Assignment 2

Deconstruct, Reconstruct Web Report

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Assessment declaration checklist

Please carefully read the statements below and check each box if you agree with the declaration. If you do not check all boxes, your assignment will not be marked. If you make a false declaration on any of these points, you may be investigated for academic misconduct. Students found to have breached academic integrity may receive official warnings and/or serious academic penalties. Please read more about academic integrity here (https://www.rmit.edu.au/students/student-essentials/assessment-and-exams/academic-integrity). If you are unsure about any of these points or feel your assessment might breach academic integrity, please contact your course coordinator for support. It is important that you DO NOT submit any assessment until you can complete the declaration truthfully.

By checking the boxes below, I declare the following:

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I agree and acknowledge that:

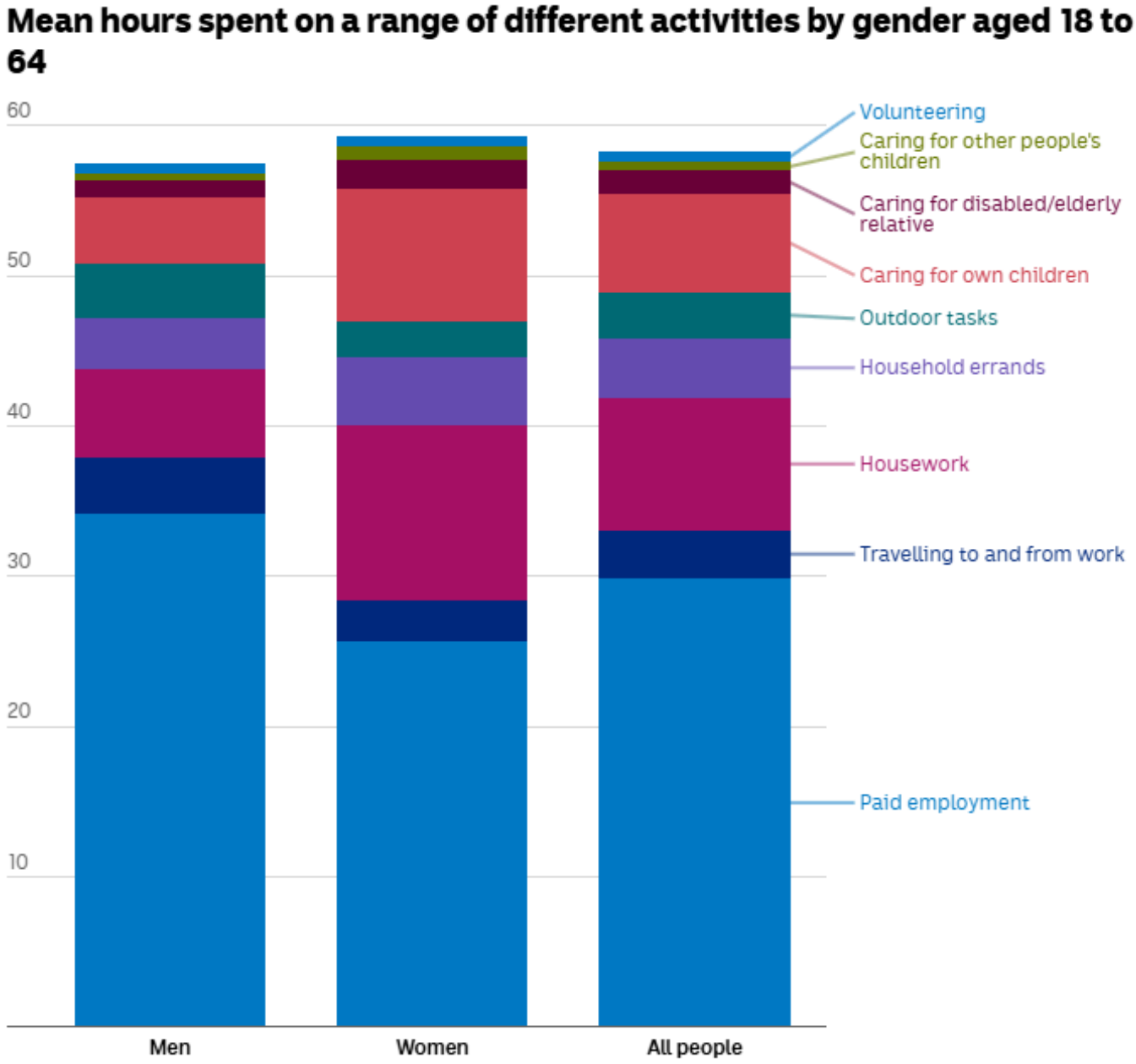
- ☑ I have read and understood the Declaration and Statement of Authorship above.

