

Impact of Temperature on Burn Operating Room Demand at a Regional Burn Center

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BACKGROUND

Extreme outdoor temperatures are known to influence health outcomes but less is understood about their effects on burn-related operating room (OR) demand. The current study aims to investigate threshold effects of daily temperature on burn OR cases and OR time, accounting for seasonality, variability, and lagged impacts.

PURPOSE

Does daily outside temperature affect burn operating room demand? If so, when?

METHODS

- Data was collected on daily operating room case count and operative time over a three-year period, and was matched with daily outside temperature
- Hinge linear regression models were created and adjusted for season, calendar year, weekday and holiday
- Constructed lagged hinge terms (0-14 days)

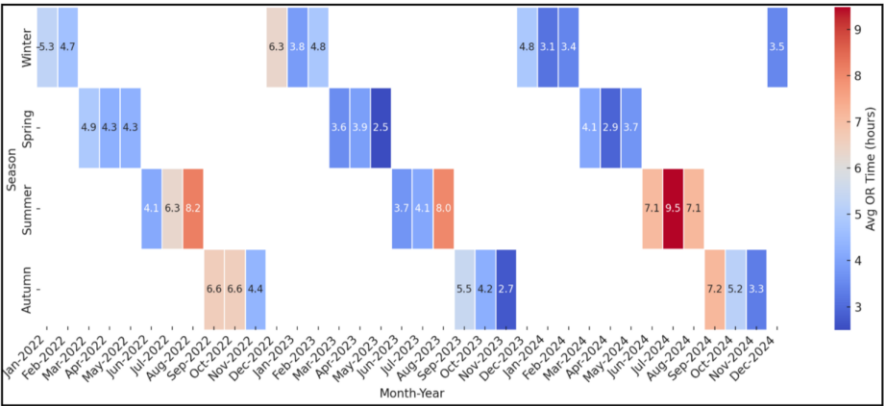


Figure 1: Seasonal heatmap of average daily burn OR time by month and year

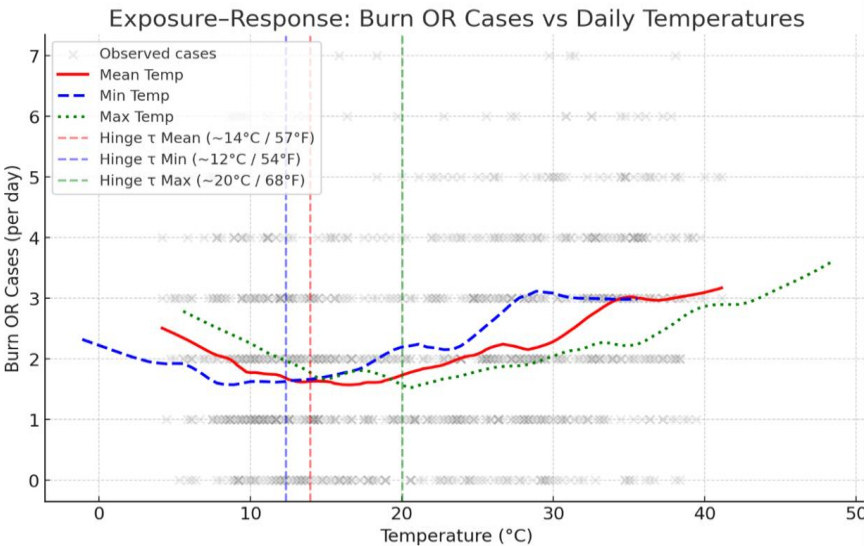


Figure 2: Exposure response curve representing burn OR cases versus daily outdoor temperature

RESULTS

- 1,094 observations, hinge regression analysis identified a temperature threshold of 57 °F (14 °C)
- Below, case counts decreased slightly (-0.03 cases/°F)
- Above, case counts rose (+0.02 cases/°F)
- OR time increased significantly above the threshold, rising by 0.30 hours per °F ($p = .01$)
- Lagged models indicated the best fit at 8–11 days

CONCLUSIONS

- At our institution, burn OR demand and OR time showed a clear temperature threshold at 57 °F, with activity rising above this point and peaking after ~1.5-week delay
- Monitoring temperature trends can help anticipate OR caseloads and OR time
- highlights lagged climate-health connections that may aid in operational planning and resource allocation in burn centers.

REFERENCES

See poster author for reference list

