

Project 1 Writeup

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1 Evaluation of Original Graph

The original graph effectively communicates its main point—that more than half of the global area burned by wildfires occurs in Africa—through its strong and visually cohesive design. The title is clear and impactful, with the word “Africa” highlighted in red to match the corresponding color used for the region in the chart, reinforcing the visual emphasis on these results. The use of a stacked bar format is appropriate for showing proportions over time and a dotted line at 50% subtly underscores the central message highlighted in the title of the graph. However, the chart could benefit from several improvements. A stacked bar chart is appropriate for showing proportions, it is also hard to determine the proportions exhibited beyond the base region. Additionally, there are potential issues with color in terms of accessibility and labeling.

2 Visualization of Data

The new visualization created attempts to solve the minor issues we had in the original graph. The new graph is a line graph to which makes it easier to determine the specific proportion of wildfire burned for each region per year. Along with the representation type, changes were made aesthetically in order to make the graph more accessible and easier to understand for the viewer. While the original color palette is aesthetically consistent, some of the shades can be difficult to distinguish, especially for viewers with impaired color vision which is why the new graph uses colors from the brewer color palette which is specifically created with friendly colors. Secondly, the original chart lacks a proper legend. The use of a legend in the new graph addresses providing context for each line while retaining good legibility. Grouping North and South America together felt arbitrary as well in the labeling of regions against the bar plot, especially when other continents are shown separately. Thirdly, the x-axis could be improved by adding more year markers. This change is especially important in terms of the choice to make a line graph. The markers help the readers quickly understand the temporal scope of the data. Although the Americas are often grouped as “New World” regions, the ecosystems most affected by wildfire—such as tropical rainforests of South America and the boreal forests of North America—are ecologically and geographically distinct. Separating them could offer more meaningful insights into regional wildfire patterns.

```

install.packages("ggtext")
library(here)
library(tidyverse)
library(ggtext)
library(ggplot2)

wildfire <- read_csv(here("data", "annual-area-burnt-by-wildfires.csv"))

wildfire_clean <- wildfire %>%
  filter(Entity %in% c("North America", "South America", "Asia", "Europe",
                      "Africa", "Oceania")) %>%
  filter(2012 <= Year & 2024 >= Year) %>%
  rename(area_ha = "Annual area burnt by wildfires")

wildfire_clean$Entity <- factor(wildfire_clean$Entity,
                              levels = c("Europe",
                                           "Asia",
                                           "Oceania",
                                           "North America",
                                           "South America", "Africa"))

wildfire_clean <- wildfire_clean %>%
  group_by(Year) %>%
  mutate(area_pct = area_ha / sum(area_ha)) %>%
  ungroup()

gg_labels <- tibble(
  Entity = c("Europe", "Asia", "Oceania", "North", "and", "South America",
            "Africa"),
  x = 14,
  y = c(.985, .93, .86, .795, .74, .68, .30),
  color = c("#BFCBB7", "#C1A686", "#B3A3C2", "#b3c3c5", "#6B6B6B", "#81919c",
            "#821E1E"))

ggplot(wildfire_clean, aes(x = factor(Year), y = area_pct, fill = Entity)) +
  geom_bar(stat = "identity", width = 0.85) +
  scale_y_continuous(labels = scales::percent_format()) +
  scale_x_discrete(breaks = seq(min(wildfire_clean$Year),
                              max(wildfire_clean$Year), by = 4)) +
  scale_fill_manual(values = c(
    "Africa" = "#821E1E",
    "North America" = "#b3c3c5",
    "South America" = "#81919c",

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    "Oceania" = "#B3A3C2",
    "Asia" = "#C1A686",
    "Europe" = "#BFCBB7"
  )) +
  geom_hline(yintercept = 0.5, linetype = "dashed", color = "black",
             linewidth = 0.5, alpha = .35) +
  geom_hline(yintercept = 0.25, linetype = "dashed", color = "black",
             linewidth = 0.5, alpha = .1) +
  geom_hline(yintercept = 0.75, linetype = "dashed", color = "black",
             linewidth = 0.5, alpha = .1) +
  labs(
    title = "More than half of the area burned by<br><b>wildfire is in  
<span style='color:#821E1E'>Africa</span></b>",
    subtitle = "Each region's share of the global area burned by wildfire.",
    x = NULL,
    y = NULL,
    fill = NULL,
    caption = "**Data source:** Global Wildfire Information System (2025)"
  ) +
  geom_text(data = gg_labels, aes(x = x, y = y, label = Entity, hjust = 0,
                                color = color), size = 3.5) +

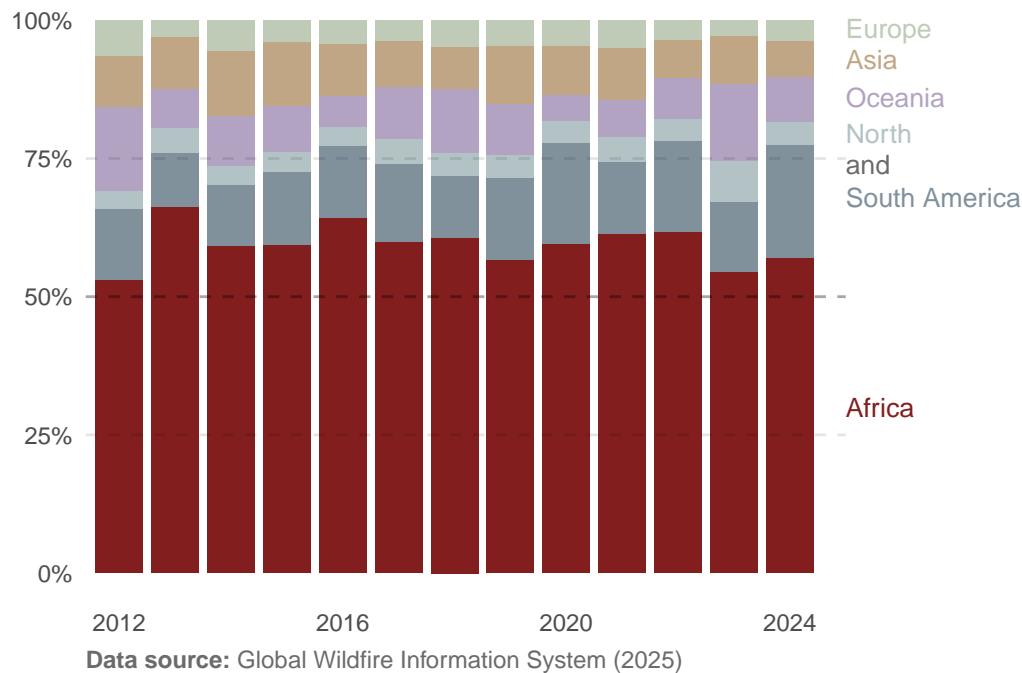
  scale_color_identity() +
  theme_minimal() +
  coord_cartesian(clip = "off") +
  theme(
    legend.position = "none",
    plot.title = ggtext::element_markdown(family = "serif", face = "bold",
                                           size = 16),

    panel.grid.major = element_blank(),
    panel.grid.minor = element_blank(),
    plot.caption = ggtext::element_markdown(hjust = 0, color = "#6B6B6B"),
    plot.subtitle = element_text(size = 10),
    plot.margin = margin(t = 10, r = 100, b = 10, l = 10, unit = "pt"),
    aspect.ratio = .80
  )

