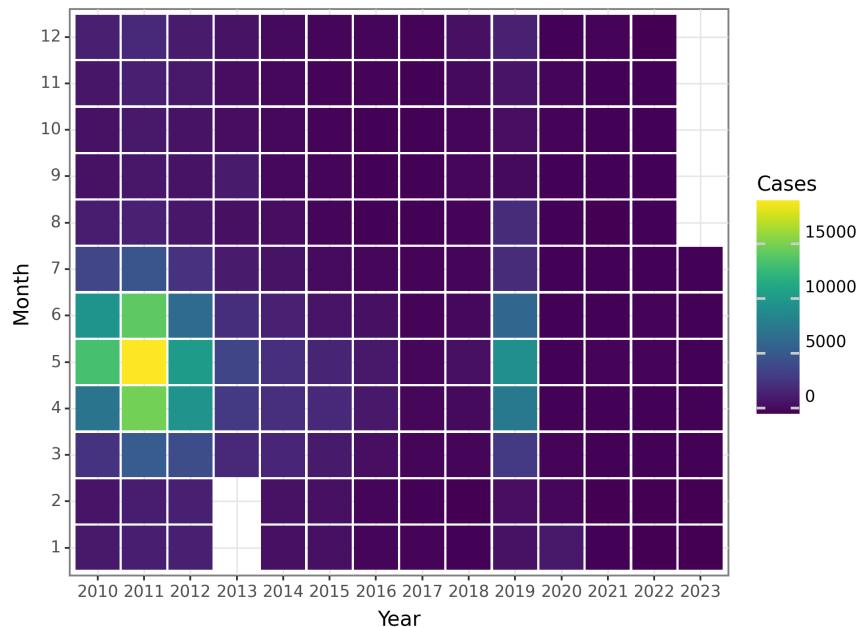


Figure 114: The Change of Rubella Cases before 2023 July

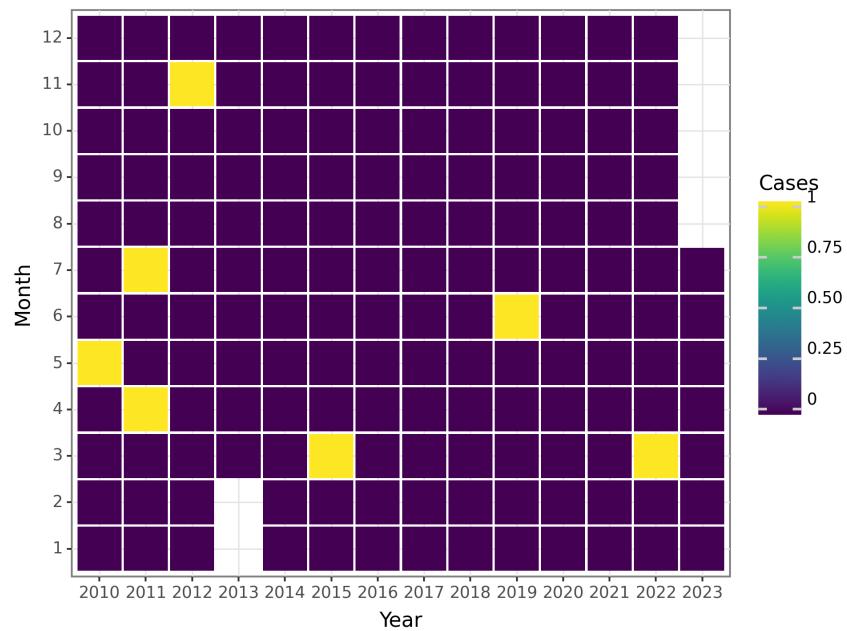


Figure 115: The Change of Rubella Deaths before 2023 July

Acute hemorrhagic conjunctivitis

Acute hemorrhagic conjunctivitis (AHC), also known as epidemic keratoconjunctivitis, is a highly contagious eye infection that primarily affects the conjunctiva, the clear membrane that covers the white part of the eye and the inner surface of the eyelids. AHC is caused by several types of viruses, with Enterovirus 70 (EV70) and Coxsackievirus A24 (CA24) being the most common culprits.

Historical Context and Discovery: Acute hemorrhagic conjunctivitis was first recognized and described in Ghana in 1969 during an outbreak. It quickly spread to other parts of West Africa and subsequently to other regions, becoming a global health concern. The virus responsible for AHC was isolated in 1970, and since then, numerous outbreaks have been reported worldwide.

Global Prevalence: Acute hemorrhagic conjunctivitis has a global distribution and has been reported in various countries across all continents. Outbreaks of AHC occur sporadically, often in epidemic form, particularly in densely populated areas with poor sanitation and hygiene practices. The prevalence varies from year to year and between different regions.

Transmission Routes: AHC is primarily transmitted through direct contact with the discharge from infected individuals' eyes or hands. The virus can also spread indirectly through contaminated objects, such as towels, tissues, and shared personal items. Poor hand hygiene and close contact with infected individuals increase the risk of transmission.

Affected Populations: AHC can affect individuals of all age groups, but it is more commonly seen in children and young adults. Crowded living conditions, such as schools, dormitories, military barracks, and childcare centers, facilitate the rapid spread of the infection. People with weakened immune systems or pre-existing eye conditions are also more susceptible to AHC.

Key Statistics: Exact data on the prevalence of AHC is challenging to obtain due to underreporting and variations in surveillance systems. However, outbreaks have been reported in several countries, including China, Japan, India, Thailand, Malaysia, Brazil, Egypt, and the United States. During epidemics, thousands of cases can occur within a short period. Mortality due to AHC is rare, but the infection can cause significant morbidity and discomfort.

Major Risk Factors: Several risk factors contribute to the transmission of AHC, including:

1. Poor hygiene practices: Lack of proper handwashing and personal hygiene increases the risk of infection.
2. Crowded living conditions: Close contact with infected individuals in crowded settings facilitates transmission.
3. Contaminated objects: Sharing towels, eye cosmetics, or other personal items can spread the virus.
4. Lack of immunization: Absence of specific vaccines against AHC leaves populations susceptible to outbreaks.

Impact on Different Regions and Populations: The impact of AHC varies across regions, depending on the level of healthcare infrastructure, public health measures, and surveillance systems in place. Developing countries, particularly those with inadequate sanitation and hygiene facilities, often experience larger outbreaks and higher prevalence rates. In densely populated areas, the virus can spread rapidly, affecting a significant portion of the population. Outbreaks can disrupt daily activities, including schools, workplaces, and public gatherings.

In conclusion, Acute hemorrhagic conjunctivitis is a highly contagious eye infection caused by various viruses. It affects all age groups, with children and young adults being more commonly affected. AHC is transmitted through direct or indirect contact with infected individuals or contaminated objects. The prevalence and impact of AHC vary across different regions, with outbreaks occurring sporadically and more frequently in areas with poor sanitation and crowded living conditions.

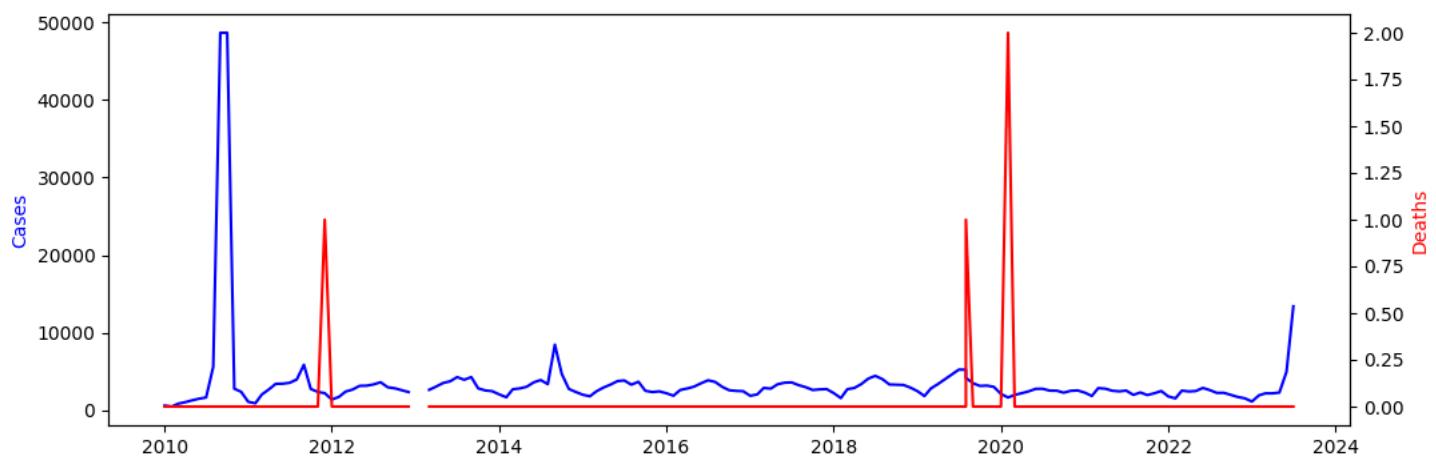


Figure 116: The Change of Acute hemorrhagic conjunctivitis Reports before 2023 July

