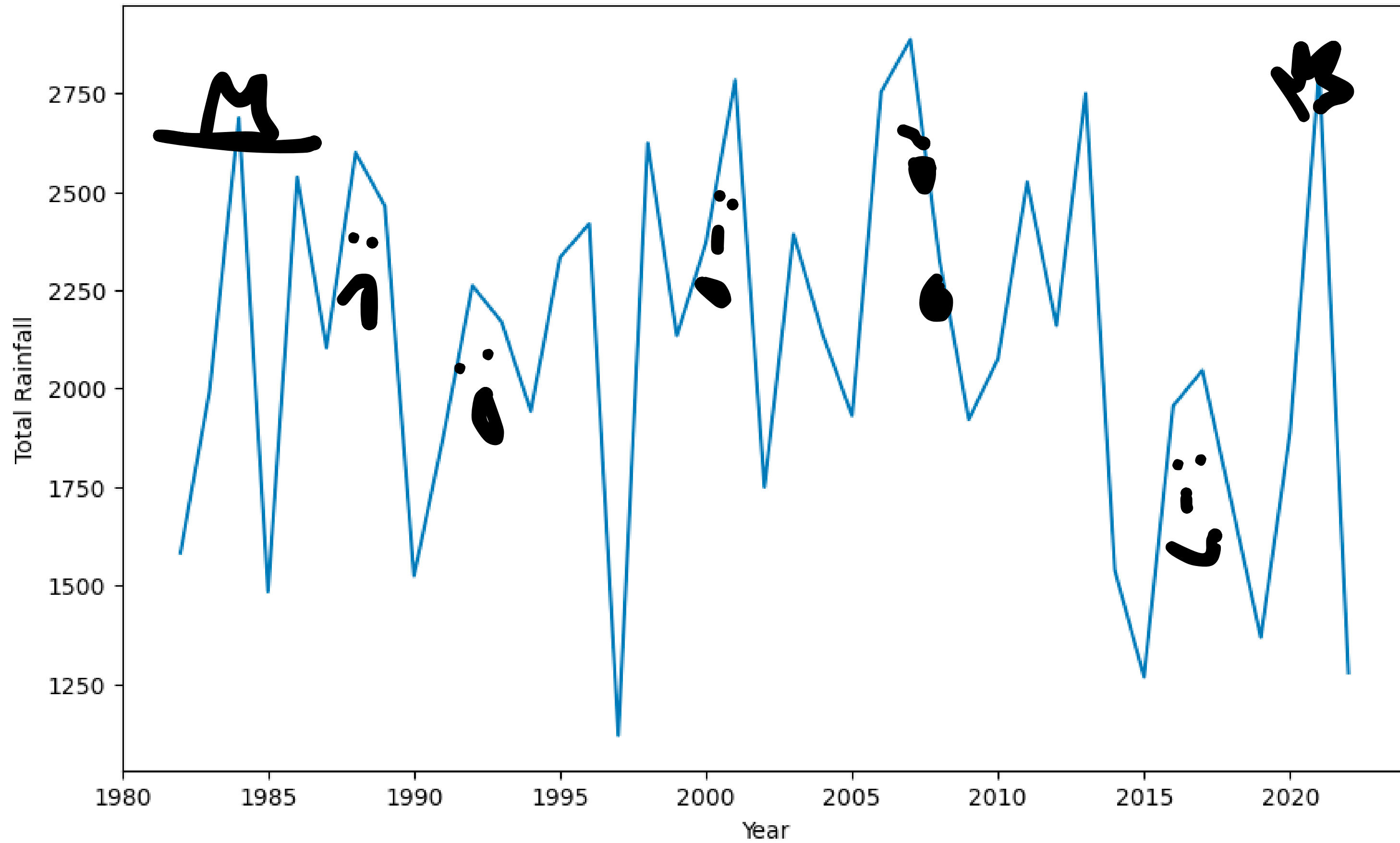
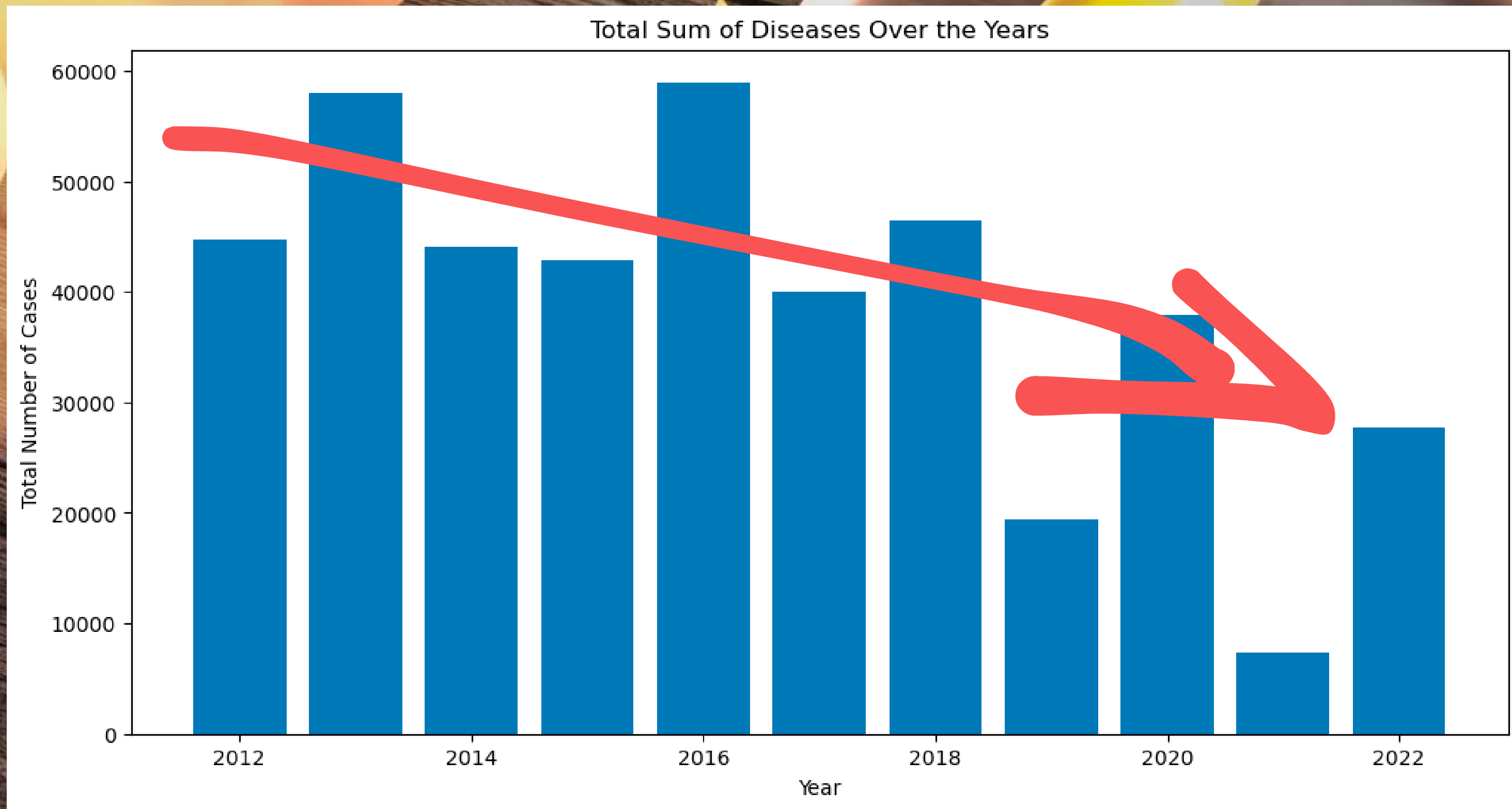


A correlational analysis of how
climate change can affect the
occurrence of pathogenic diseases

CHARLES YAP

Total Rainfall per Year





Over half of known human pathogenic diseases can be aggravated by climate change

[Camilo Mora](#) , [Tristan McKenzie](#), [Isabella M. Gaw](#), [Jacqueline M. Dean](#), [Hannah von Hammerstein](#), [Tabatha A. Knudson](#), [Renee O. Setter](#), [Charlotte Z. Smith](#), [Kira M. Webster](#), [Jonathan A. Patz](#) & [Erik C. Franklin](#)

[Nature Climate Change](#) **12**, 869–875 (2022) | [Cite this article](#)

103k Accesses | **78** Citations | **6380** Altmetric | [Metrics](#)

