

FEW EVENTS, MANY LIVES – AN EXPLORATORY DATA ANALYSIS OF GLOBAL DISASTER IMPACTS

DSCD 611 Programming for Data Scientists
Group C4



UNIVERSITY OF GHANA

Research Questions

- ☐ How has disaster frequency changed over time?
- ☐ Which disaster types occur most frequently?
- ☐ Which disaster types cause the greatest deaths?
- ☐ Which disaster types affect the largest populations?
- ☐ How does impact vary by region?
- ☐ Are impacts concentrated in few events?
- ☐ How have impacts changed over time?



Data Overview

Source

Emergency Events Database (EM-DAT)
Centre for Research on Epidemiology
of Disasters

Coverage

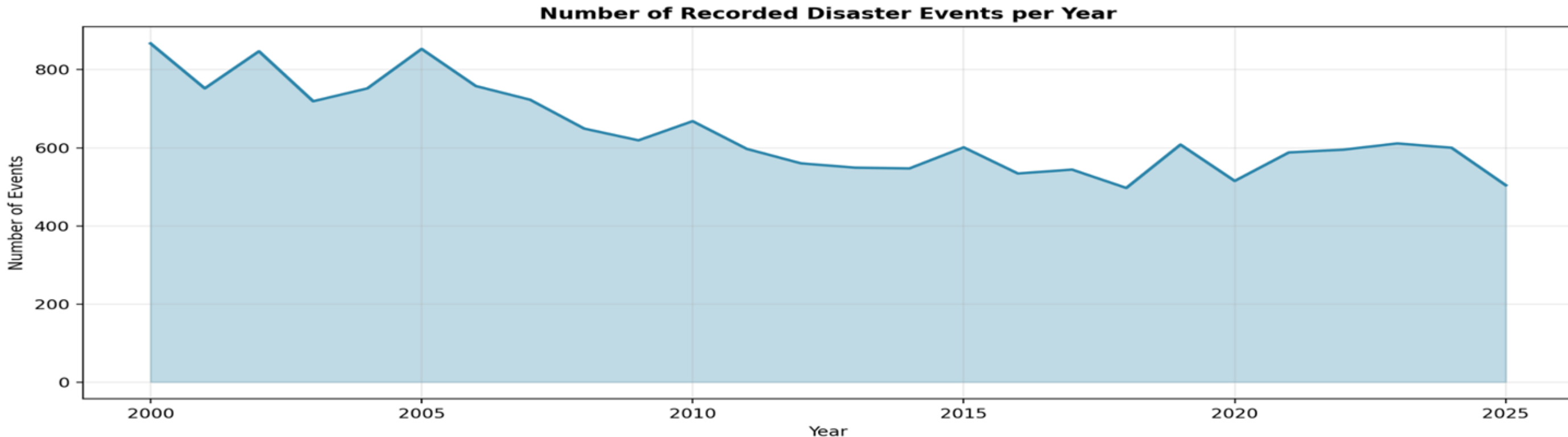
Years: 2000 to 2025
Records: 16,657 disaster events

Key Variables

- **Time:** start year, month, day
- **Classification:** disaster type and subtype
- **Geography:** country, region, subregion
- **Impact:** deaths, affected populations, injuries