- ☑ If I do not agree to the Declaration and Statement of Authorship in this context and all boxes are not checked, the assessment outcome is not valid for assessment purposes and will not be included in my final result for this course.

Deconstruct

Original

The original data visualisation selected for the assignment was as follows:



Source: ABC News (Murphy, 2025).

Objective and Audience

The objective and audience of the original data visualisation chosen can be summarised as follows:

Objective

The objective of this data visualisation is to compare the mean hours spent across a range of daily activities between men and women aged 18 to 64.

It highlights the distribution of time spent on paid employment versus unpaid work, where unpaid work includes activities housework and chores, caring for children etc.

Ultimately, the visualisation seeks to portray gender differences and similarities in time use patterns, using an averaged column between men and women called “All people”, stacked bar as a reference.

Audience

The primary audience is likely the general public to inform on the time use patterns.

An audience may be legislators or those making policies. This relates because they may implement laws or workplace policies that adhere to specific genders.

Another target group may be those advocating for balance in lifestyles between the genders, for instance, women are more likely to perform unpaid work, however men are at work for longer and away from comfort. Is there a middle ground?

Improvements

The original data visualisation chosen could be improved in the three following ways:

1. Enhancing Visual Clarity Through Chart Type and Colour

The original visualisation used a stacked bar chart, which made it difficult to directly compare activities between genders because there was no common baseline. The new visualisation will replace the stacked bar chart with a side-by-side bar chart, allowing for easier comparison between the activities for men and women. Values will be added so that the reader does not have to hover over the bar to obtain information. The original colours were problematic for colour-blind users because similar hues are used, as well some green and colours close to red. I will implement a softer, colour blind accessible palette.

2. Logical Reordering and Grouping of Activities

The original visualisation lacks logical ordering of activities, and may seem random to a reader. Activities weill be reordered in descending order based on total mean hours spent across genders. The activities will also be grouped into broader categories, as well as distinguishing between paid and unpaid work. This will help the reader differentiate between the types of activities to enhance story telling.

3. Providing Context

The original visualisation fails to account for the full use of time during a week. It leaves out important context such as not factoring in necessary time (eating, sleeping, getting ready etc.), and the display of free time. Using additional data from the ABS Time Use Survey 2020–21, I calculated and introduced ‘Free Time’ into the visualisation to show a larger picture of how time is used, which provides context that is needed to further understand the visualisation.

Reconstruct

Code

The following code was used to improve the original.

```r
# Load libraries
library(ggplot2)
library(dplyr)

#Create a table consisting of Men and Women.
#Repeated for 9 activities. Mean hours was derived through highlighting the original visualis
ation.
gender_activity <- data.frame(
  Gender = rep(c("Men", "Women"), each = 9),
  Activity = rep(c(
    "Paid employment", "Travelling to and from work", "Housework", "Household errands",
    "Outdoor tasks", "Caring for own children", "Caring for disabled/elderly relative",
    "Caring for other people's children", "Volunteering"
  ), 2),
  Mean_Hours = c(
    34, 4, 6, 3, 4, 5, 1, 0, 1,   # Men
    26, 3, 12, 5, 2, 9, 2, 1, 1   # Women
  )
)

#Assigning categories inspired by the Excel spreadsheet.
gender_activity$Broad_Category <- rep(c(
  "Employment",
  "Commuting",
  "Domestic",
  "Domestic",
  "Domestic",
  "Care",
  "Care",
  "Care",
  "Community"
), 2)

#Include an added free time bar.
free_time <- data.frame(
  Gender = c("Men", "Women"),
  Activity = c("Free time", "Free time"),
  Mean_Hours = c(40, 36),
  Broad_Category = c("Free Time", "Free Time")
)
#Append it
gender_activity <- bind_rows(gender_activity, free_time)

#Group Men and Women as a total so that R can sort it in descending order.
activity_order <- gender_activity %>%
  group_by(Activity) %>%
  summarise(Total_Mean = sum(Mean_Hours), .groups="drop") %>%
  arrange(desc(Total_Mean)) %>%
  pull(Activity)

gender_activity$Activity <- factor(gender_activity$Activity, levels = activity_order)

#Differentiate categories between paid and unpaid. Paid features only "Paid employment".
gender_activity$Payment_Type <- ifelse(
  gender_activity$Activity == "Paid employment",
```

