Climate Trends - Hospital Admission Analysis

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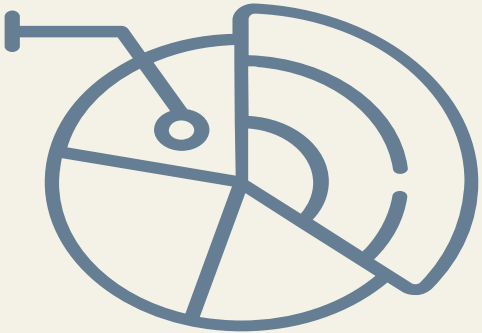


Singapore’s Climate System

- Hot
  - 24 to 32 deg °C
- Rainy
  - 171 days a year
- Humid
  - 79 to 86%
- Monsoonal Seasons
  - NE monsoon
  - SW monsoon
  - Two inter-monsoons
- Vector-borne diseases
  - Dengue
  - Malaria

Problem Statement

Can we leverage climate data trends to optimize hospital resource allocation, including manpower and bed allocations, aiming to improve efficiency and patient care.

Dissecting our data

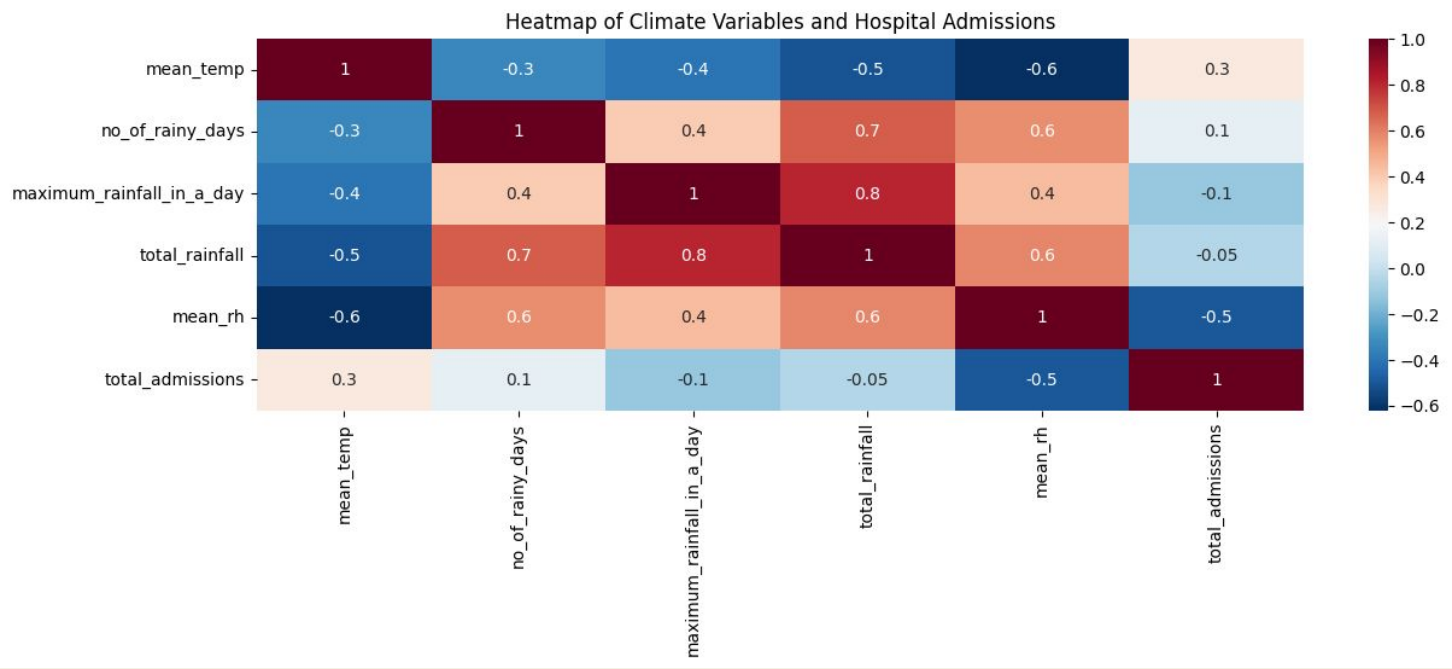
Climate Data

Mean air temperature
No. of rain days
Max. rainfall in a day
Total rainfall
Relative humidity (RH)
Mean sunshine hours