Disaster Frequency Trends



❑ Number of Recorded Disaster Events per Year

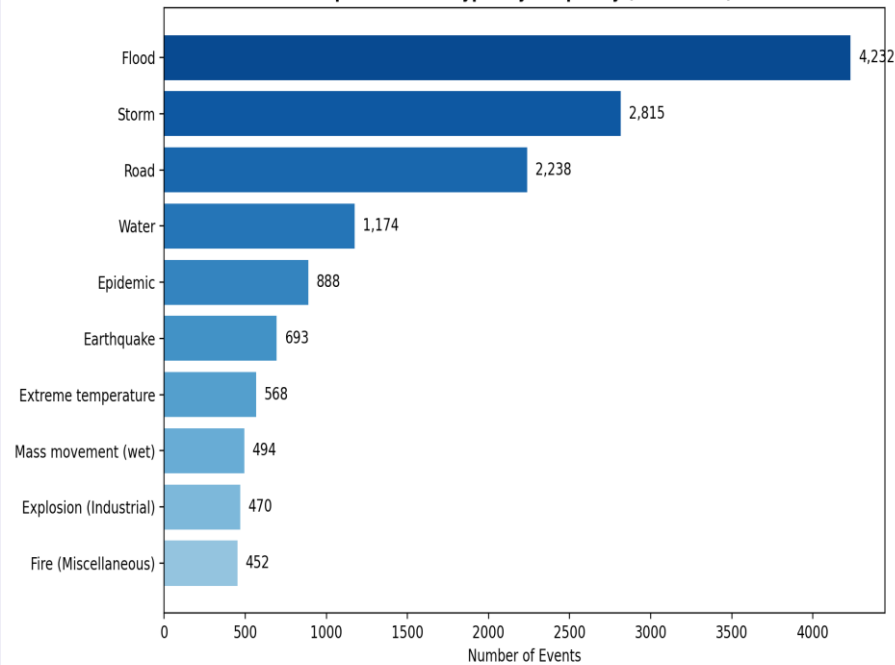
- Recorded events peaked in early 2000s
- Modest decline observed in recent years
- Changes reflect reporting practices, not necessarily reduced risk



Frequency vs Severity

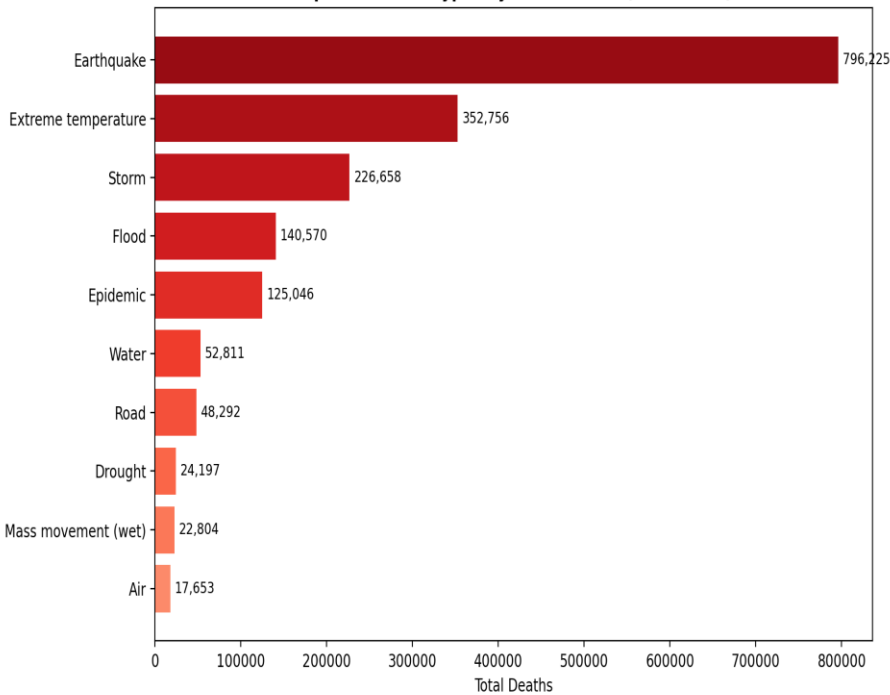
Most Frequent

Top 10 Disaster Types by Frequency (2000-2025)