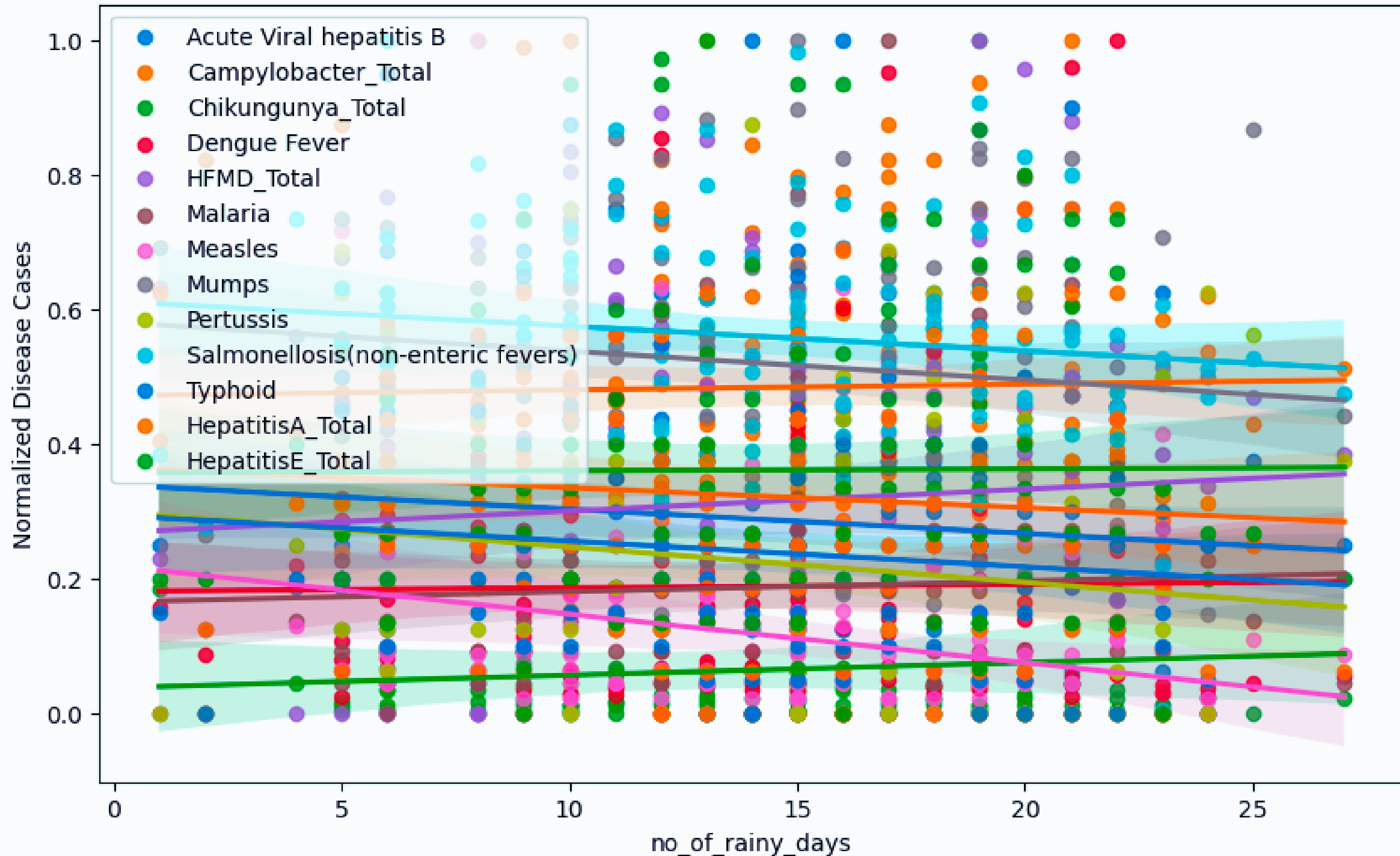
Abstract

It is relatively well accepted that climate change can affect human pathogenic diseases; however, the full extent of this risk remains poorly quantified. Here we carried out a systematic search for empirical examples about the impacts of ten climatic hazards sensitive to greenhouse gas (GHG) emissions on each known human pathogenic disease. We found that 58% (that is, 218 out of 375) of infectious diseases confronted by humanity worldwide have been at some point aggravated by climatic hazards; 16% were at times diminished. Empirical cases revealed 1,006 unique pathways in which climatic hazards, via different transmission types, led to pathogenic diseases. The human pathogenic diseases and transmission pathways aggravated by climatic hazards are too numerous for comprehensive societal