Hospitals

Alexandra Hospital
Changi General Hospital
Khoo Teck Puat Hospital
National University Hospital
Ng Teng Fong Hospital
SengKang General Hospital
Tan Tock Seng Hospital
Communicable Disease Centre
National Centre for Infectious Disease
Institute of Mental Health
KK Women's and Children's Hospital
National Heart Centre

Looking for Relationships



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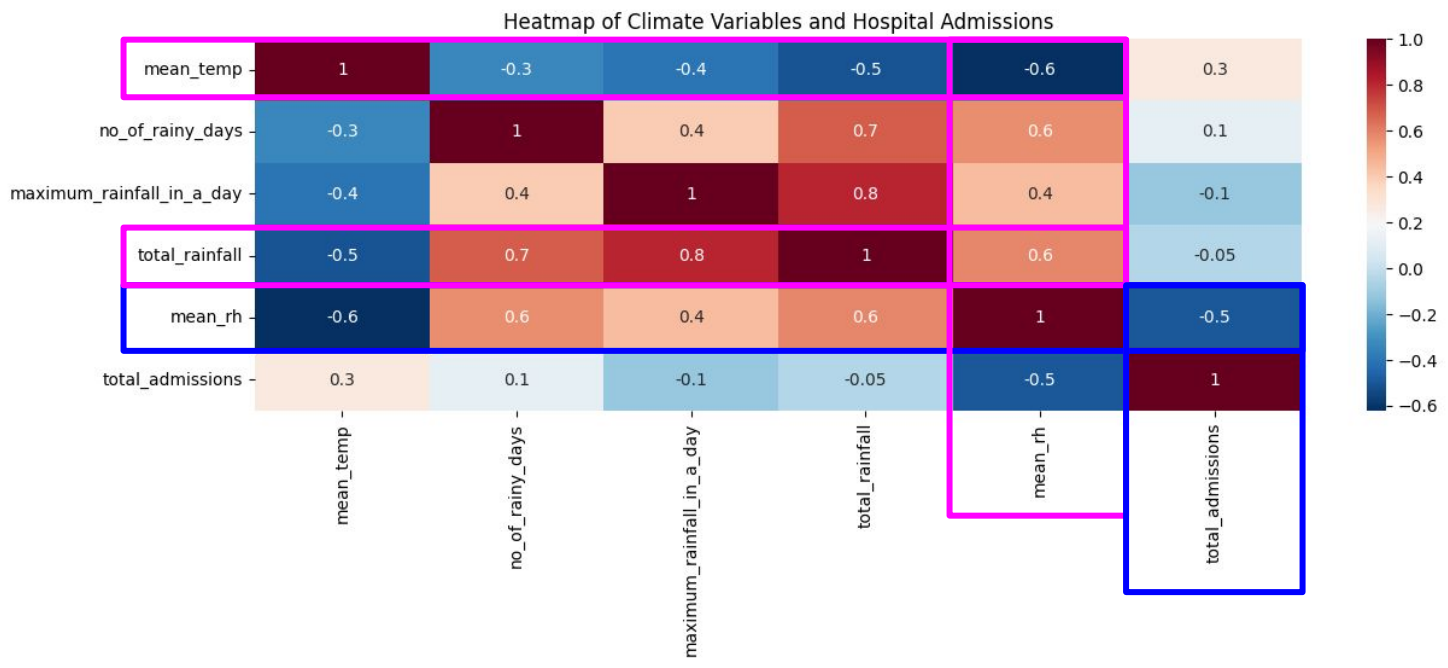