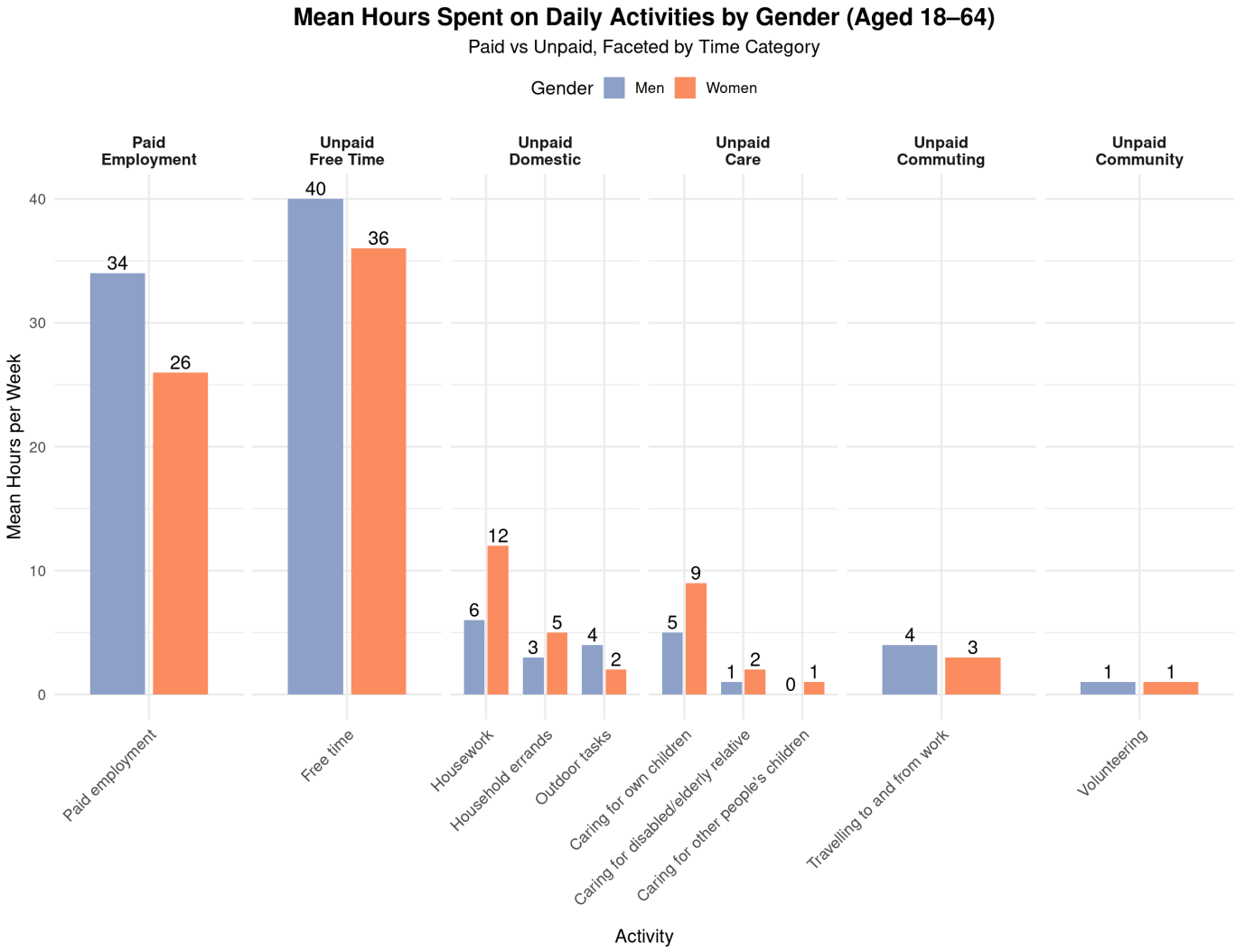
```
  "Paid",
  "Unpaid"
)

# Puts the broad category with the paid/unpaid label for extra clarity.
gender_activity$Combined_Category <- factor(
  paste0(gender_activity$Payment_Type, "\n", gender_activity$Broad_Category),
  levels = c(
    "Paid\nEmployment",
    "Unpaid\nFree Time",
    "Unpaid\nDomestic",
    "Unpaid\nCare",
    "Unpaid\nCommuting",
    "Unpaid\nCommunity"
  )
)

# Plot the graph. Draw side by side bars and label it with its exact hours.
p1 <- ggplot(gender_activity, aes(x = Activity, y = Mean_Hours, fill = Gender)) +
  geom_bar(stat = "identity", position = position_dodge(0.8), width = 0.7) +
  geom_text(aes(label = paste0(round(Mean_Hours, 1))),
            position = position_dodge(0.8), vjust = -0.25, size = 5) +
  scale_fill_manual(values = c("Men" = "#8da0cb", "Women" = "#fc8d62")) +
  labs(
    title = "Mean Hours Spent on Daily Activities by Gender (Aged 18–64)",
    subtitle = "Paid vs Unpaid, Faceted by Time Category",
    x = "Activity",
    y = "Mean Hours per Week",
    fill = "Gender"
  ) +
  #Tweak graph for visual appeal.
  theme_minimal(base_size = 14) +
  theme(
    axis.text.x = element_text(angle = 45, hjust = 1, vjust = 1),
    strip.text = element_text(face = "bold", size = 12),
    plot.title = element_text(face = "bold", size = 18, hjust = 0.5),
    plot.subtitle = element_text(size = 14, hjust = 0.5),
    legend.position = "top"
  ) +
  #Facet the plot.
  facet_wrap(~ Combined_Category, scales = "free_x", nrow = 1
  ) + theme(
  axis.text.x = element_text(
    angle   = 45,
    hjust   = 1,
    vjust   = 1,
    size    = 12
  ),
  axis.title.x = element_text(
    margin = margin(t = 15)
  ))
```