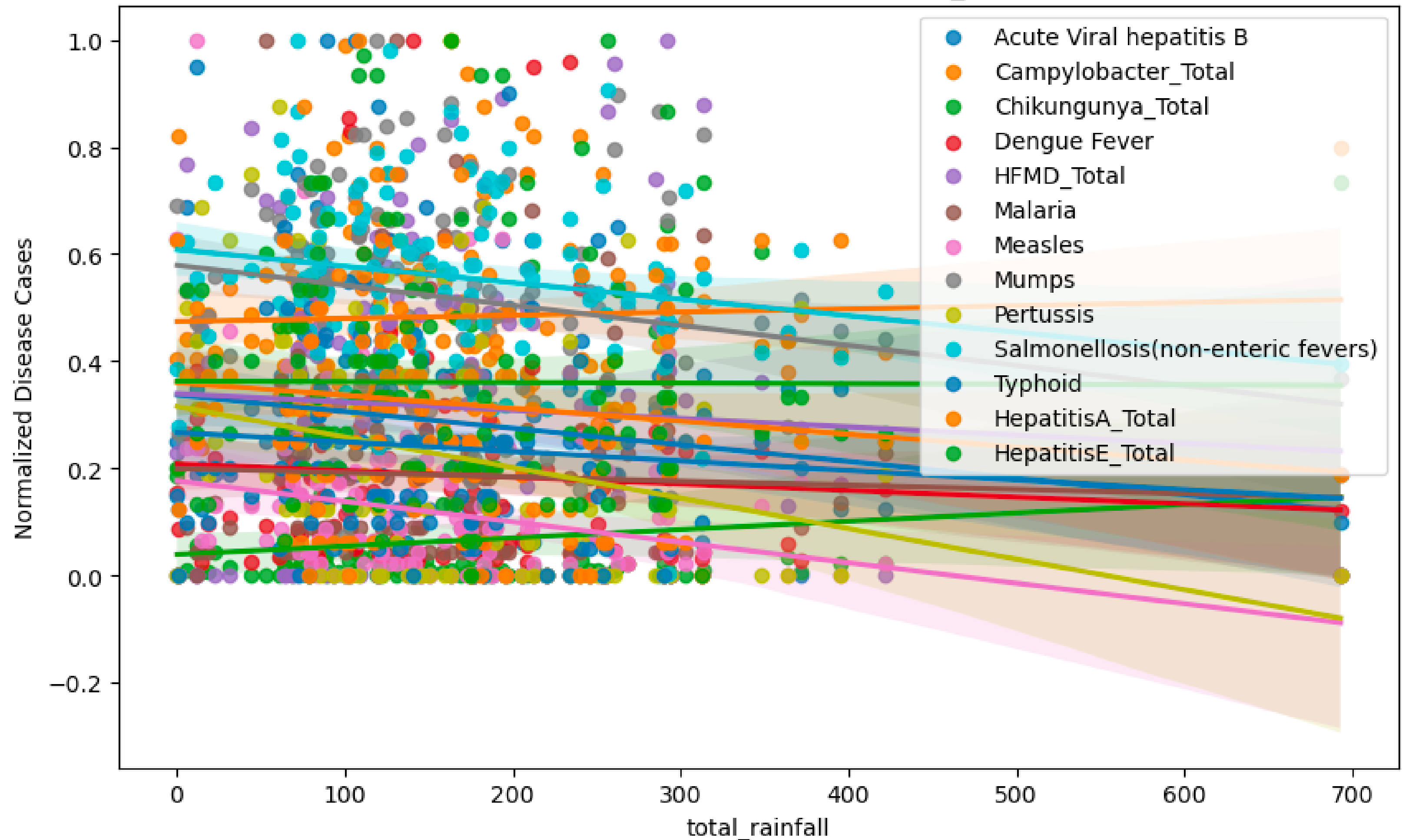
3

Trend lines of diseases against no_of_rainy_days



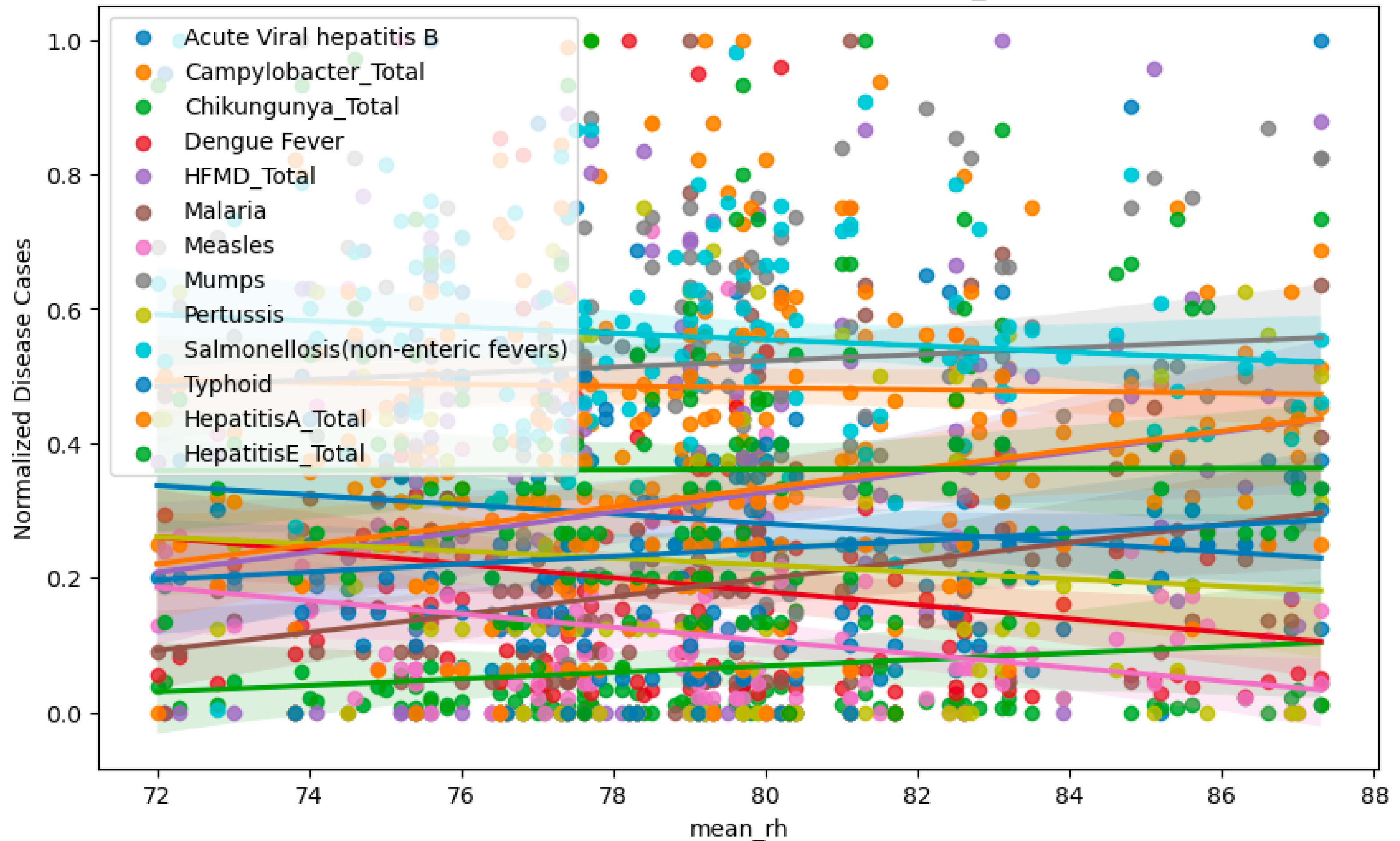
The correlation between no_of_rainy_days and average disease occurrence is -0.08416138917110441

Trend lines of diseases against total_rainfall

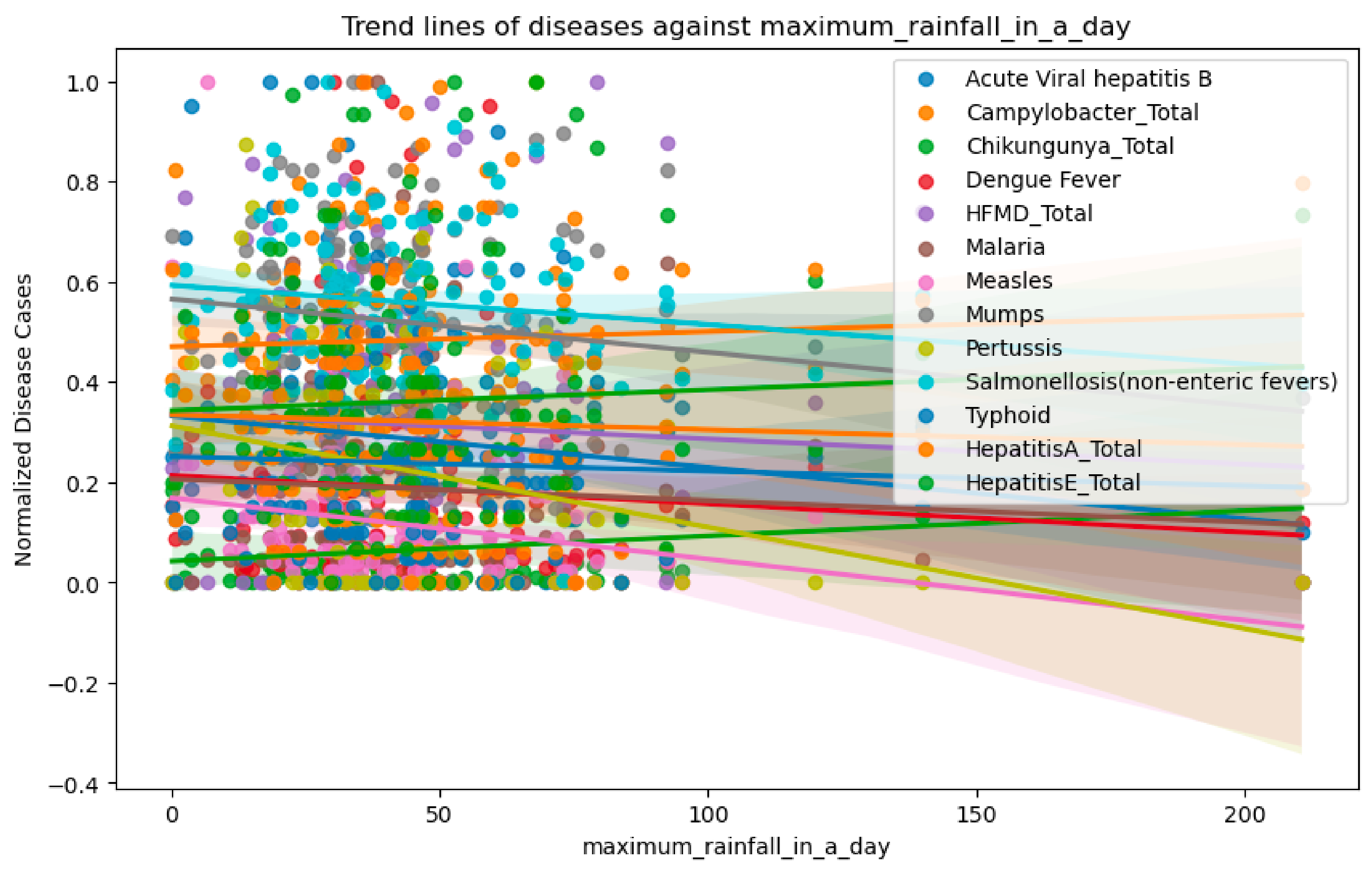


The correlation between total_rainfall and average disease occurrence is -0.16003721777734653

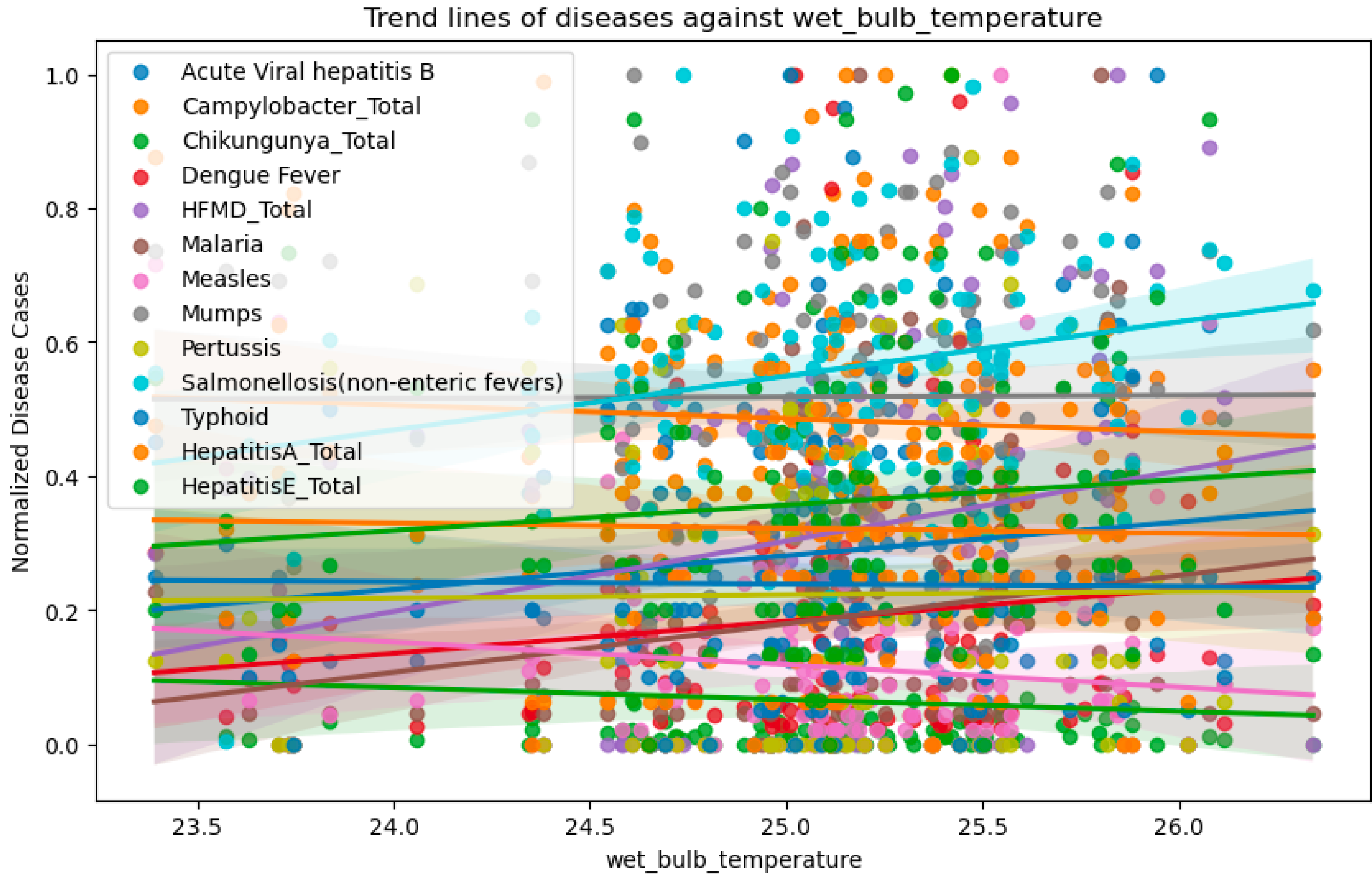
Trend lines of diseases against mean_rh



The correlation between mean_rh and average disease occurrence is 0.04501022026850151