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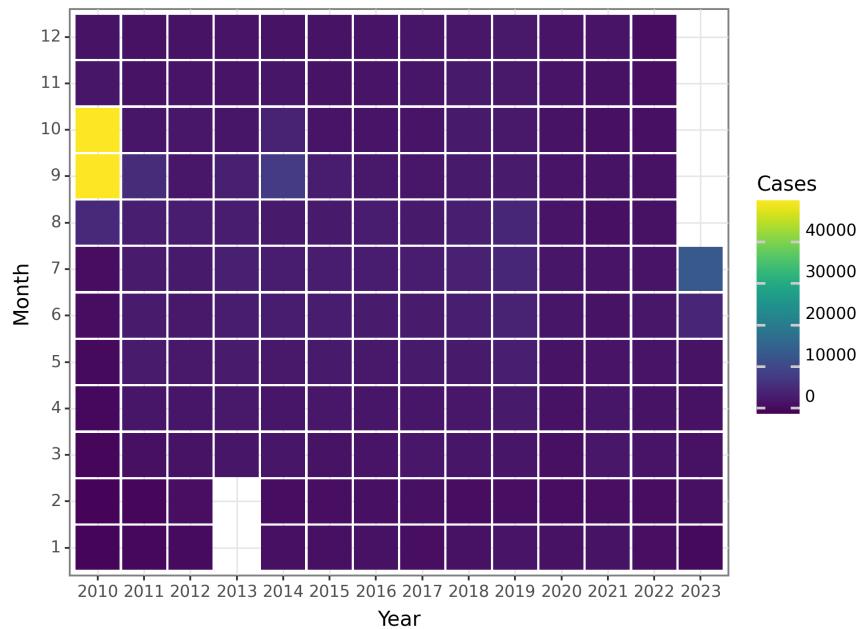


Figure 117: The Change of Acute hemorrhagic conjunctivitis Cases before 2023 July

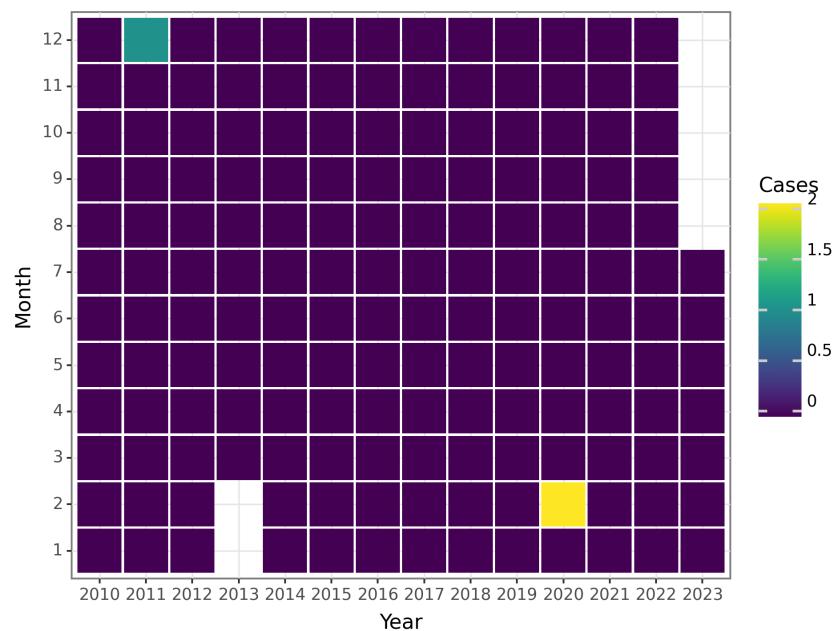


Figure 118: The Change of Acute hemorrhagic conjunctivitis Deaths before 2023 July

Leprosy

Leprosy, also known as Hansen's disease, is a chronic infectious disease caused by the bacterium *Mycobacterium leprae*. It primarily affects the skin, peripheral nerves, and mucous membranes. Leprosy has been a significant public health concern throughout history and continues to be a challenge in certain regions of the world. In this comprehensive overview, we will discuss the epidemiology of leprosy, including its global prevalence, transmission routes, affected populations, key statistics, historical context and discovery, major risk factors associated with transmission, and the impact of leprosy on different regions and populations.

Global Prevalence: Leprosy is a global disease, but its prevalence varies across different regions. According to the World Health Organization (WHO), the global prevalence of leprosy has been decreasing over the years. In 2019, the global prevalence was reported to be 176,176 cases, with a prevalence rate of 0.2 per 10,000 population. However, it is important to note that these numbers may not fully reflect the true burden of the disease due to underreporting and underdiagnosis in some regions.

Transmission Routes: Leprosy is primarily transmitted through respiratory droplets when an infected person coughs or sneezes. However, the exact mode of transmission is not fully understood, and it is believed that prolonged close contact with an untreated person is necessary for transmission to occur. Leprosy is not highly contagious, and most people have natural immunity to the disease. It is thought that only a small proportion of individuals who are exposed to the bacteria actually develop the disease.

Affected Populations: Leprosy affects people of all ages, but it is more prevalent in certain populations. The disease is more common in tropical and subtropical regions, particularly in countries like India, Brazil, and Indonesia. Socioeconomic factors, such as poverty, overcrowding, and lack of access to healthcare, contribute to the higher prevalence in these regions. Additionally, certain genetic factors may increase susceptibility to leprosy.

Key Statistics: As of 2019, the countries with the highest number of new leprosy cases were India, Brazil, and Indonesia. These three countries accounted for approximately 80% of the global new case detection. Men are slightly more affected than women, with a male-to-female ratio of around 1.3:1. Children under the age of 15 account for about 8% of new cases, indicating ongoing transmission in some areas.

Historical Context and Discovery: Leprosy has plagued humanity for thousands of years and has been referenced in ancient texts and religious scriptures. The exact origins of leprosy are unclear, but evidence suggests that it has affected humans since at least 2000 BCE. Over the centuries, leprosy was associated with social stigma and led to the segregation and isolation of affected individuals. The bacterium responsible for leprosy, *Mycobacterium leprae*, was discovered by Gerhard Armauer Hansen in 1873, leading to significant advances in understanding the disease and its treatment.

Major Risk Factors: Several risk factors are associated with leprosy transmission. These include living in close proximity to untreated individuals with leprosy, prolonged and intimate contact with an infected person, and a weakened immune system. Poverty, malnutrition, and inadequate access to healthcare also increase the risk of leprosy transmission.

Impact on Different Regions and Populations: The impact of leprosy varies across different regions and populations. Some regions, particularly in Asia, Africa, and Latin America, continue to face significant challenges in controlling the disease. Leprosy affects marginalized communities, including those living in poverty, rural areas, and urban slums. Stigma and discrimination associated with leprosy persist in many areas, leading to delayed diagnosis, reduced access to treatment, and social exclusion of affected individuals.

In conclusion, leprosy remains a global health concern, although its prevalence has been decreasing over the years. The disease primarily affects populations in tropical and subtropical regions, with India, Brazil, and Indonesia having the highest burden. Leprosy transmission occurs through respiratory droplets, although the exact mode of transmission is not fully understood. Risk factors for transmission include close contact with untreated individuals and a weakened immune system. Leprosy has had a significant historical impact, and its stigma continues to affect affected populations. Efforts to reduce the burden of leprosy involve early diagnosis, multidrug therapy, health education, and social integration of affected individuals.

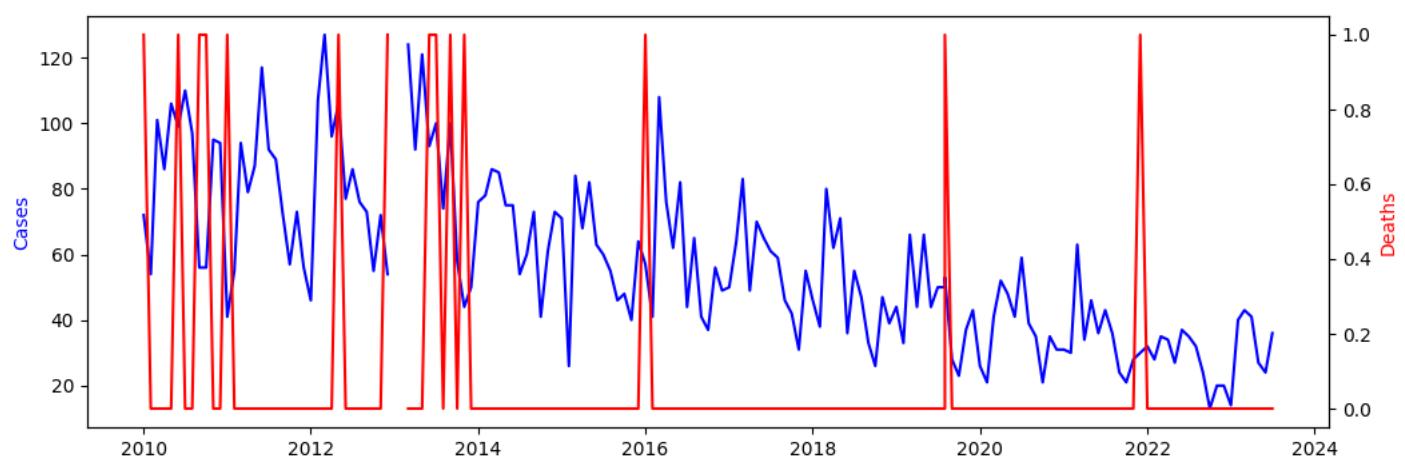


Figure 119: The Change of Leprosy Reports before 2023 July

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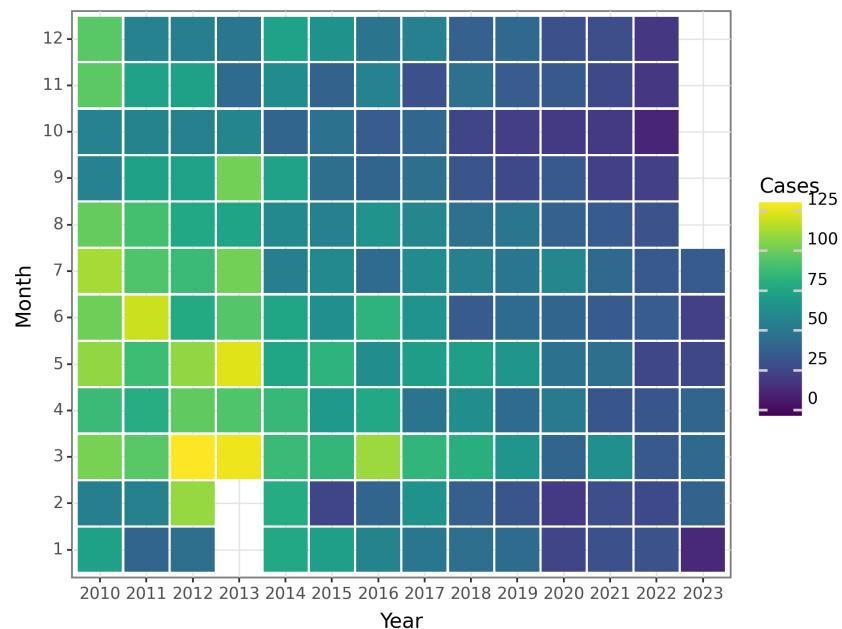


