AE 14: Visceralizing billion dollar weather and climate disasters

APPLICATION EXERCISE

MODIFIED

March 18, 2025

Measuring large-scale weather and climate disasters

The **Billion-Dollar Weather and Climate Disasters** dataset contains information on weather and climate disasters in the United States that have caused at least one billion dollars in damage. The dataset includes the year, the event type, the location, the number of deaths, and the total cost of the disaster. It is produced by the National Oceanic and Atmospheric Administration (NOAA).[1]

```
# skip first two rows - not data
disasters <- read_csv(file = "data/events-US-1980-2024-Q4.csv", skip = 2) |>
  # clean column names
  janitor::clean_names() |>
  # fix date variables
  mutate(
    across(
      .cols = ends_with("date"),
      .fns = ymd
    )
  )
```

```
Rows: 403 Columns: 7
── Column specification ─────────────────────────────────────────────────────
Delimiter: ","
chr (2): Name, Disaster
dbl (5): Begin Date, End Date, CPI-Adjusted Cost, Unadjusted Cost, Deaths

ℹ Use `spec()` to retrieve the full column specification for this data.
ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
disasters
```

```
# A tibble: 403 × 7
   name   disaster begin_date end_date   cpi_adjusted_cost unadjusted_cost deaths
```

```
   <chr> <chr>     <date>    <date>               <dbl>      <dbl> <dbl>
 1 Sout… Flooding 1980-04-10 1980-04-17          2749.       707.     7
 2 Hurr… Tropica… 1980-08-07 1980-08-11          2236.       590     13
 3 Cent… Drought  1980-06-01 1980-11-30         40681.     10020   1260
 4 Flor… Freeze   1981-01-12 1981-01-14          2076.       572      0
 5 Seve… Severe … 1981-05-05 1981-05-10          1409.       401.    20
 6 Midw… Winter … 1982-01-08 1982-01-16          2218.       662     85
 7 Midw… Severe … 1982-04-02 1982-04-04          1604        483.    33
 8 Seve… Severe … 1982-05-31 1982-06-10          1579        480.    30
 9 Gulf… Flooding 1982-12-01 1983-01-15          4946.      1536.    45
10 West… Flooding 1982-12-13 1983-03-31          4829.      1500.    50
# i 393 more rows
```

Explore the data

Your turn: With a partner or small team, explore key trends in the data and discuss:

- What emotions could this data evoke?
- What visualization techniques could enhance that emotional impact?

> **Explore the NOAA website**
>
> The NOAA has created a handful of [static and interactive visualizations](#) using this data that are available online. Feel free to look at them for inspiration.

Design and implement a visualization

Your turn: Create a visualization (or set of visualizations) designed to **elevate emotion** and tell a story of the impact of these disasters. Consider how you can use color, annotation, personal perspectives,[2] etc. to make the data more engaging and impactful.

> **Note**
>
> Feel free to bring in additional data sources for this exercise, albeit we have only a limited amount of time together.

When you are finished, share your visualization(s) with the class on [GitHub Discussions](#).

> **Remember** `ggsave()`
>
> You can use `ggsave()` to export your graphs to local files in order to post on the discussion thread.

Footnotes

1. For now. ↵

2. Real or simulated for the purpose of the exercise. ↩