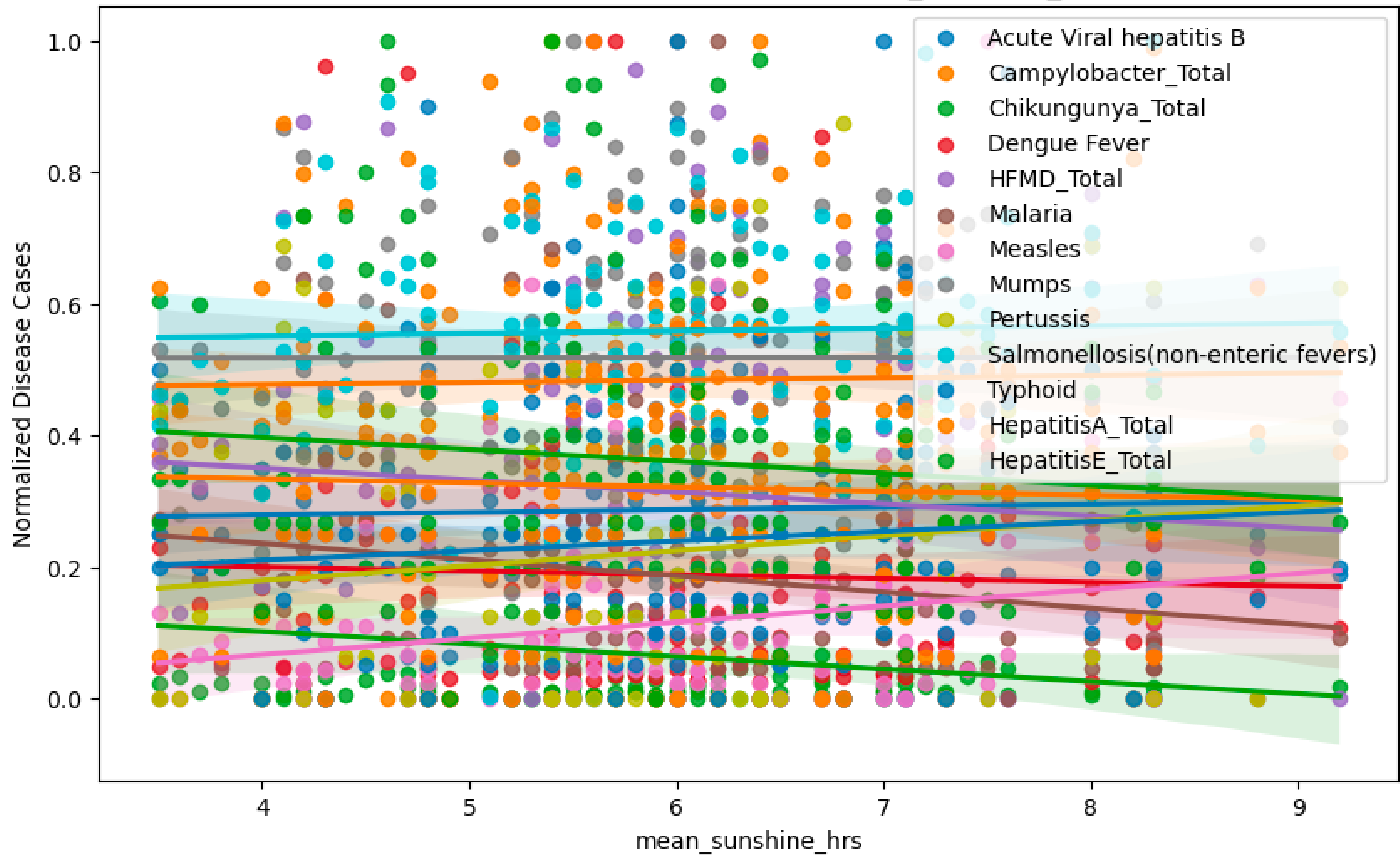


The correlation between maximum_rainfall_in_a_day and average disease occurrence is -0.12826176595110106



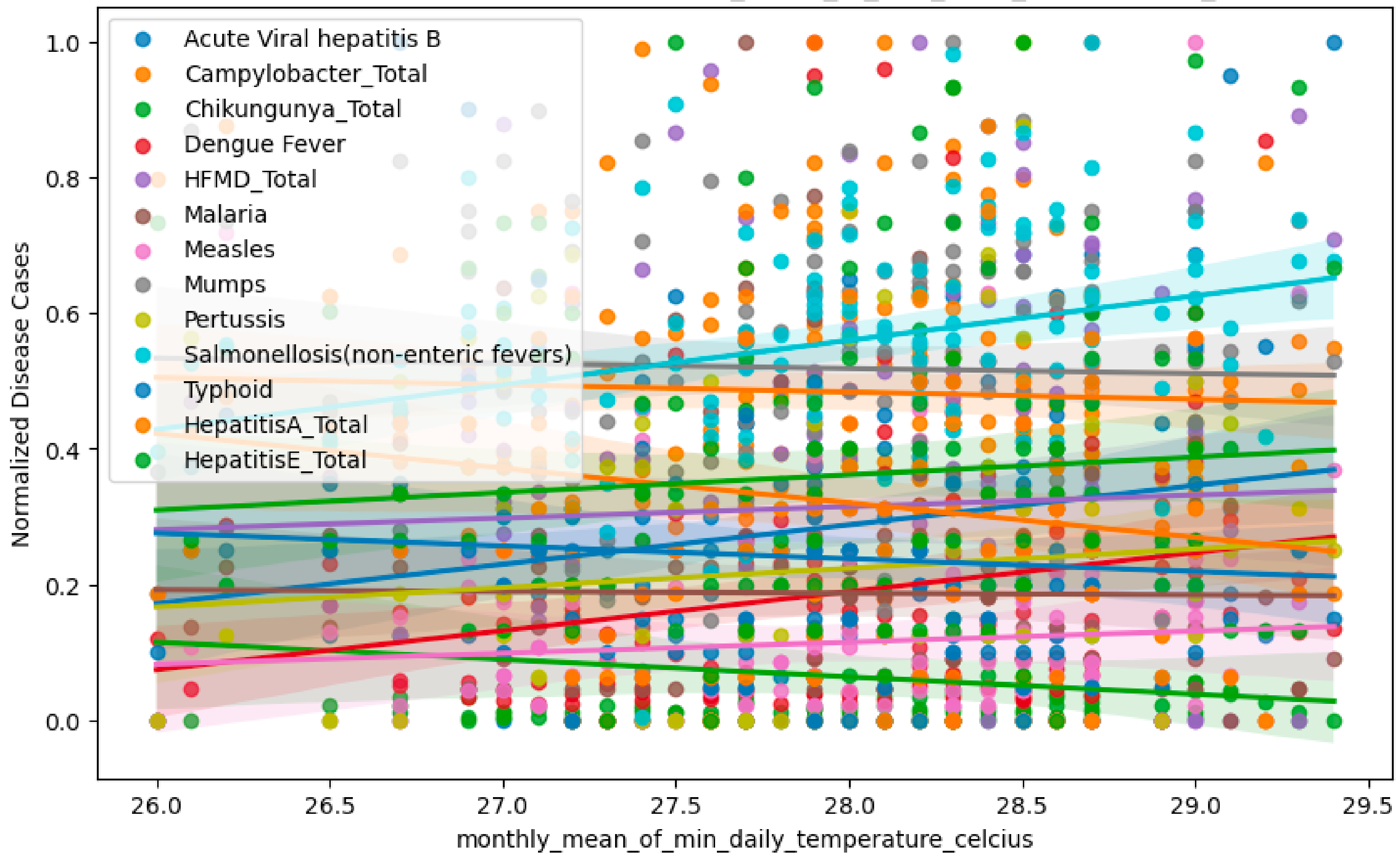
The correlation between wet_bulb_temperature and average disease occurrence is 0.0760217505663096

Trend lines of diseases against mean_sunshine_hrs



The correlation between mean_sunshine_hrs and average disease occurrence is -0.037980876839857625