Figure 120: The Change of Leprosy Cases before 2023 July

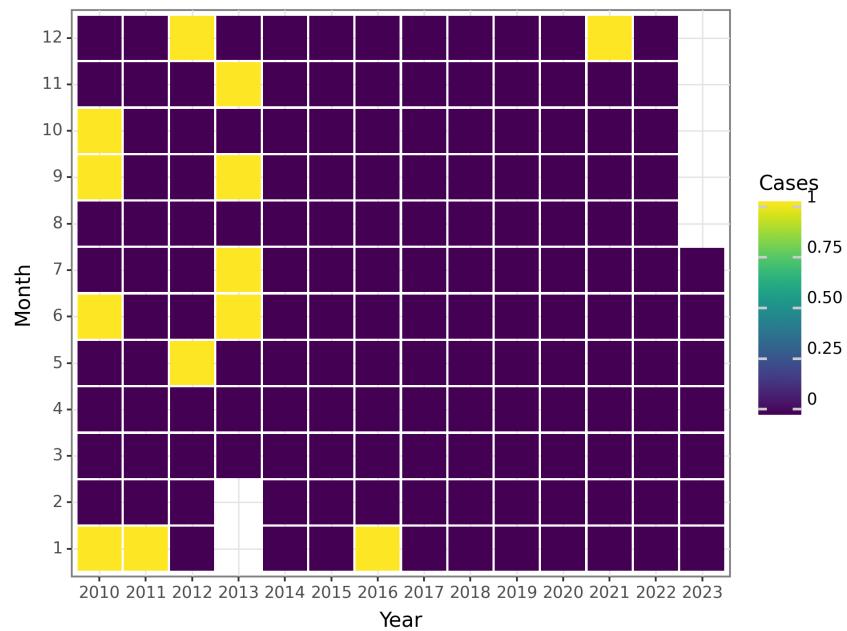


Figure 121: The Change of Leprosy Deaths before 2023 July

Typhus

Typhus is a group of infectious diseases caused by bacteria belonging to the genus *Rickettsia*. It is characterized by high fever, headache, body aches, and a rash. There are three main types of typhus: epidemic typhus, endemic typhus (also known as murine typhus), and scrub typhus. Each type has its own distinct characteristics and epidemiology.

Historical Context and Discovery: Typhus has been a significant disease throughout history, with notable epidemics occurring during times of war, poverty, and overcrowded living conditions. The first major epidemic of typhus was recorded in the 16th century in Europe, and it continued to be a major public health concern during World War I and World War II. The discovery of the causative agent, *Rickettsia*, and the development of effective antibiotics in the mid-20th century greatly reduced the impact of typhus.

Global Prevalence: Typhus is found worldwide but is more prevalent in regions with limited resources, poor sanitation, and overcrowding. It is more common in developing countries, particularly in areas with tropical and subtropical climates. Epidemic typhus is more prevalent in regions such as Africa, Asia, and South America, while endemic typhus is found in many parts of the world, including Africa, Asia, Europe, and the Americas.

Transmission Routes: Typhus is primarily transmitted to humans through arthropod vectors, such as lice, fleas, and mites. Epidemic typhus is usually transmitted by body lice (*Pediculus humanus corporis*) that spread the bacteria when they defecate on the skin, and the infected feces are subsequently scratched into the bite wound or rubbed into mucous membranes. Endemic typhus is transmitted by fleas, particularly those found on rats, cats, and opossums. Scrub typhus is transmitted by mites found in areas with dense vegetation.

Affected Populations: Typhus can affect people of all ages and genders. However, certain populations are at a higher risk due to specific factors. These include individuals living in poverty, crowded conditions, or refugee camps with limited access to sanitation and hygiene facilities. Homeless people, prisoners, and individuals with compromised immune systems are also more susceptible to typhus. Additionally, healthcare workers, veterinarians, and individuals working in agriculture or forestry may be at an increased risk due to their exposure to arthropod vectors.

Key Statistics: Typhus infections are not consistently reported worldwide, making it difficult to estimate the exact global burden of the disease. However, it is estimated that there are tens of thousands of cases annually, with endemic typhus being more common than epidemic typhus. The case-fatality rate varies depending on the type of typhus, ranging from 1% to 60% in untreated cases. Prompt diagnosis and treatment with appropriate antibiotics significantly reduce mortality rates.

Impact on Different Regions and Populations: The impact of typhus varies across different regions and populations. In regions with poor sanitation and hygiene infrastructure, like some parts of Africa, Asia, and South America, typhus outbreaks can occur and have a significant impact on public health. In conflict zones or areas with displaced populations, such as refugee camps, typhus can spread rapidly due to overcrowding and limited access to healthcare. Additionally, endemic typhus is more prevalent in urban areas with a high rat population.

Prevention and Control: Prevention and control of typhus involve several strategies. These include improving sanitation and hygiene conditions, such as providing access to clean water, adequate sanitation facilities, and promoting personal hygiene practices. Vector control, such as the use of insecticides and insect repellents, is also essential in preventing transmission. In high-risk populations, providing access to proper shelter, regular health check-ups, and treatment of infected individuals are crucial. Vaccines for typhus are not widely available or routinely used, so prevention primarily relies on these control measures. In conclusion, typhus is a group of bacterial infections with a significant historical impact and a continuing public health concern. Its prevalence varies across regions and populations, with higher rates in areas with poor sanitation, overcrowding, and limited resources. Effective prevention and control measures, along with early diagnosis and treatment, can help reduce the morbidity and mortality associated with typhus.

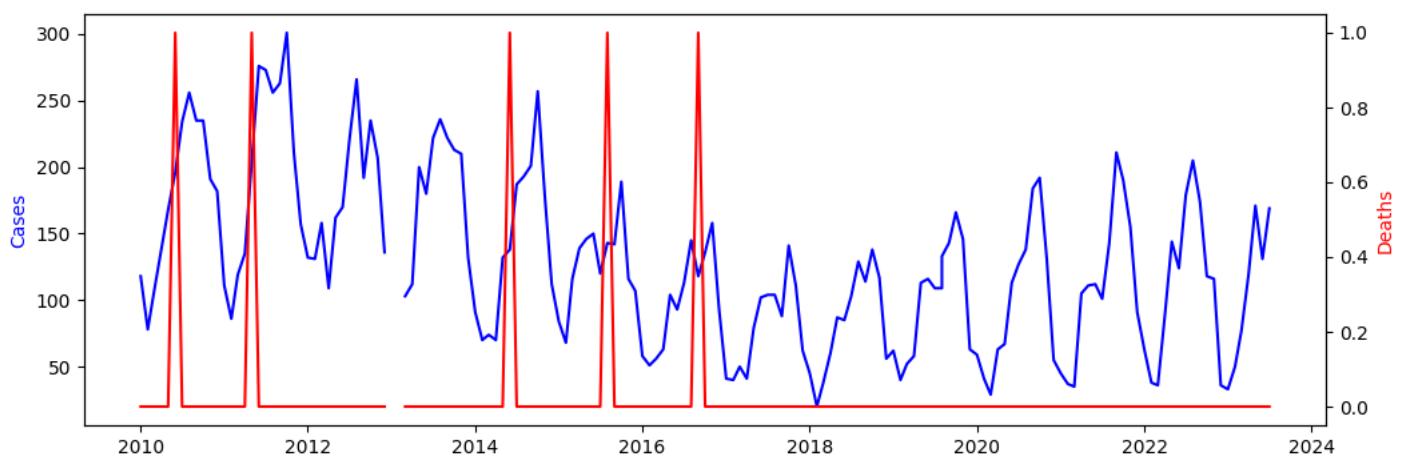


Figure 122: The Change of Typhus Reports before 2023 July

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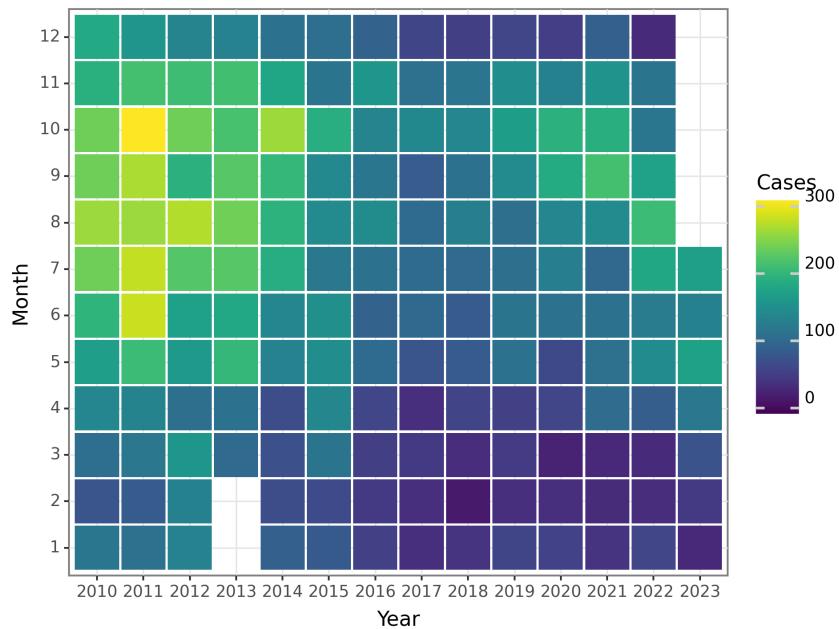


