Session 16: Storytelling with Data — Pen-and-Paper Pair Exercise

PSY 410 | Data Science for Psychology

Name: _____ **Date:** _____

No laptop today? No problem. This handout lets you practice the same skills on paper. Work with a partner who has a laptop and compare your work at the end.

The data: `stress_data`

Mean stress and burnout ratings (0–10 scale) by profession:

profession	stress	burnout
Teacher	7.2	6.8
Nurse	8.1	7.9
Engineer	5.5	4.8
Retail	6.8	6.5
Admin	6.2	5.9

Your partner has a default bar chart on screen that needs improvement.

The task (same as the slide exercise)

The original code produces a basic, unpolished bar chart:

```
ggplot(stress_data, aes(x = profession, y = stress, fill = profession)) +
  geom_col() +
  labs(title = "Stress by Profession") +
  theme_gray()
```

Improve it by:

1. Removing the unnecessary legend
2. Reordering professions by stress level
3. Highlighting the profession with highest stress
4. Adding a clear, message-driven title
5. Cleaning up the theme

Your pen-and-paper version

Step 1: Reorder the data. Rank the professions from lowest to highest stress:

Rank	Profession	Stress
1		
2		
3		
4		
5		

Step 2: Write a message-driven title. The current title is "Stress by Profession" — this describes the axes but says nothing about the finding. Write a title that tells the reader what to take away:

Your title: _____

Step 3: Plan the highlighting. Which profession should be highlighted? _____

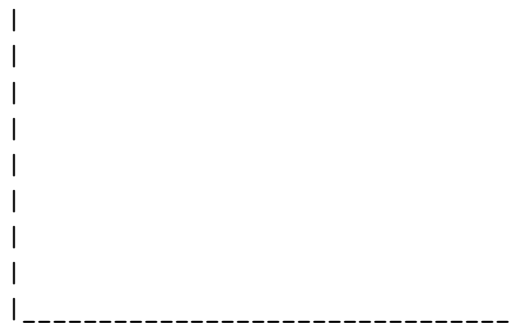
What color would you use for the highlight? _____

What color for the non-highlighted bars? _____

Step 4: Horizontal vs. vertical? Should the bars be horizontal or vertical? Why?

Your answer: _____

Step 5: Sketch the improved figure. Draw it by hand below, incorporating all your improvements:



Step 6: Write the improved code. Fill in the blanks:

```
stress_data <- stress_data |>
  mutate(
    profession = fct_reorder(profession, _______),
    highlight = if_else(profession == "________", "yes", "no")
  )

ggplot(stress_data, aes(x = stress, y = profession,
                        fill = __________)) +
  geom_col() +
  scale_fill_manual(values = c("yes" = "___________",
                               "no" = "___________")) +
  labs(
    title = "_________________________________",
    subtitle = "_________________________________",
    x = "____________",
    y = ______
  ) +
  theme___________() +
  theme(legend.position = "________")
```

Check your work

Compare your sketch and code with your partner's screen. Do your rankings, title, and highlighting choices match?