```

More than half of the area burned by wildfire is in **Africa**

Each region's share of the global area burned by wildfire.



```
ggplot(wildfire_clean) +
  geom_line(aes(x = Year, y = area_pct, color = Entity)) +
  scale_x_continuous(breaks = seq(min(wildfire_clean$Year),
                                   max(wildfire_clean$Year), by = 2)) +
  scale_y_continuous(labels = scales::percent_format(), limits = c(0, 1)) +
  scale_color_manual(values = c(
    "Africa" = "#0072B2",
    "North America" = "#E69F00",
    "South America" = "#56B4E9",
    "Oceania" = "#009E73",
    "Asia" = "#F0E442",
    "Europe" = "#CC0000"
  )) +
  geom_hline(yintercept = 0.5, linetype = "dashed", color = "black",
             linewidth = 0.5) +
  labs(
    title = "More than half of the area burned by<br><b>wildfire each year<br><b>is in <span style='color:#0072B2'>Africa</span></b>",
    subtitle = "Each region's share of the global area burned by wildfire.",
    x = NULL,
    y = "Percentage of Global Area Burned by Wildfire",
    color = "Region",
    caption = "**Data source:** Global Wildfire Information System (2025)"
  )
```

```

) +
theme_minimal(base_family = "serif") +
theme(
  legend.position = "right",
  plot.title = ggtext::element_markdown(family = "serif", face = "bold",
                                         size = 16),
  panel.grid.major.x = element_blank(),
  panel.grid.minor = element_blank(),
  plot.caption = ggtext::element_markdown(hjust = 0, color = "#6B6B6B"),
  plot.subtitle = element_text(size = 10),
  plot.margin = margin(t = 10, r = 10, b = 10, l = 10, unit = "pt")
)

```

More than half of the area burned by wildfire each year is in **Africa**

Each region's share of the global area burned by wildfire.