Figure 123: The Change of Typhus Cases before 2023 July

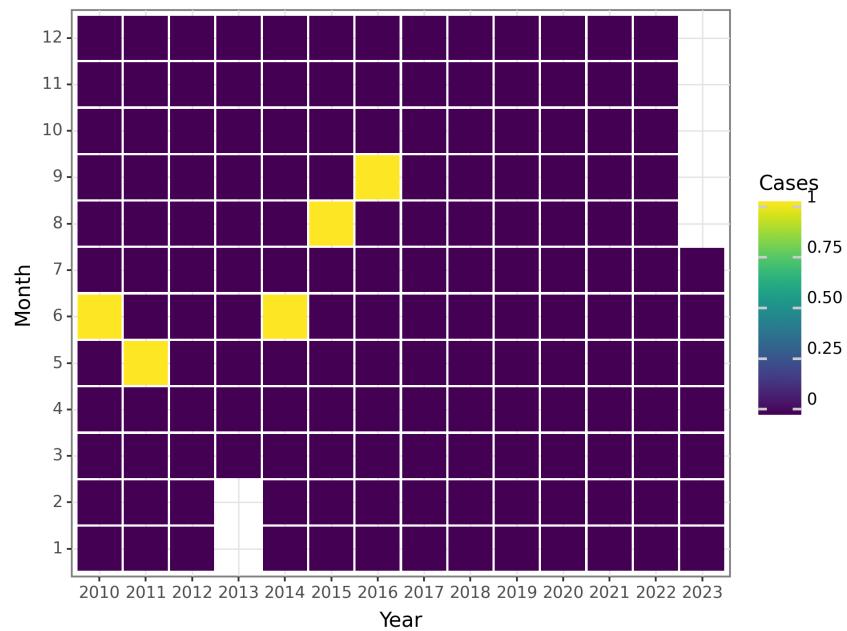


Figure 124: The Change of Typhus Deaths before 2023 July

Kala azar

Kala azar, also known as visceral leishmaniasis, is a neglected tropical disease caused by the protozoan parasite *Leishmania donovani* or *Leishmania infantum*. It is characterized by the presence of parasites in the internal organs, such as the spleen, liver, and bone marrow. Kala azar is endemic in 79 countries, with the majority of cases occurring in South Asia, East Africa, and South America.

Transmission Routes: The primary mode of transmission of Kala azar is through the bite of infected female sandflies belonging to the *Phlebotomus* genus in the Old World and *Lutzomyia* genus in the New World. The sandflies acquire the infection by feeding on infected humans or animals. Additionally, the disease can also be transmitted through blood transfusion and vertical transmission from infected mother to child.

Affected Populations: Kala azar predominantly affects impoverished populations living in rural areas with poor sanitation and limited access to healthcare. The disease primarily affects children under the age of 15 and immunocompromised individuals, such as those with HIV/AIDS or malnutrition. However, adults can also be affected, particularly in areas with high transmission rates.

Key Statistics: - It is estimated that there are around 200,000 to 400,000 new cases of visceral leishmaniasis reported annually worldwide. - Approximately 40,000 deaths occur each year due to Kala azar. - India accounts for approximately 50% of the global burden of Kala azar cases. - Other heavily affected countries include Bangladesh, Sudan, South Sudan, Ethiopia, Brazil, and Nepal.

Historical Context and Discovery: Kala azar has been known for centuries, with evidence of the disease found in ancient texts from India and China. The term "Kala azar" was first coined in the late 19th century when British physicians working in India observed the characteristic darkening of the skin (kala means black in Hindi) in individuals with the disease. The parasite responsible for Kala azar was discovered by William Leishman, a Scottish pathologist, in 1901.

Major Risk Factors: Several risk factors contribute to the transmission of Kala azar: 1. Poverty and poor living conditions: Lack of access to clean water, proper sanitation, and adequate housing increases the risk of transmission. 2. Vector presence: The presence of sandflies in endemic areas is a significant risk factor. Factors such as deforestation, urbanization, and climate change can influence sandfly populations. 3.

Immunocompromised individuals: People with weakened immune systems, such as those with HIV/AIDS or malnutrition, are more susceptible to Kala azar. 4. Migration and displacement: Movement of infected individuals from endemic areas to non-endemic regions can introduce the disease to new populations.

Impact on Different Regions and Populations: The prevalence of Kala azar varies among different regions and populations. In South Asia, India and Bangladesh have the highest burden, with Bihar state in India being particularly affected. In East Africa, Sudan and South Sudan have the highest incidence rates. In South America, Brazil is the most affected country. The disease has a significant impact on the affected populations, leading to increased morbidity and mortality, economic burden, and reduced productivity.

In conclusion, Kala azar is a significant public health concern in many parts of the world, particularly in impoverished rural areas. The disease primarily affects children and immunocompromised individuals, with India having the highest burden of cases. Factors such as poverty, poor living conditions, and vector presence contribute to the transmission of Kala azar. Efforts to control and eliminate the disease focus on vector control, early diagnosis, and treatment.

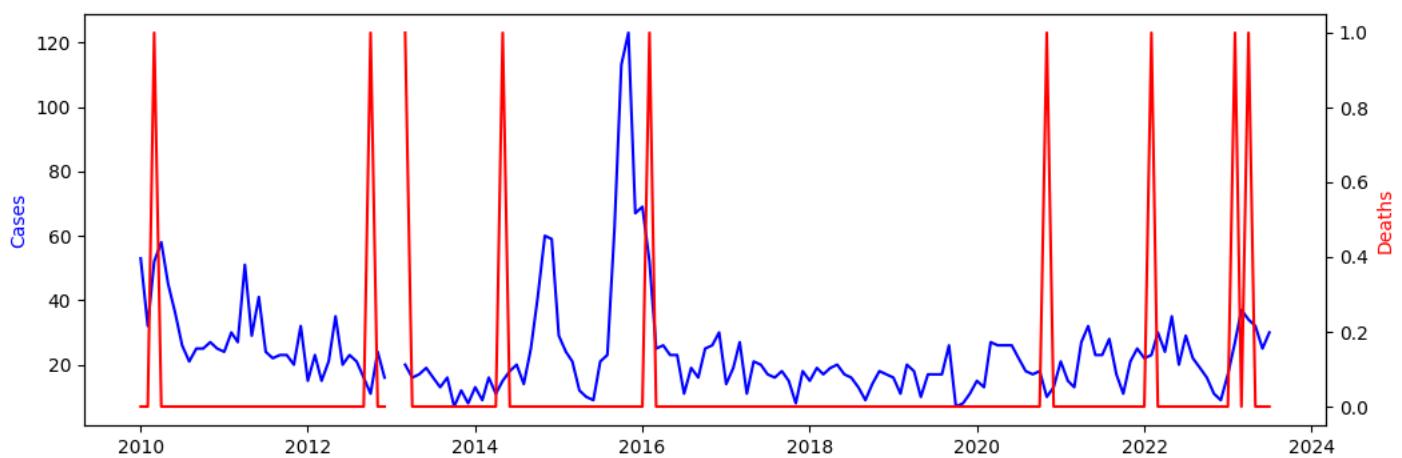


Figure 125: The Change of Kala azar Reports before 2023 July

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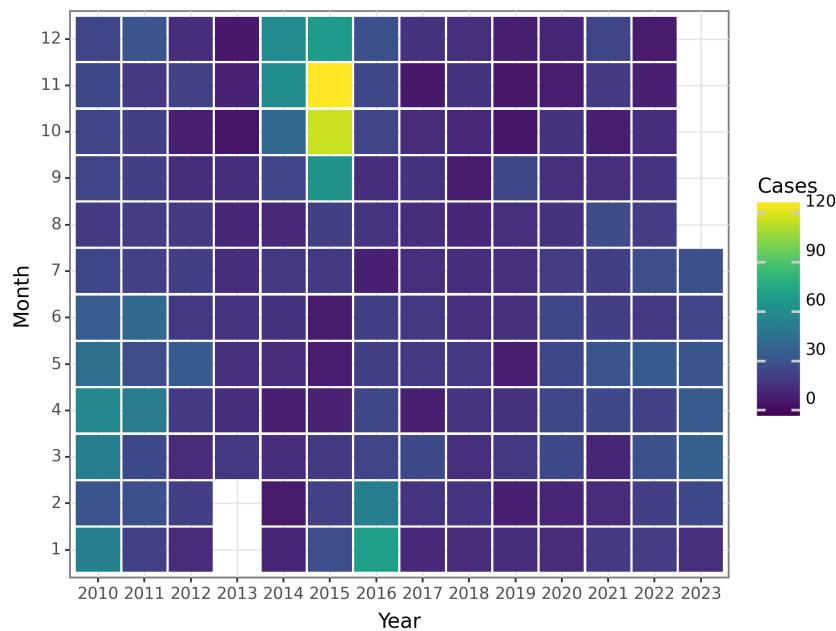