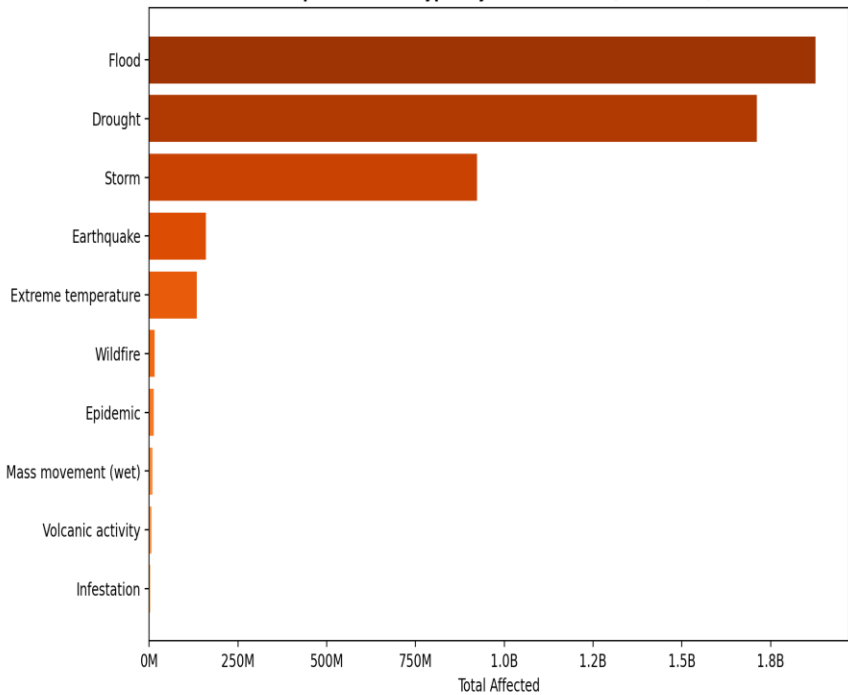
Most Deadly

Top 10 Disaster Types by Total Deaths (2000-2025)