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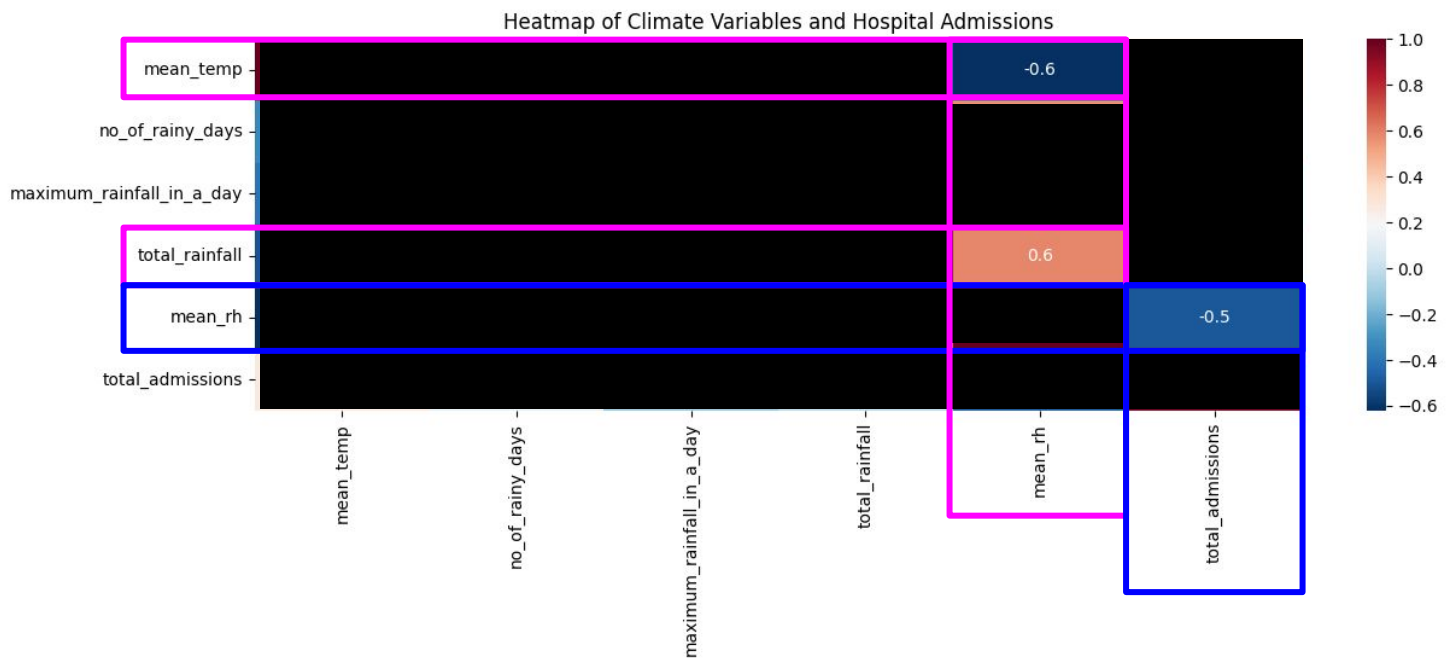