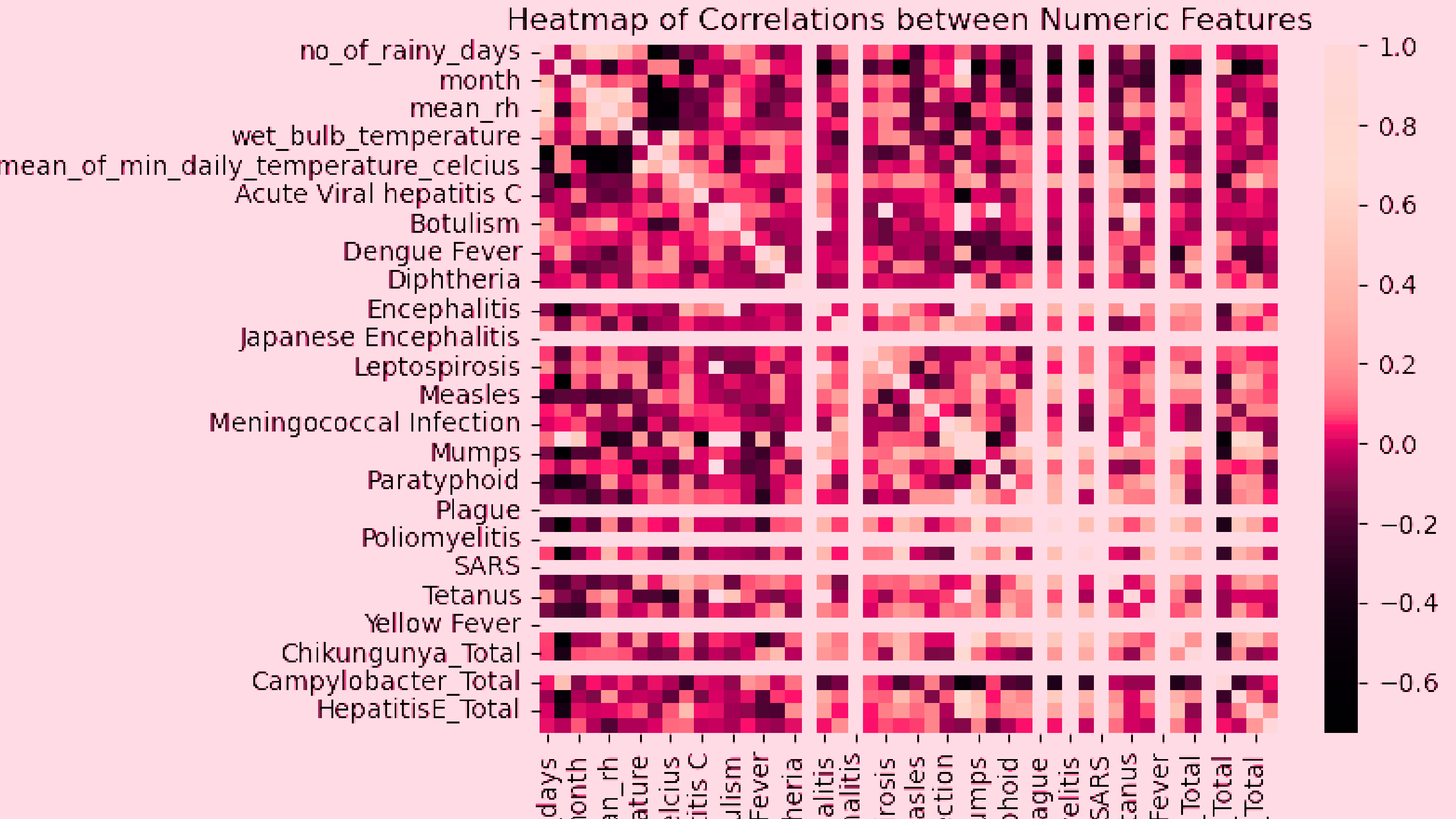
Trend lines of diseases against monthly_mean_of_min_daily_temperature_celcius



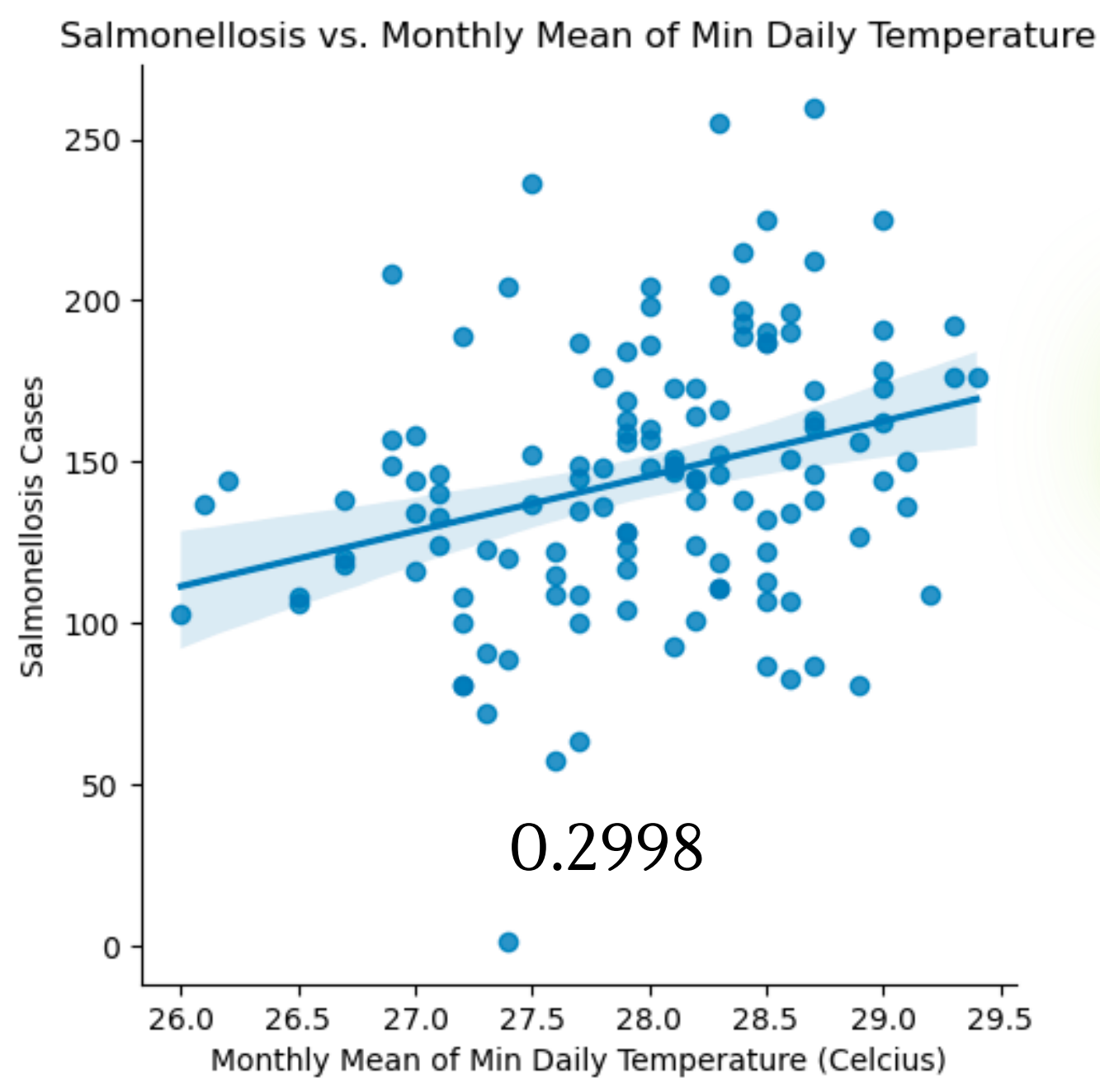
The correlation between monthly_mean_of_min_daily_temperature_celcius and average disease occurrence is 0.043905546215027985