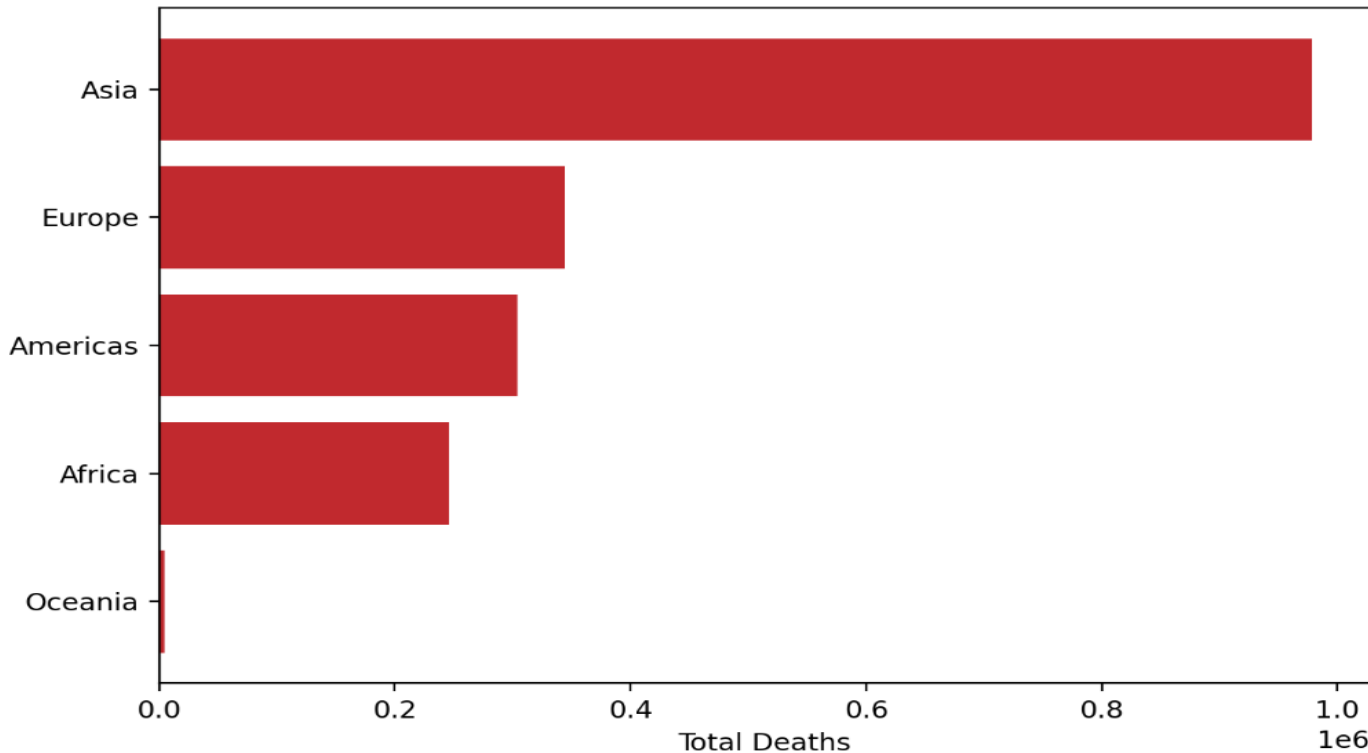
Largest Affected

Top 10 Disaster Types by Total Affected (2000-2025)