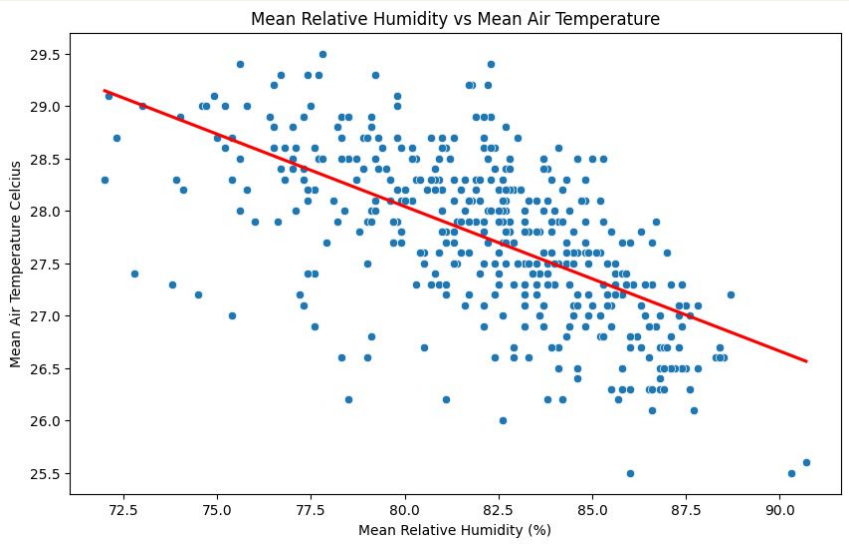
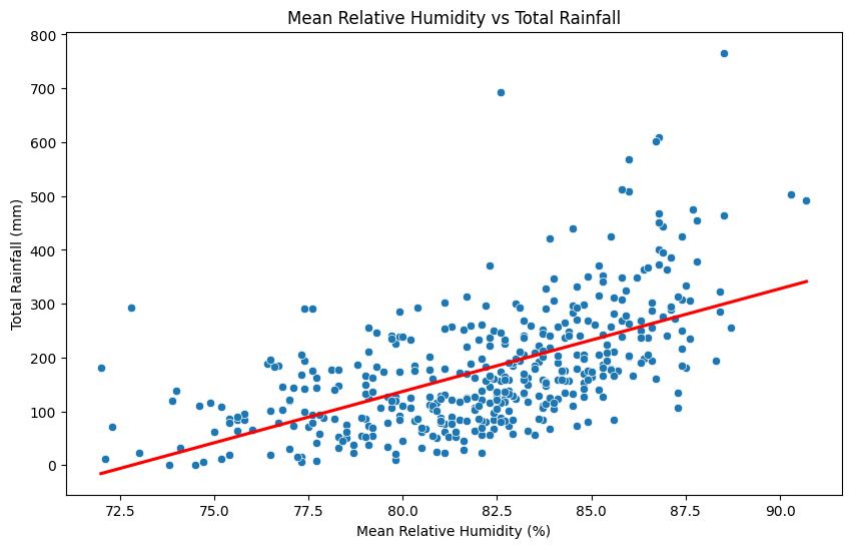
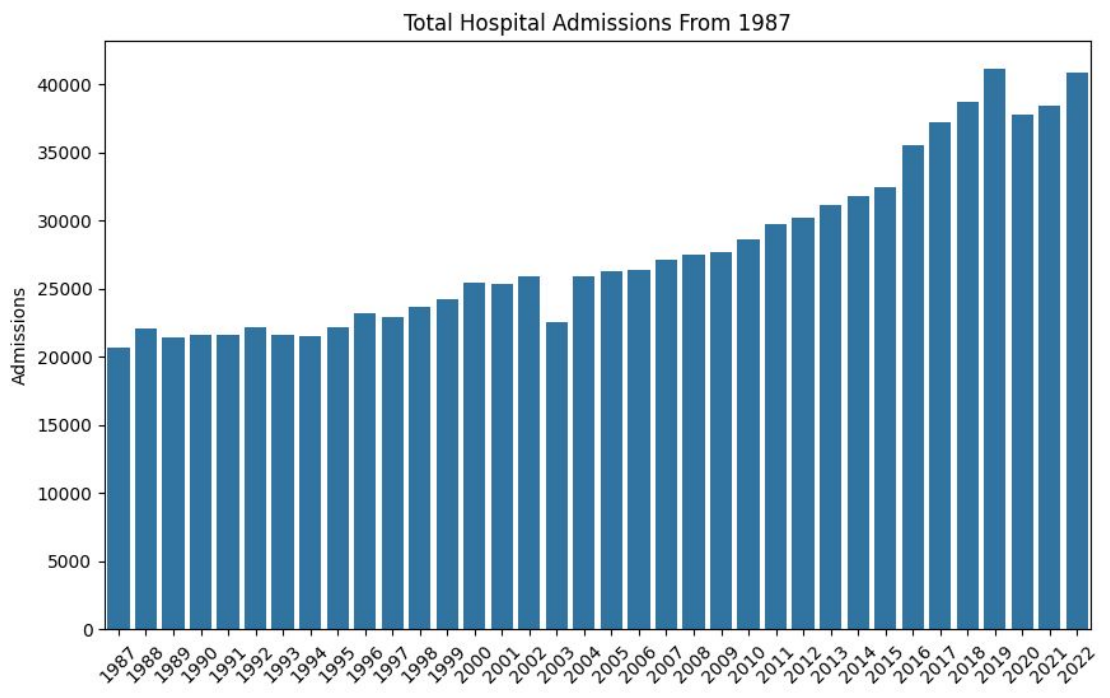