Figure 126: The Change of Kala azar Cases before 2023 July

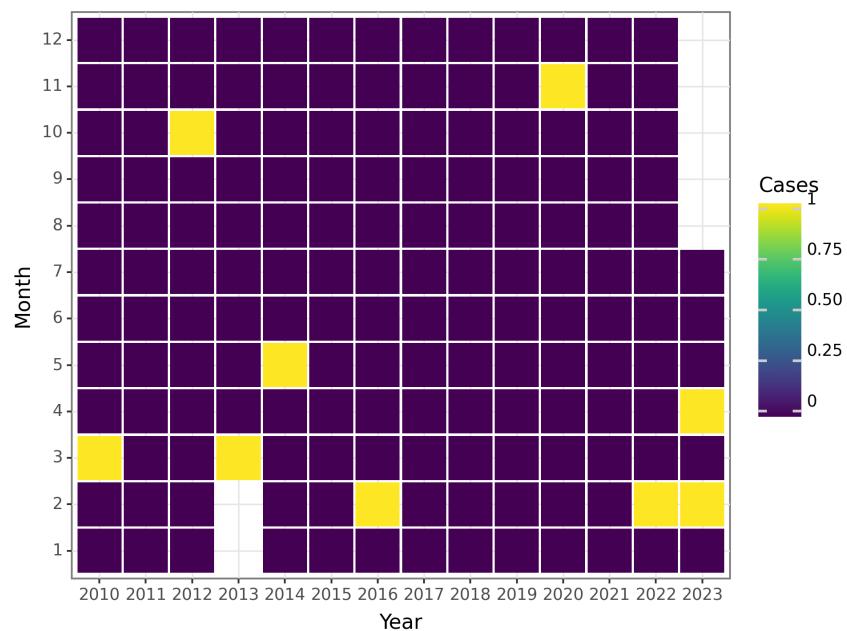


Figure 127: The Change of Kala azar Deaths before 2023 July

Echinococcosis

Echinococcosis is a zoonotic parasitic disease caused by the larval stage of tapeworms belonging to the genus *Echinococcus*. The two main species causing human infection are *Echinococcus granulosus* and *Echinococcus multilocularis*. Echinococcosis has a global distribution, primarily affecting rural communities in endemic regions.

Historical Context and Discovery: Echinococcosis has been known since ancient times, with evidence of the disease found in mummies from ancient Egypt. However, its causative agent, the tapeworm, was not identified until the 19th century. In 1851, Karl von Siebold described the adult tapeworm and its eggs, while Rudolf Leuckart discovered the intermediate hosts responsible for transmission to humans. Since then, various studies have expanded our understanding of the disease's epidemiology and its impacts on human health.

Global Prevalence: Echinococcosis is endemic in many parts of the world, particularly in regions where pastoralism and livestock farming are common. The highest prevalence is found in Central Asia, the Mediterranean region, parts of South America, and parts of China. However, cases have been reported in almost every continent, including Africa, Australia, and North America. The exact prevalence is difficult to determine due to underreporting and limited surveillance systems. Estimates suggest that around one million people are affected globally, with approximately 50,000 new cases reported annually.

Transmission Routes: The life cycle of *Echinococcus* involves two hosts, a definitive host (usually dogs or other canids) and an intermediate host (usually herbivores such as sheep, cattle, or pigs). Humans become infected by accidentally ingesting the eggs shed in the feces of infected definitive hosts. This can occur through direct contact with contaminated soil, water, or contaminated food, or by contact with dogs or other canids carrying the parasite. Once ingested, the eggs release larvae that form cysts in various organs, most commonly the liver and lungs.

Affected Populations: Echinococcosis predominantly affects rural populations involved in livestock farming or living in close proximity to canids. This includes farmers, shepherds, hunters, and their families. However, the disease can also occur in urban areas due to the presence of stray dogs or the consumption of contaminated food. Children are particularly vulnerable due to their close contact with dogs and their tendency to play in contaminated environments. Additionally, people with weakened immune systems may be at higher risk of developing severe forms of the disease.

Key Statistics: - Echinococcosis causes approximately 2,000 deaths annually. - The disease accounts for an estimated 1.2 million disability-adjusted life years (DALYs) lost each year. - The economic burden associated with Echinococcosis is significant, including costs related to diagnosis, treatment, and loss of productivity.

Major Risk Factors: - Close contact with infected canids, particularly dogs. - Consumption of raw or undercooked meat from infected animals. - Living in or visiting endemic areas. - Poor hygiene practices, such as inadequate handwashing. - Lack of awareness about the disease and its prevention measures.

Impact on Different Regions and Populations: The prevalence of Echinococcosis varies across regions and populations due to differences in environmental conditions, cultural practices, and healthcare infrastructure. In endemic regions, the disease can have a significant impact on public health and socioeconomic development. It can lead to chronic illness, disability, and even death, causing a substantial burden on affected individuals and their communities. Additionally, Echinococcosis can have economic consequences, affecting livestock production and trade.

In conclusion, Echinococcosis is a parasitic disease with a global distribution, particularly affecting rural communities in endemic regions. Its transmission routes involve canids as definitive hosts and humans as accidental intermediate hosts. The disease has a significant impact on affected populations, with variations in prevalence rates and affected demographics across different regions. Public health interventions focusing on education, improved hygiene practices, and control of definitive host populations are crucial for reducing the burden of Echinococcosis.

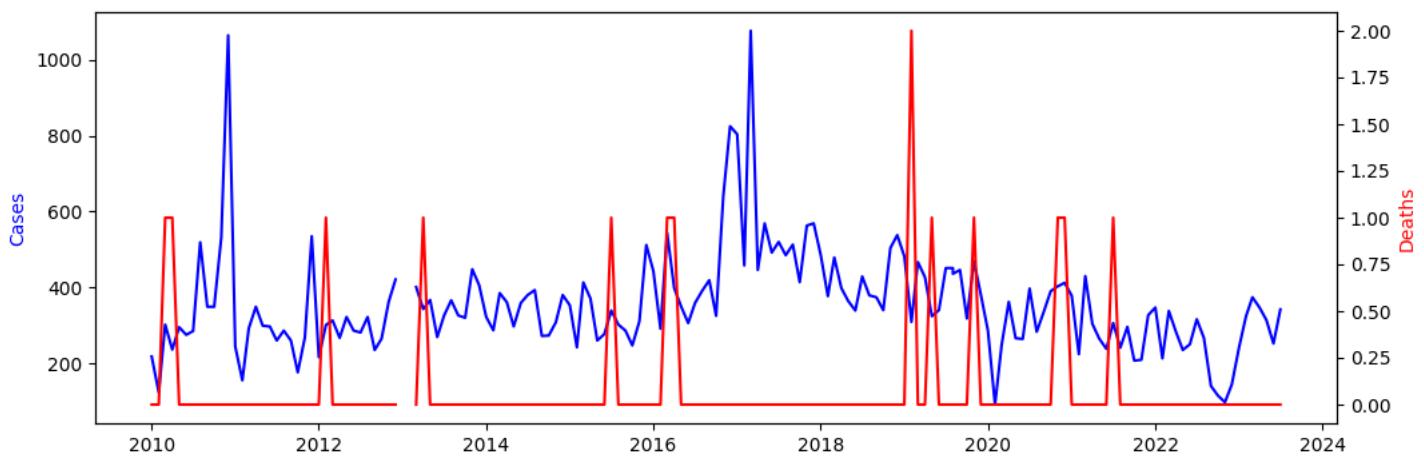


Figure 128: The Change of Echinococcosis Reports before 2023 July

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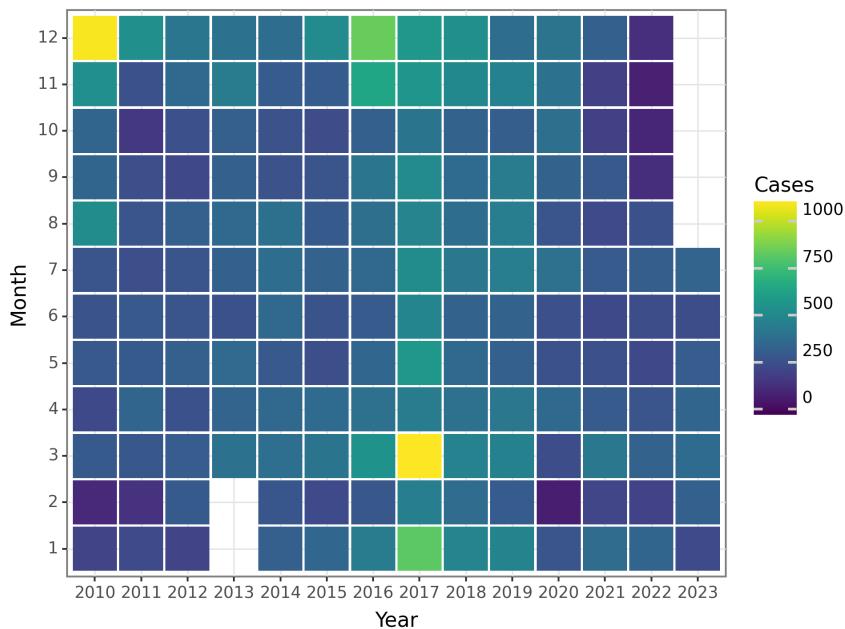


Figure 129: The Change of Echinococcosis Cases before 2023 July

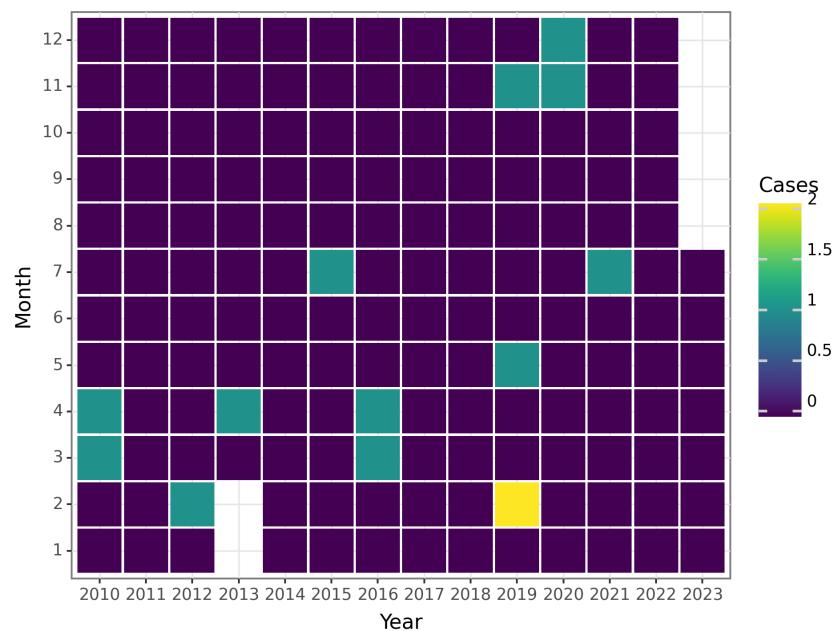


Figure 130: The Change of Echinococcosis Deaths before 2023 July

Filariasis

Filariasis, also known as elephantiasis, is a neglected tropical disease caused by parasitic worms called filarial worms. It is primarily transmitted through the bites of infected mosquitoes. This disease affects millions of people worldwide, particularly in tropical and subtropical regions. Understanding the epidemiology of filariasis is crucial for implementing effective control measures and reducing its impact on affected populations.