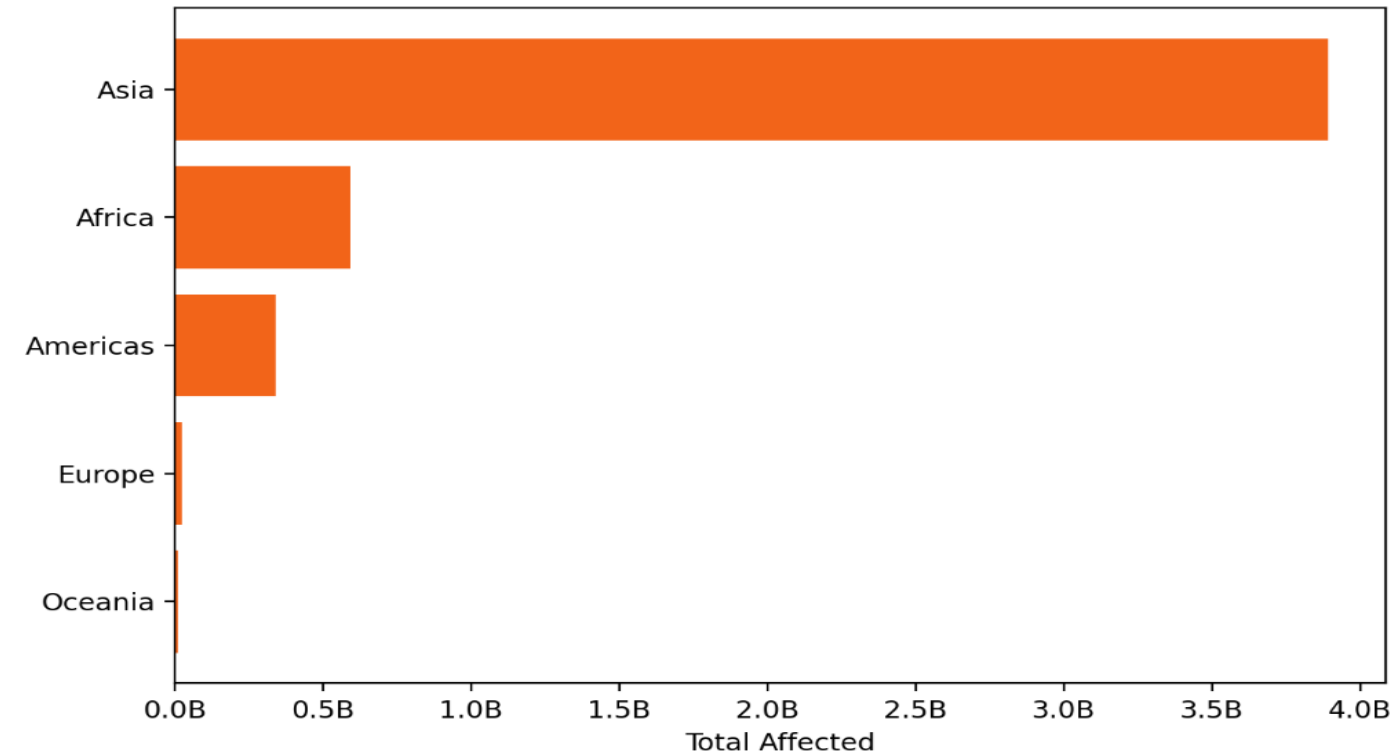


Regional Impact Distribution

Total Deaths by Region



Total Affected by Region



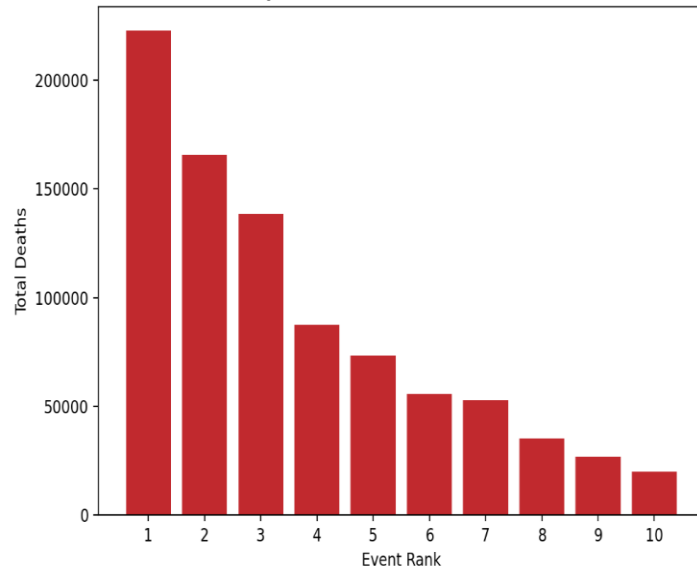
❑ Total Disaster Impact by Region

- Asia: highest burden in total deaths and affected populations
- Substantial regional inequality observed
- Infrastructure and preparedness capacity drive differences