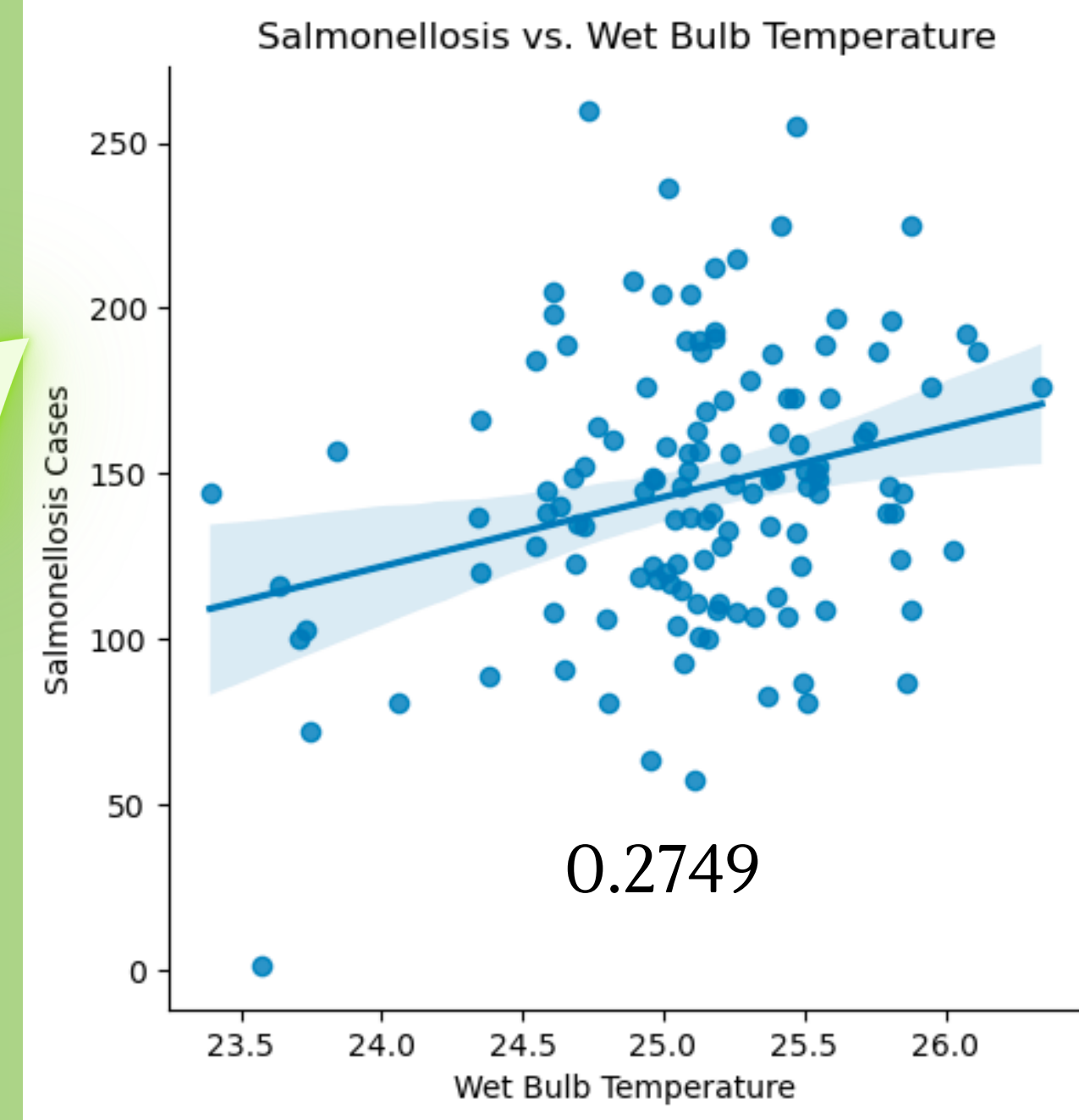
*Thank
you!*



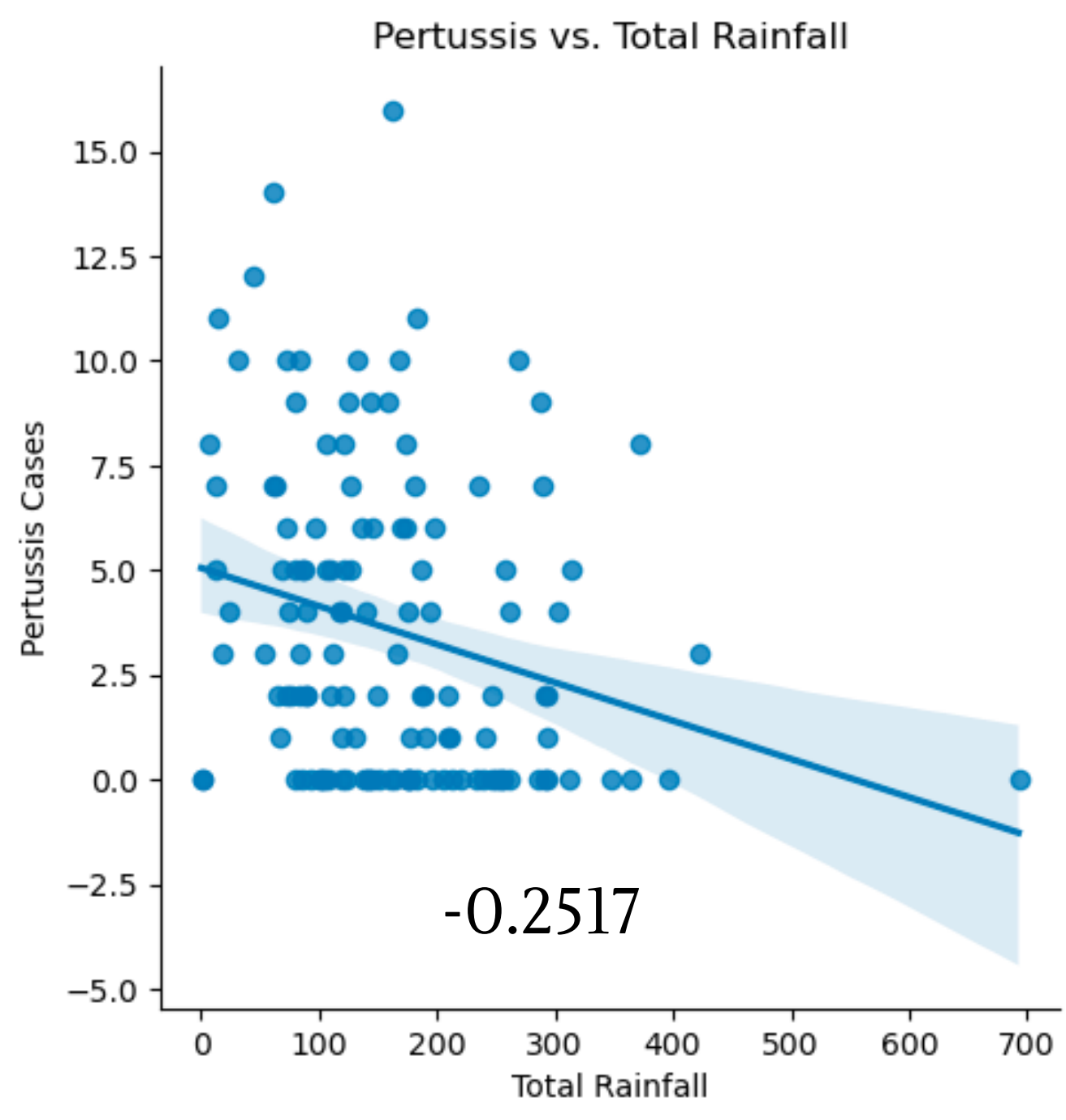
<u>CLIMATE/WEATHER METRIC</u>	<u>DISEASE</u>	<u>CORRELATION</u>
monthly_mean_of_min_daily_temperature_celcius	SALMONELLOSIS	0.2998
wet_bulb_temperature	SALMONELLOSIS	0.2749
total_rainfall	PERTUSSIS	-0.2517
no_of_rainy_days	MEASLES	-0.2411
maximum_rainfall_in_a_day	PERTUSSIS	-0.2405
total_rainfall	MEASLES	-0.2377
mean_rh	MALARIA	0.2334
monthly_mean_of_min_daily_temperature_celcius	HEPATITIS B	0.2276
mean_rh	HEPATITIS A	0.2207
mean_rh	MEASLES	-0.2152



SALMONELLA!