Historical Context and Discovery: Filariasis has a long history, with references to the disease dating back to ancient times. However, it was not until the 19th century that the causative agent, filarial worms, was discovered. In 1866, Sir Patrick Manson, a Scottish physician, established the link between mosquitoes and filariasis transmission. He also identified the three main species of filarial worms that infect humans: *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori*.

Prevalence and Transmission Routes: Filariasis is endemic in several regions of the world, particularly in tropical and subtropical areas. According to the World Health Organization (WHO), approximately 120 million people are infected with lymphatic filariasis (caused by *W. bancrofti* and *B. malayi*), and about 40 million people are affected by onchocerciasis (river blindness, caused by *Onchocerca volvulus*).

The primary mode of transmission for filariasis is through the bites of infected mosquitoes. Mosquitoes become infected by taking blood from infected individuals and ingesting the microfilariae, the larval form of the filarial worms. The larvae develop into infective stages within the mosquito, and when the mosquito bites another person, the infective larvae enter the bloodstream, leading to infection.

Affected Populations and Key Statistics: Filariasis predominantly affects the poorest populations in tropical and subtropical regions, where access to adequate healthcare and prevention measures is limited. Key statistics related to filariasis include:

1. Lymphatic Filariasis: - Global prevalence: Approximately 120 million people infected. - Endemic countries: Over 70 countries in Africa, Asia, the Americas, and the Pacific. - Most affected populations: Rural and urban poor, particularly those living in areas with poor sanitation and limited access to clean water.
2. Onchocerciasis: - Global prevalence: Around 40 million people affected. - Endemic countries: Primarily in sub-Saharan Africa, with some foci in Latin America and Yemen. - Most affected populations: Rural communities living near fast-flowing rivers, where blackflies (*Simulium spp.*) that transmit the disease breed.

Major Risk Factors: Several risk factors contribute to the transmission of filariasis, including:

1. Poverty: Limited access to healthcare, clean water, and sanitation increases the risk of filariasis transmission.
2. Vector Presence: The presence of mosquito or blackfly populations in endemic areas increases the likelihood of transmission.
3. Poor Sanitation: Lack of proper waste management and sewage systems facilitates the breeding of mosquitoes, increasing the risk of transmission.
4. Migration and Travel: Movement of infected individuals from endemic areas to non-endemic regions can introduce the disease to new populations.

Impact on Different Regions and Populations: Filariasis has a significant impact on affected regions and populations:

1. Physical and Emotional Burden: Filariasis can cause severe disability, including lymphedema, elephantiasis, and blindness. These conditions can lead to social stigmatization, psychological distress, and reduced productivity.
2. Economic Consequences: Filariasis affects individuals' ability to work, resulting in decreased productivity, lost wages, and increased healthcare costs.
3. Geographic Variations: Prevalence rates and affected demographics vary across regions. For instance, lymphatic filariasis is more prevalent in Africa and Asia, while onchocerciasis is primarily found in sub-Saharan Africa.
4. Control Efforts: Mass drug administration programs, vector control measures, and health education campaigns have been implemented to reduce the burden of filariasis. Significant progress has been made in eliminating lymphatic filariasis in several regions.

In conclusion, filariasis is a significant public health concern, particularly in tropical and subtropical regions. The disease's global prevalence, transmission routes, affected populations, and associated risk factors highlight the need for comprehensive control strategies to reduce its impact on affected individuals and communities.

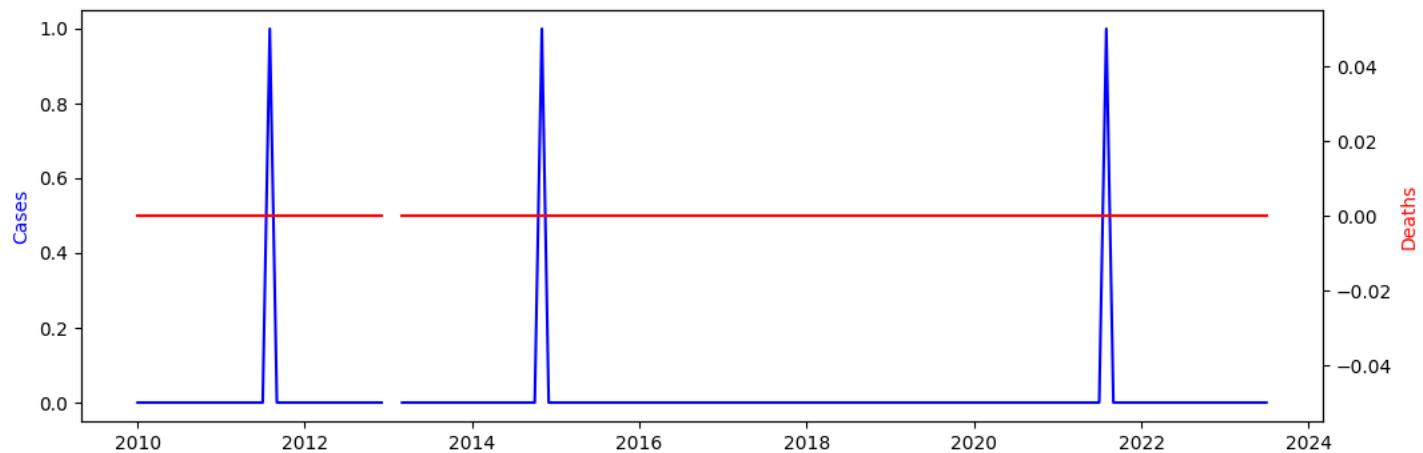


Figure 131: The Change of Filariasis Reports before 2023 July

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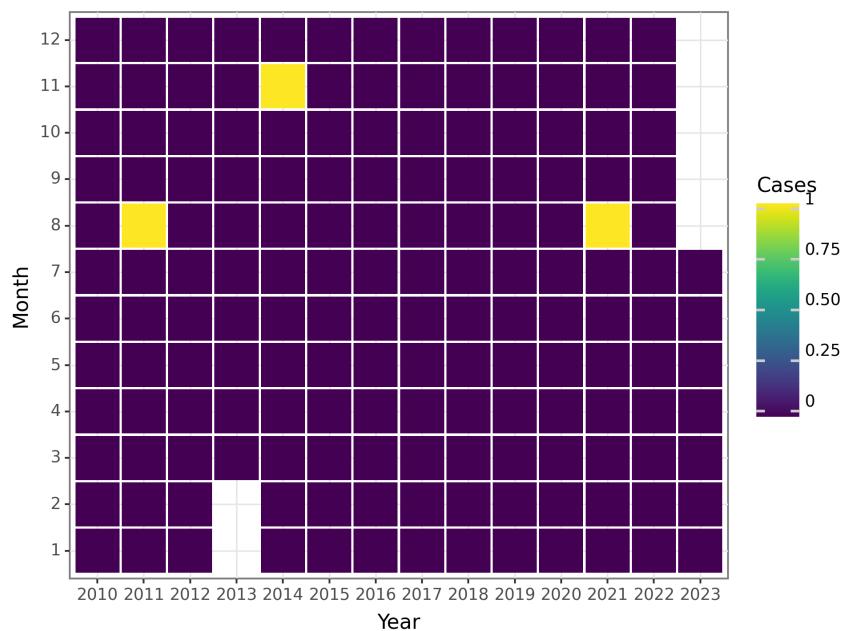


Figure 132: The Change of Filariasis Cases before 2023 July

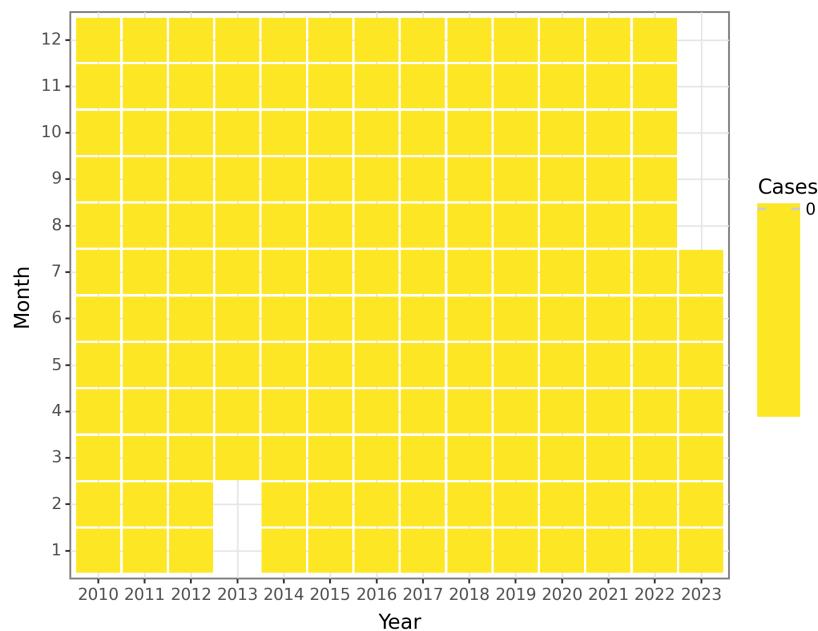


Figure 133: The Change of Filariasis Deaths before 2023 July

Infectious diarrhea

Infectious diarrhea, also known as acute gastroenteritis, is a common gastrointestinal illness that is caused by a variety of infectious agents. It is characterized by the inflammation of the stomach and intestines, leading to symptoms such as diarrhea, vomiting, abdominal pain, and fever. This condition can be caused by bacteria, viruses, parasites, or toxins produced by these pathogens.