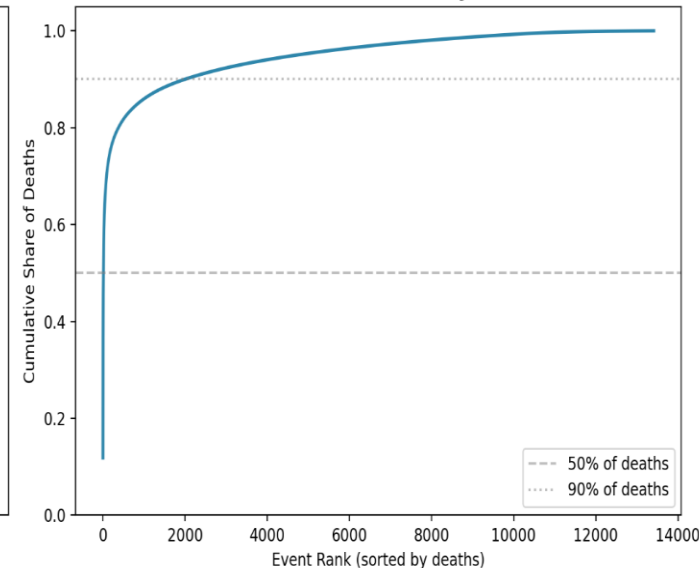


Impact Concentration

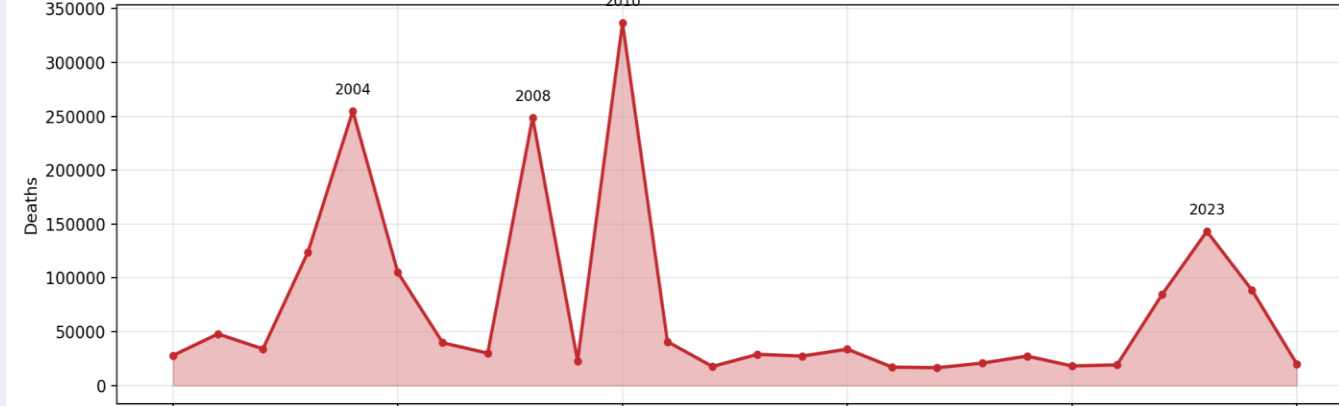
Top 10 Deadliest Disaster Events



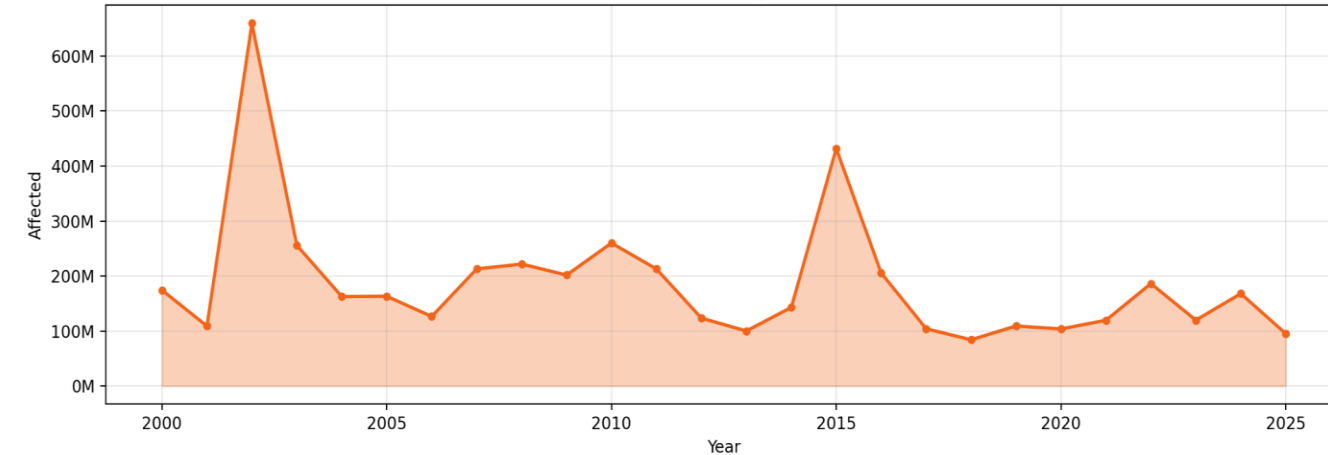
Cumulative Share of Deaths by Event Rank



Total Deaths per Year



Total Affected per Year



50%
of all disaster deaths from
10 DEADLIEST EVENTS

Key Findings

- Strong concentration of impacts in rare catastrophic events
- Average statistics obscure disproportionate influence of extreme disasters
- No clear long-term decline in total impacts
- Annual totals driven by rare but severe events



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Conclusions

- ❑ Most frequent disasters are not always the most harmful
- ❑ Impacts heavily concentrated in small number of extreme events
- ❑ Regional inequality: Asia bears disproportionate burden
- ❑ Focus on high-impact, low-frequency disasters more effective than planning for average outcomes
- ❑ Targeted investments in preparedness and early warning systems needed in high-risk regions