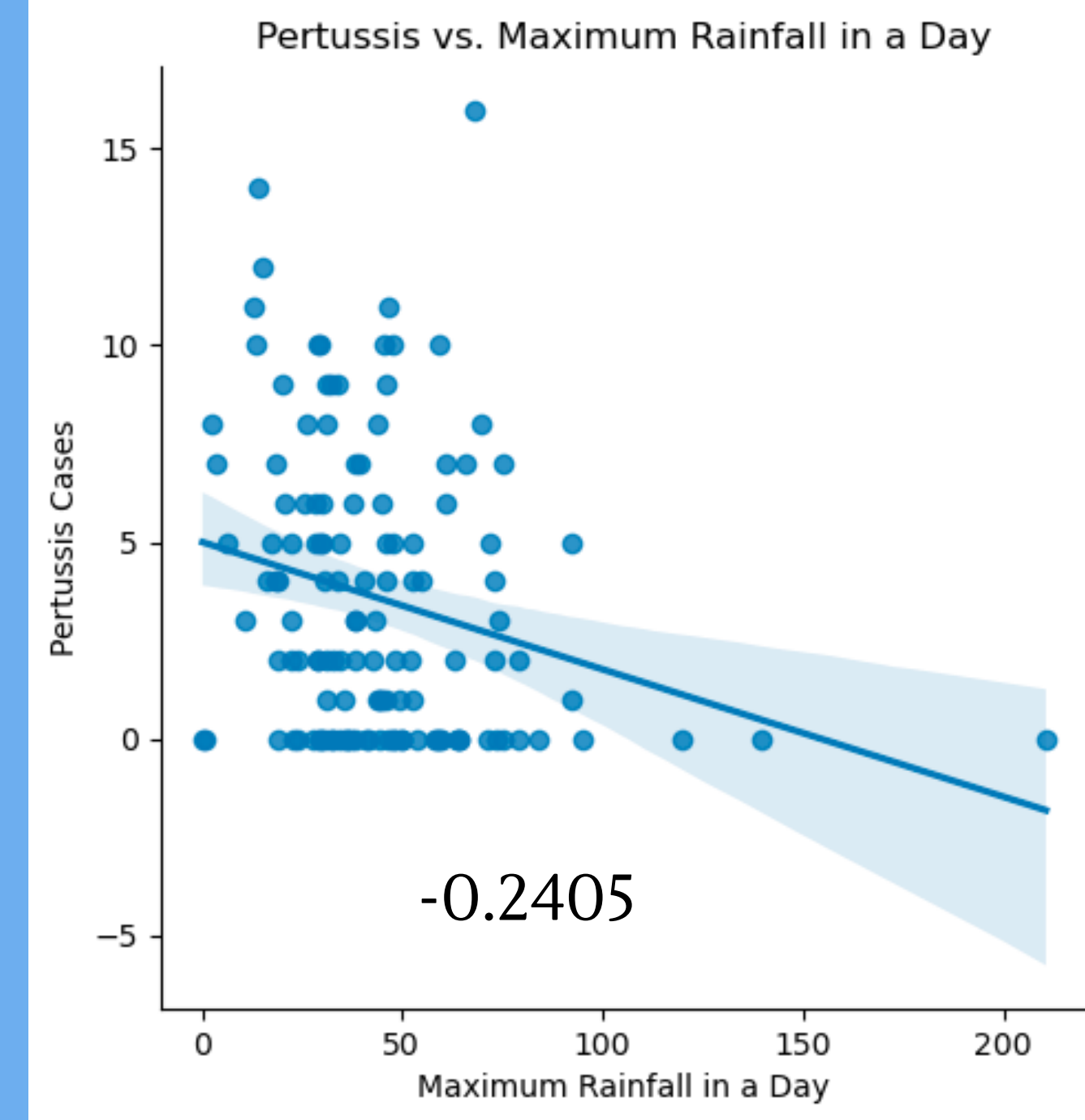


- Optimal growth temperature: 37°C
- When not in host, survives in moist regions.
- Hotter = FESTERING BACTERIA

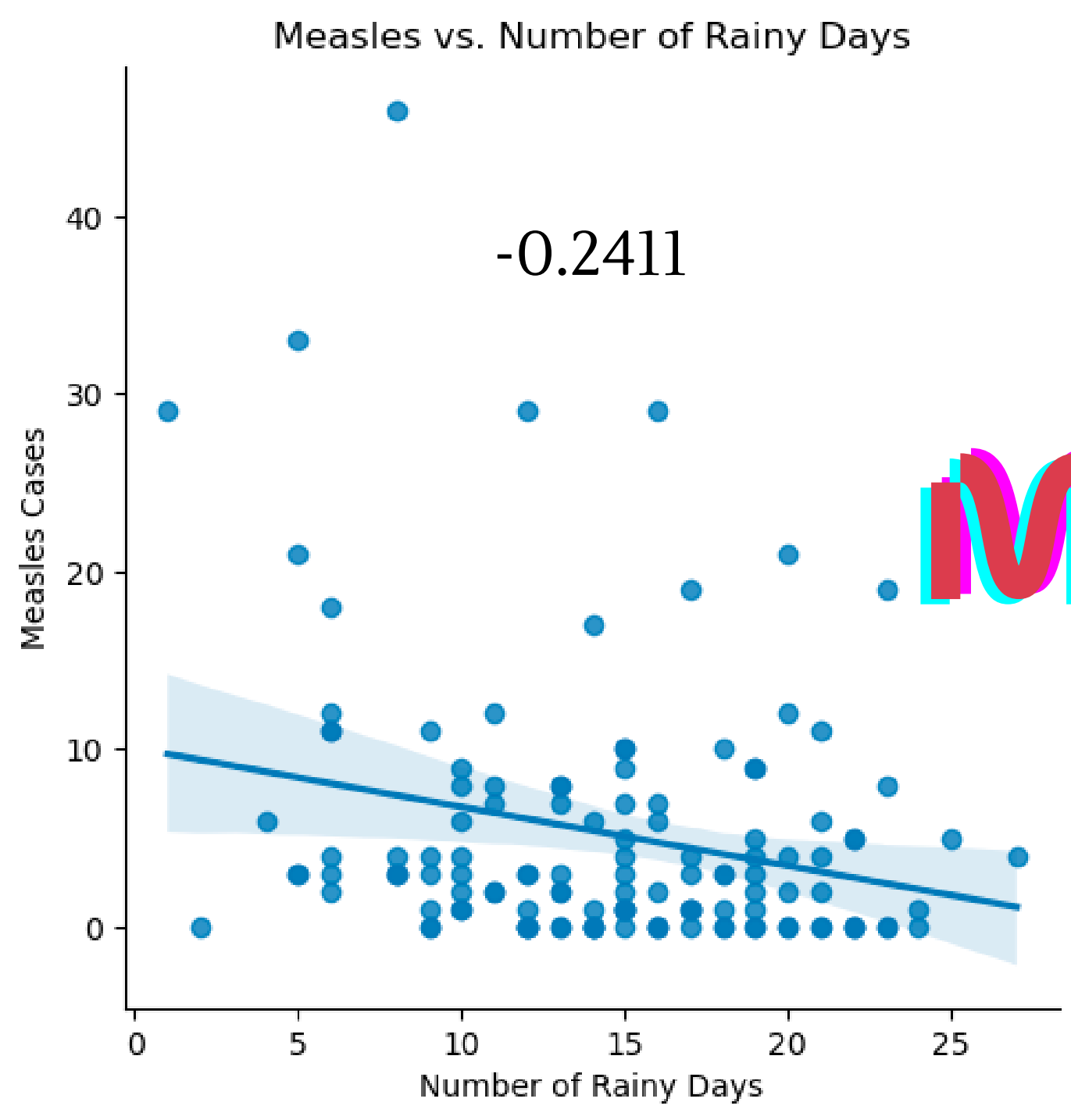


Pertussis

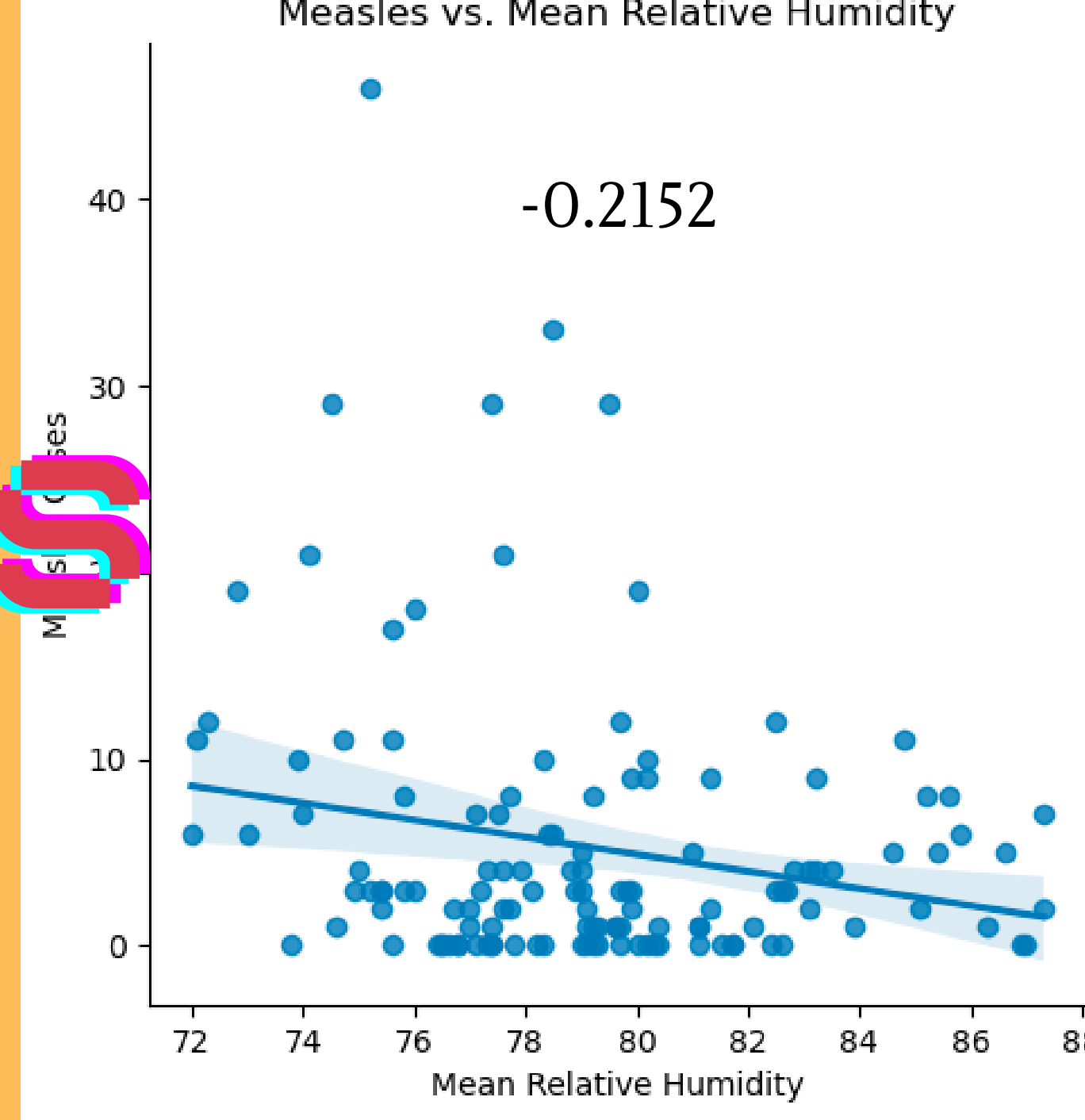
AKA WHOOPING COUGH



- Transmitted via water droplets in air
- Rain = less transmissions???