Historically, infectious diarrhea has been prevalent throughout human history. However, it was not until the late 19th and early 20th centuries that specific pathogens were identified as the cause of the disease. The discovery of bacteria such as *Salmonella*, *Shigella*, and *Escherichia coli* (*E. coli*) in the early 20th century provided a significant breakthrough in understanding the etiology and transmission of infectious diarrhea. Transmission of infectious diarrhea can occur through various routes, including:

1. Fecal-oral route: This is the most common mode of transmission and happens when individuals consume food or water contaminated with fecal matter containing the infectious agents. This can occur due to poor sanitation and hygiene practices, inadequate water treatment, or improper food handling.
2. Person-to-person transmission: Infected individuals can spread the disease to others through direct contact, such as shaking hands, sharing utensils, or through close personal contact.
3. Contaminated surfaces: Infectious agents can survive on surfaces for extended periods, and individuals can become infected by touching contaminated surfaces and then touching their mouths or ingesting food without proper hand hygiene.
4. Zoonotic transmission: Some pathogens causing infectious diarrhea can be transmitted from animals to humans. For example, *Campylobacter* and *Salmonella* can be transmitted through the consumption of contaminated poultry or unpasteurized milk.

The global prevalence of infectious diarrhea is significant, particularly in developing countries with poor sanitation and limited access to clean water. According to the World Health Organization (WHO), there are an estimated 1.7 billion cases of diarrheal disease worldwide every year, resulting in around 525,000 deaths, primarily among children under the age of five.

Children, especially those in low-income countries, are the most vulnerable population affected by infectious diarrhea. Poor sanitation, malnutrition, and weak immune systems make them more susceptible to infection and its severe consequences. However, infectious diarrhea can affect individuals of all ages and populations, including adults, travelers, and immunocompromised individuals.

Several risk factors contribute to the transmission of infectious diarrhea:

1. Poor sanitation and hygiene practices: Lack of access to clean water, proper sanitation facilities, and inadequate handwashing contribute to the spread of the disease.
2. Contaminated food and water: Consuming food or water contaminated with infectious agents is a significant risk factor. This can occur due to contaminated food handling, improper storage, or inadequate water treatment.
3. Crowded living conditions: Overcrowded households or communities increase the risk of person-to-person transmission.
4. Travel to high-risk areas: Traveling to regions with poor sanitation and hygiene practices increases the risk of exposure to infectious diarrhea.

The impact of infectious diarrhea varies across different regions and populations. Developing countries, particularly those in sub-Saharan Africa and South Asia, bear the highest burden of the disease due to limited access to clean water, sanitation, and healthcare resources. In these regions, infectious diarrhea contributes significantly to childhood mortality rates.

In developed countries, while the overall prevalence of infectious diarrhea is lower, outbreaks can occur in various settings, including daycare centers, schools, hospitals, and nursing homes. In these settings, the disease can spread rapidly due to close contact and inadequate infection control measures.

In conclusion, infectious diarrhea is a significant global health issue, particularly in developing countries. It affects individuals of all ages and populations, with children being the most vulnerable. Poor sanitation, contaminated food and water, and inadequate hygiene practices are major risk factors for transmission. Efforts to improve sanitation, access to clean water, and promote proper hygiene practices are crucial in reducing the burden of infectious diarrhea and its impact on different regions and populations.

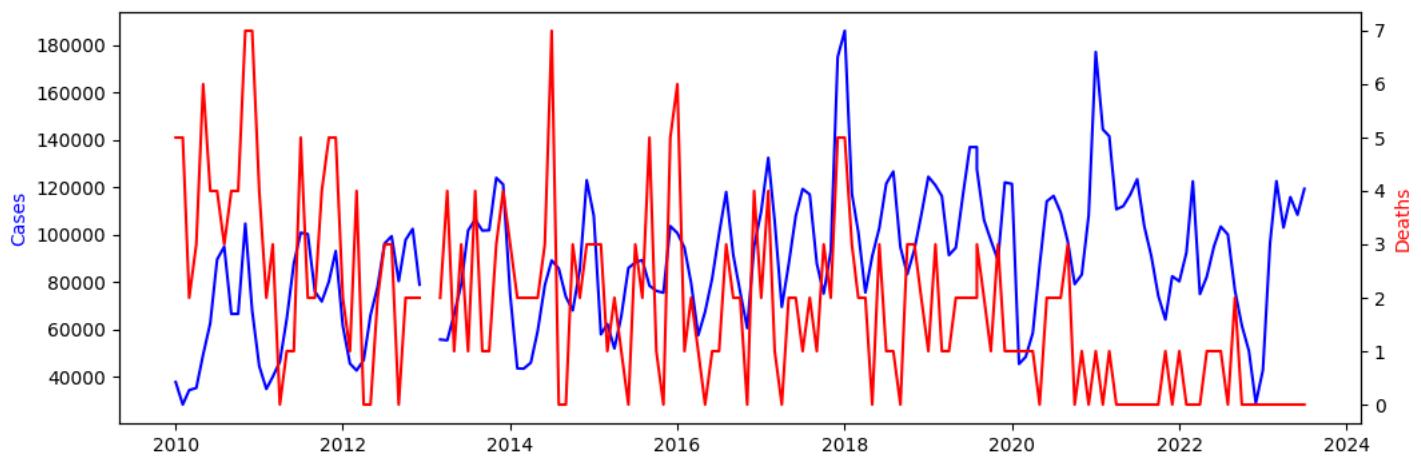


Figure 134: The Change of Infectious diarrhea Reports before 2023 July

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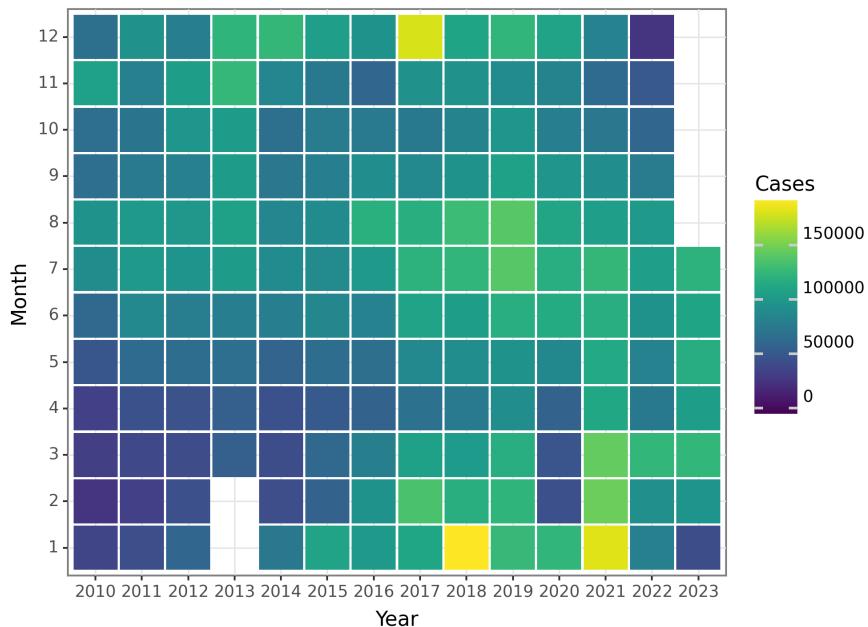


Figure 135: The Change of Infectious diarrhea Cases before 2023 July

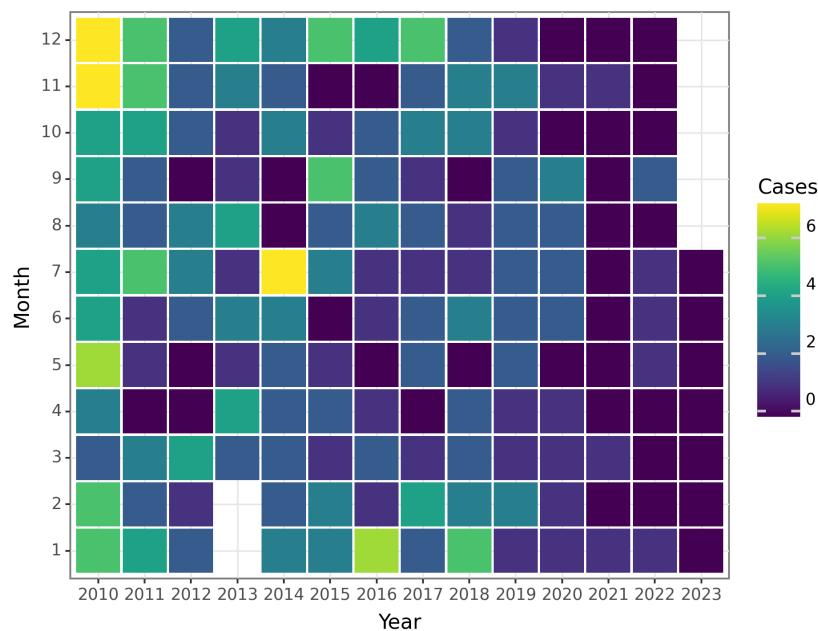


Figure 136: The Change of Infectious diarrhea Deaths before 2023 July

Hand foot and mouth disease

Hand, foot, and mouth disease (HFMD) is a common viral illness that primarily affects young children. It is caused by several types of enteroviruses, most commonly the coxsackievirus. HFMD is characterized by the development of blisters or sores on the hands, feet, and mouth, along with other symptoms such as fever, sore throat, and a rash. In this comprehensive overview, we will explore the epidemiology of HFMD, including its global prevalence, transmission routes, affected populations, key statistics, historical context and discovery, major risk factors associated with transmission, and the impact on different regions and populations.

