Figure 8

Overview

This script takes a data frame produced by challenges.qmd and outputs a figure that adheres to PLOS submission guidelines.

Import packages and utilities

```
project_root <- here::here() # requires that you be somewhere in the
# project directory (not above it)
# packages
suppressMessages(source(file.path(project_root, "scripts/packages.R")))
# functions and objects used across scripts
suppressMessages(source(file.path(project_root, "scripts/utils.R")))
```

Load data

```
# This poorly named function from utils.R
# is basically just read.csv with my data path in there
clust1 <- load_qualtrics_data(file.path("data_for_plots/chall_cluster1.tsv"))
clust2 <- load_qualtrics_data(file.path("data_for_plots/chall_cluster2.tsv"))
clust3 <- load_qualtrics_data(file.path("data_for_plots/chall_cluster3.tsv"))
```

Reorder factor levels

```r
level_order = c(
  "Non-applicable",
  "Never",
  "Rarely",
  "Occasionally",
  "Frequently",
  "Always"
)

clust1$challenge_level <- factor(
  clust1$challenge_level,
  levels = level_order)

clust2$challenge_level <- factor(
  clust2$challenge_level,
  levels = level_order)

clust3$challenge_level <- factor(
  clust3$challenge_level,
  levels = level_order)
```

```r
# Paul Tol's sunset theme
#https://sronpersonalpages.nl/~pault/
sunset <- c(
  "#c6c6c6",
  "#4a7bb7",
  "#C2E4EF",
  "#eaeccc",
  "#fdb366",
  "#dd3c2d"
)
```

```r
p1 <- stacked_bar_chart(
  df = clust1,
  x_var = "challenge",
  y_var = "total",
  fill = "challenge_level",
  title = "Cluster 1: \"Time\"",
  ylabel = NULL,
  show_axis_title_y = FALSE,
  show_x_axis_text = FALSE,
  show_grid = TRUE,
```

```
  show_legend = FALSE, # don't show legend
  horizontal = TRUE,
  proportional = TRUE,
  cpalette = sunset,
  legend_text_size = 7,
  margin_vals = c(0.3, 0.3, 0.3, 0.3),
  plot_title_size = 8,
  x_axis_text_size = 7,
  y_axis_text_size = 7,
  y_axis_title_size = 7
)

p2 <- stacked_bar_chart(
  df = clust2,
  x_var = "challenge",
  y_var = "total",
  fill = "challenge_level",
  title = "Cluster 2: \"Resourcing\"",
  ylabel = NULL,
  legend_left_margin = 15, # show legend, with a wide margin
  show_axis_title_y = FALSE,
  show_x_axis_text = FALSE,
  show_grid = TRUE,
  horizontal = TRUE,
  proportional = TRUE,
  cpalette = sunset,
  legend_text_size = 7,
  margin_vals = c(0.3, 0.3, 0.3, 0.3),
  plot_title_size = 8,
  x_axis_text_size = 7,
  y_axis_text_size = 7,
  y_axis_title_size = 7
) +
  scale_fill_manual(
    values = rev(sunset),
    breaks = rev(level_order)
  )
```

```
Scale for fill is already present.
Adding another scale for fill, which will replace the existing scale.
```

```r
p3 <- stacked_bar_chart(
  df = clust3,
  x_var = "challenge",
  y_var = "total",
  fill = "challenge_level",
  title = "Cluster 3: \"Other\"",
  ylabel = NULL,
  show_axis_title_y = FALSE,
  show_x_axis_text = FALSE,
  show_grid = TRUE,
  show_legend = FALSE, # don't show legend
  horizontal = TRUE,
  proportional = TRUE,
  cpalette = sunset,
  legend_text_size = 7,
  margin_vals = c(0.3, 0.3, 0.3, 0.3),
  plot_title_size = 8,
  x_axis_text_size = 7,
  y_axis_text_size = 7,
  y_axis_title_size = 7
)
```

```r
p_combined <- patchwork::wrap_plots(p1, p2, p3, ncol = 1) +
  patchwork::plot_layout(heights = c(1, 1, 2)) +
  patchwork::plot_annotation(
    title = "Frequency of open source challenges",
    theme = theme(plot.title = element_text(
      size = 8,
      face = "bold",
      margin = margin(t = 15),
      hjust = 0.5)
      )
  )

ggsave(
  filename = file.path(FIGURE_PATH, "Fig8.tif"),
  plot = p_combined + plot_annotation(tag_levels = "A") & theme(plot.tag = element_text(size
  device = "tiff",
  width = 5.2, height = 5.2, units = "in",
  dpi = 300,
  compression = "none",
  bg = "white"
```

```
)
```