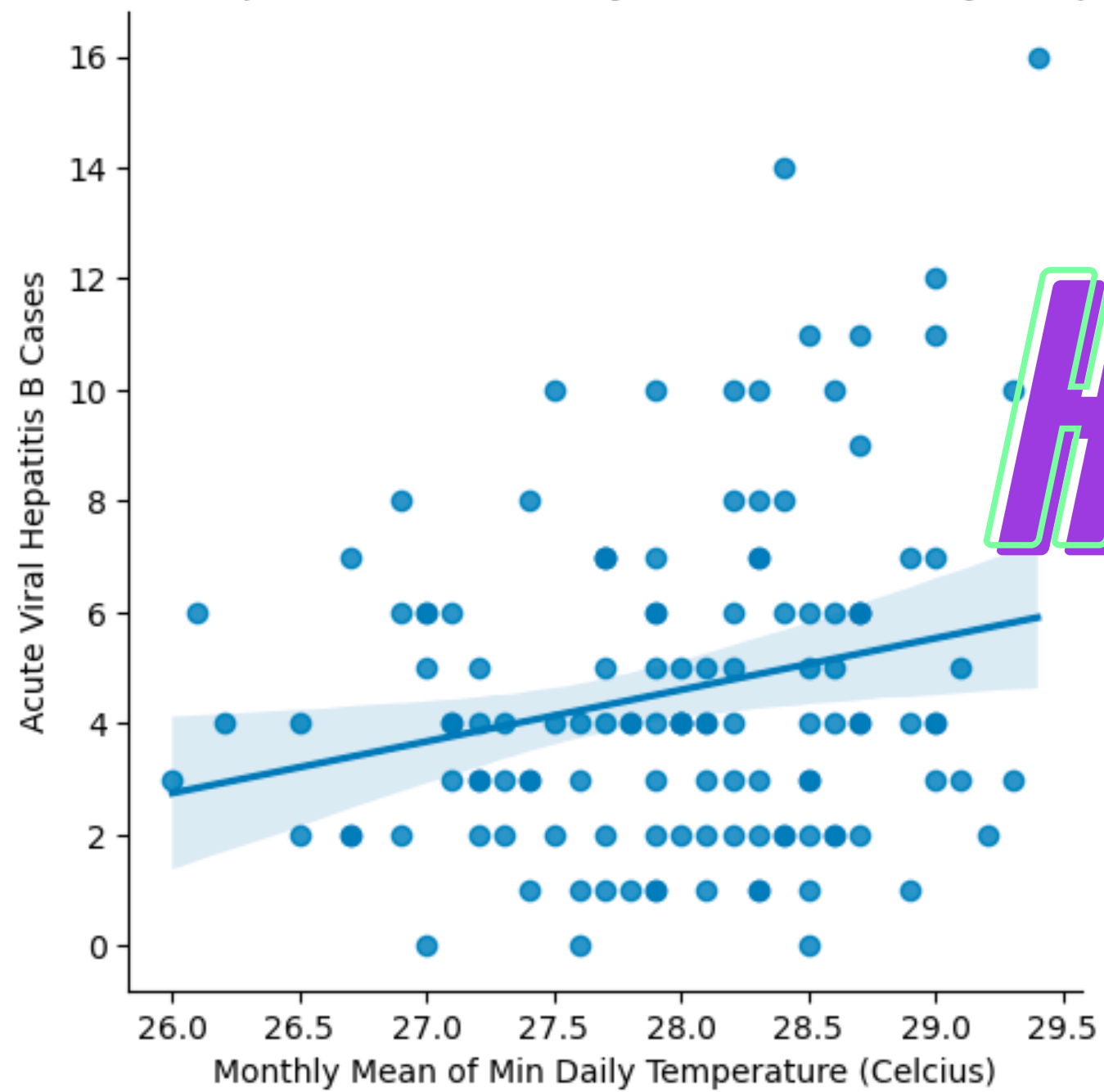


MEASLES

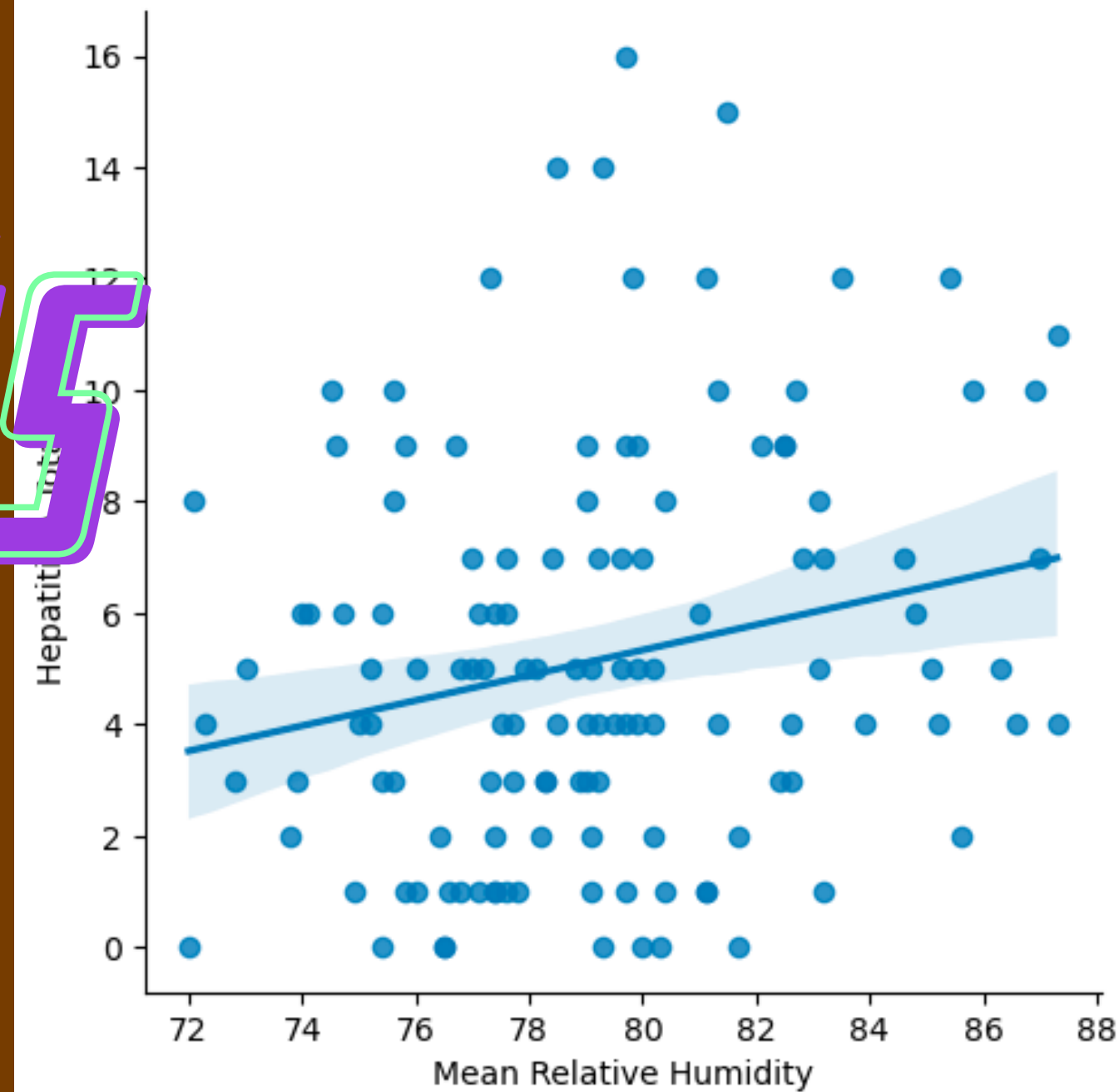


- Another respiratory-transmitted disease
- Rain + Humid = less transmissions???

Acute Viral Hepatitis B vs. Monthly Mean of Min Daily Temperature



Hepatitis A Total vs. Mean Relative Humidity



HEPATITIS

- Fecal-oral route of transmission
- High humidity/temperature = Poorer sanitation

WHAT DO I PUT HERE
IDK

RECOMMEND ATIONS:

FOR PEOPLE IN POWER

WE PLEBS ARE POWERLESS

- conduct longitudinal studies,
- include additional climate variables,
- assess role of population dynamics and behavioral factors,
- optimizing health interventional methods,
- develop better climate monitoring and disease modelling tools to facilitate adapting to the situation.

*Thank
you!*