1. Global Prevalence: HFMD is a global health concern and can occur in outbreaks or sporadic cases throughout the year. It is most prevalent in tropical and subtropical regions, but can also occur in temperate climates. Outbreaks tend to occur more frequently in densely populated areas such as schools, childcare centers, and summer camps.

2. Transmission Routes: HFMD is highly contagious and primarily spreads through direct contact with respiratory secretions, saliva, feces, or fluid from the blisters of an infected individual. It can also be transmitted through contact with contaminated surfaces or objects. The virus can survive on surfaces for several days, increasing the risk of transmission.

3. Affected Populations: HFMD primarily affects infants and children under the age of 5, although older children and adults can also contract the disease. Immunity to the virus is not lifelong, which means that individuals can get re-infected. Certain populations, such as those with weakened immune systems, may be more susceptible to severe complications.

4. Key Statistics: The exact number of HFMD cases worldwide is challenging to determine due to underreporting and variations in surveillance systems. However, it is estimated that there are millions of cases each year. For example, in China, which has experienced several large outbreaks, there were over 2 million reported cases in 2018. In the United States, there were around 25,000 reported cases in 2019.

5. Historical Context and Discovery: HFMD was first described in the late 1950s in Australia, where it was initially referred to as "vesicular stomatitis with exanthem." The coxsackievirus, specifically coxsackievirus A16, was identified as the causative agent in 1957. Since then, other enteroviruses, such as enterovirus 71, have also been associated with HFMD.

6. Major Risk Factors for Transmission: - Close contact with an infected individual, especially during the early stages of the illness when the viral load is high. - Poor hygiene practices, including inadequate handwashing. - Crowded living conditions, such as schools and childcare centers. - Exposure to contaminated surfaces or objects. - Lack of immunity, particularly in individuals who have not previously been infected with the specific enterovirus causing the outbreak.

7. Impact on Different Regions and Populations: HFMD impacts different regions and populations to varying degrees. In densely populated areas with limited access to healthcare, such as parts of Southeast Asia, outbreaks can be more severe. Certain countries, such as China, Japan, Singapore, and Malaysia, have experienced large-scale outbreaks with significant morbidity and, in rare cases, mortality. In contrast, in regions with robust healthcare systems, such as North America and Europe, HFMD is generally a milder illness, with fewer complications and lower mortality rates.

In conclusion, HFMD is a viral disease primarily affecting young children, caused by enteroviruses such as coxsackievirus. It is highly contagious and spreads through various routes, including direct contact and contaminated surfaces. The disease has a global prevalence, with millions of cases reported annually. HFMD's impact varies across regions, with more severe outbreaks occurring in densely populated areas with limited healthcare access. Major risk factors for transmission include close contact, poor hygiene, crowded living conditions, and lack of immunity. Understanding the epidemiology of HFMD is crucial for implementing effective prevention and control measures to reduce its impact on affected populations.

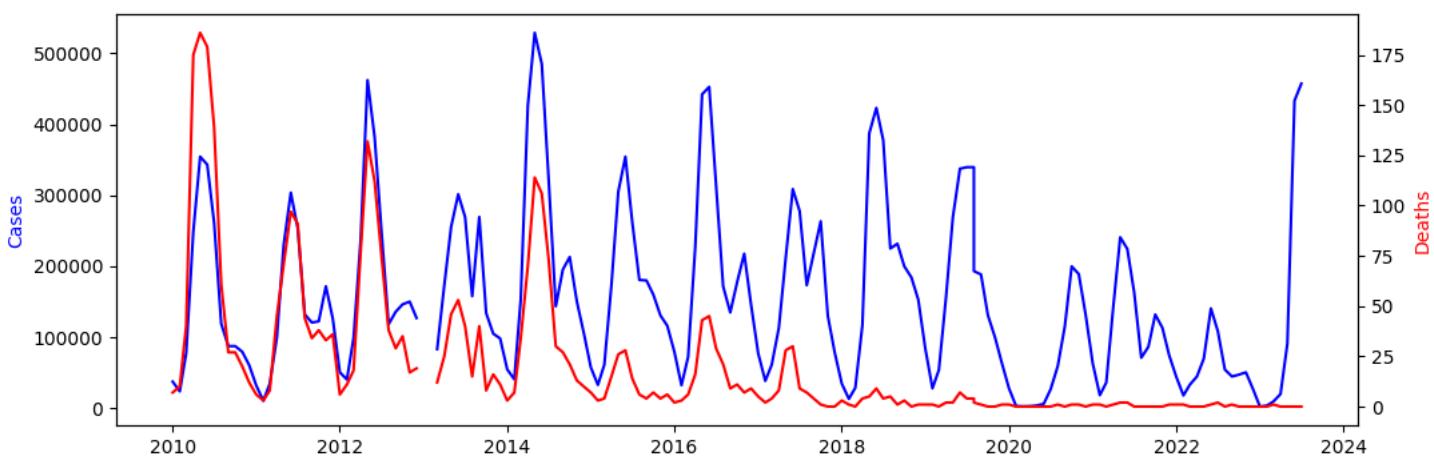


Figure 137: The Change of Hand foot and mouth disease Reports before 2023 July

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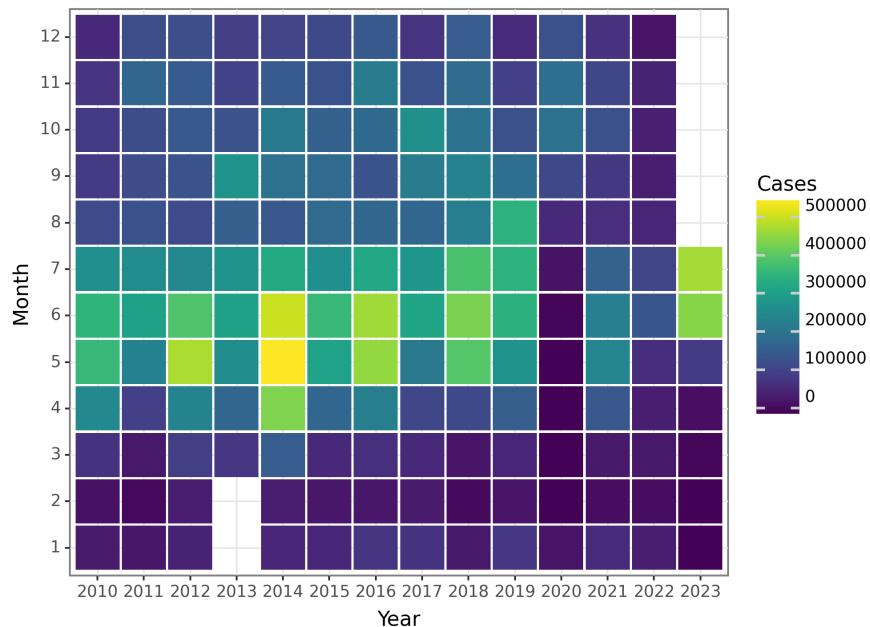


Figure 138: The Change of Hand foot and mouth disease Cases before 2023 July

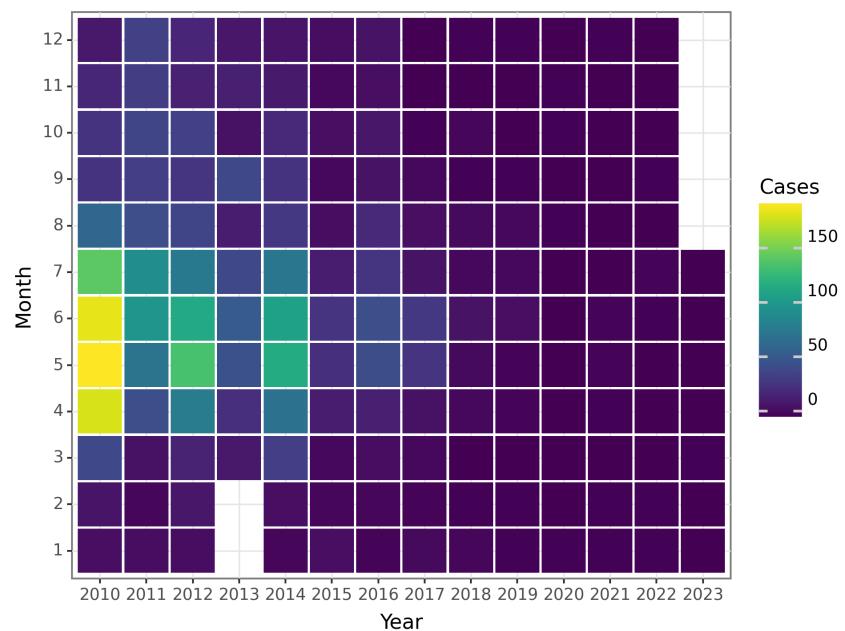


Figure 139: The Change of Hand foot and mouth disease Deaths before 2023 July