RH vs Temperature and Rain

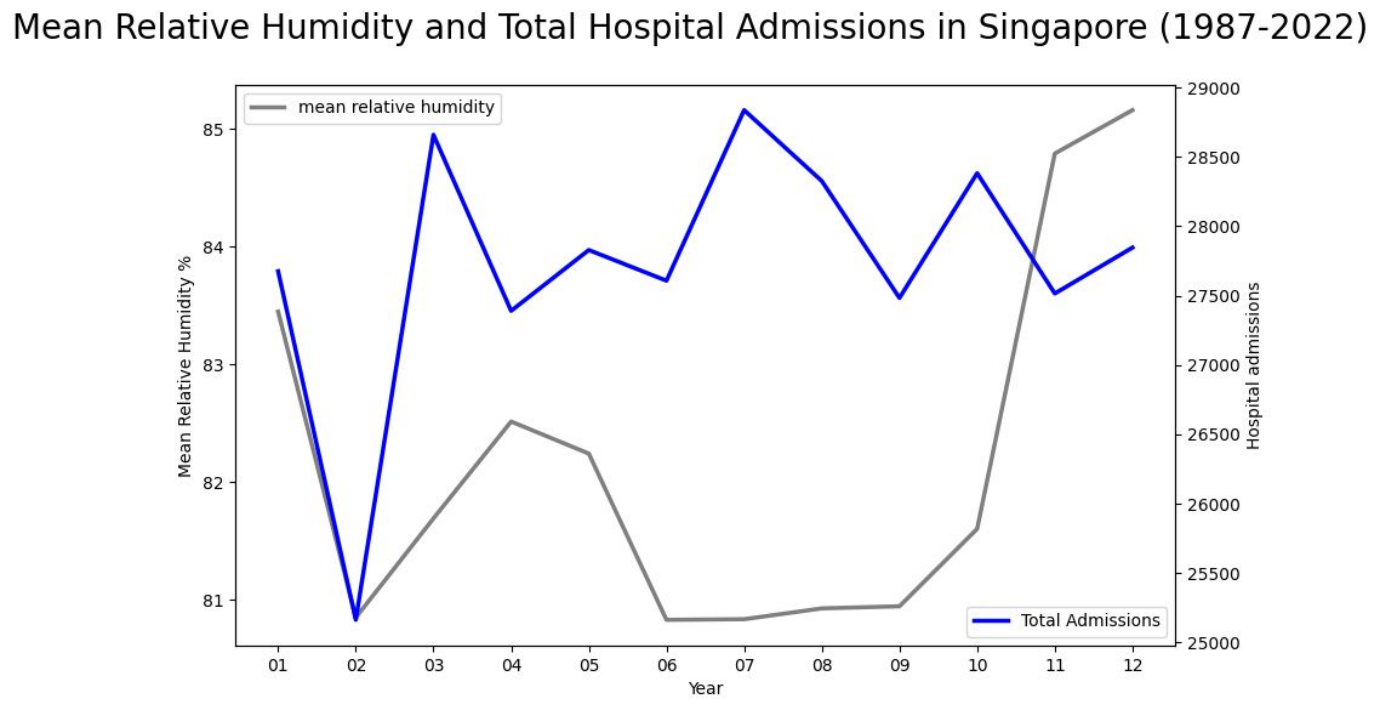




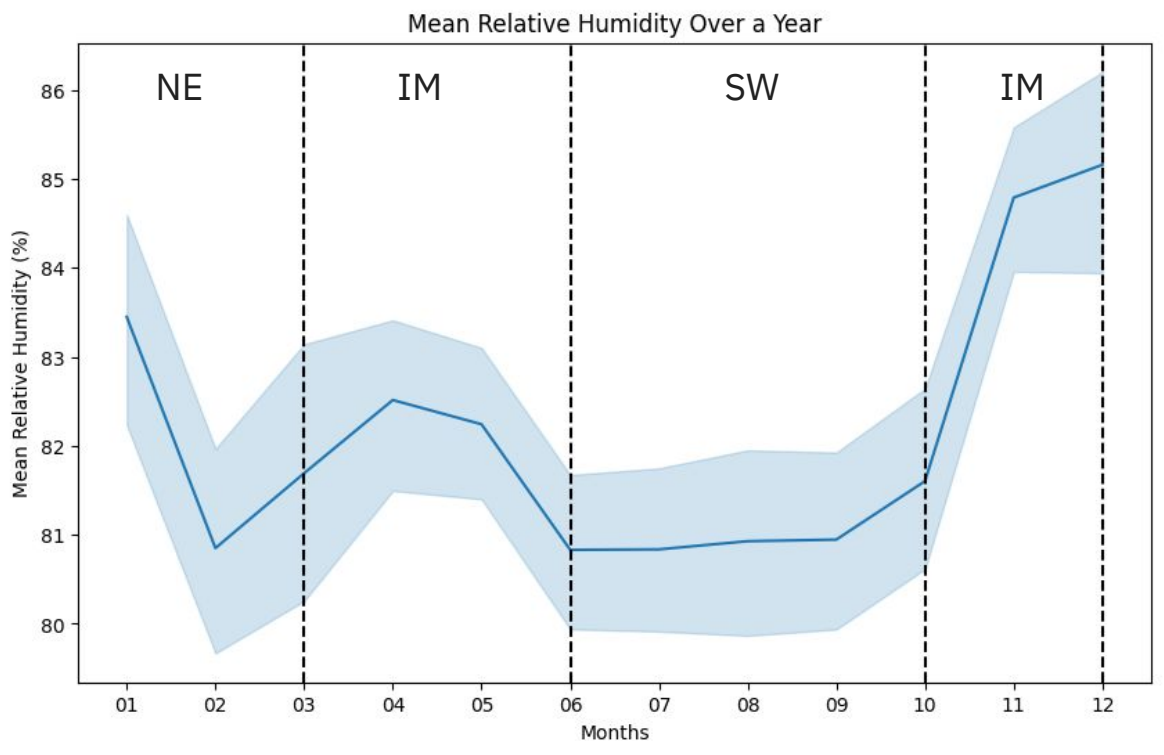
Uptrend of Hospital Admissions



Total Hospital Admissions and RH



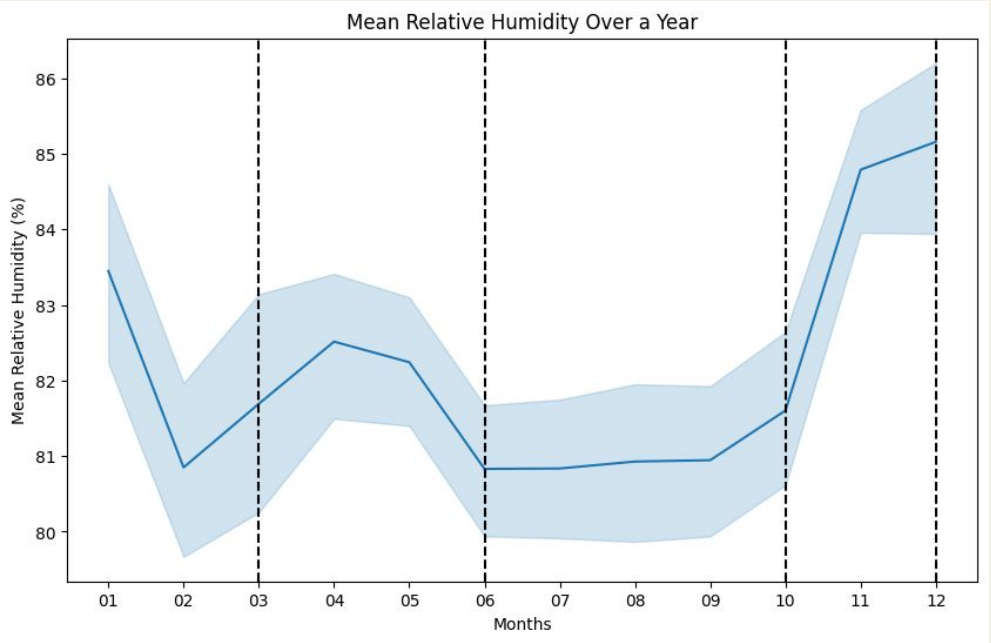
Monsoon Seasons



Severe Acute Respiratory Syndrome

- First occurred in 2003
- First Coronavirus
- Healthcare worker most affected
  - 41% of total cases
  - 97/238

- Retain viability over 5 days at optimum conditions
- 22 - 25 °C
- 40 - 50 % RH



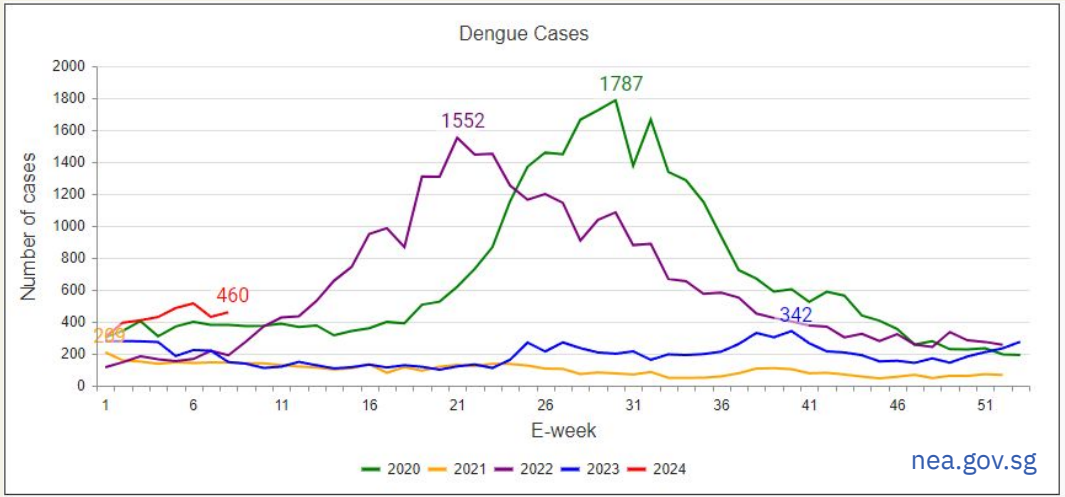
Dengue Fever

Severe Dengue Haemorrhagic Fever

- Internal bleeding
- Organ damage
- Dangerously low blood pressure
- Shock
- Death

Optimal conditions

- Studies in Thailand
- 90% of cases occur
- 22.5 - 36.5 °C
- 55 - 88% RH



Recommendations

- Consider using climate data (RH) in monitoring the status of potential outbreaks
- Further analysis using the breakdown number for hospital admissions.

Conclusion

Based on the observed data, there appears to be a moderate correlation between relative humidity and hospital admissions. However, it's essential to note that while relative humidity may contribute to increased hospitalizations, outbreaks is only one of the reasons a person requires inpatient care. Incorporating climate drivers into the analysis could prove insightful in staff management and bed allocations.

Thank You