Reconstruction

The following plot improves the original data visualisation in the three ways previously explained.



Story-telling

Why does this work? The original visualisation presented several challenges in communicating the differences in time use between genders. I chose to re-design it with a strong focus on improving clarity, accessibility, particularly for the colour blind, and completeness of the story the data tells. The stacked bar chart format made it difficult to compare activities between genders, so I replaced it with a side-by-side grouped bar chart to establish a common baseline, making comparisons more intuitive.Colour selection in the original was not suitable for colour-blind viewers, so I used a softer, colour-blind-accessible palette.

Most importantly, the original lacked important context — it only focused on selected activities without showing the broader time commitments like necessary time or free time. By incorporating data from the ABS Time Use Survey 2020–21, I added ‘Free Time’ as a new category and clearly distinguished between Paid and Unpaid work. Activities were reordered logically based on total mean hours spent to highlight the most significant time commitments. These changes I believe ensure that the final visualisation not only addresses the issues of the original visualisation, but also delivers a much more complete, coherent and visually clear representation of the data.

References

The reference to the original data visualisation choose, the data source(s) used for the reconstruction and any other sources used for this assignment are as follows:

- Australian Bureau of Statistics. (2022, October 7). How Australians Use Their Time. Australian Bureau of Statistics. https://www.abs.gov.au/statistics/people/people-and-communities/how-australians-use-their-time/latest-release (https://www.abs.gov.au/statistics/people/people-and-communities/how-australians-

use-their-time/latest-release)

- Murphy, H. (2025, March 5). Eight graphs show how Australians have changed over the last 20 years. Abc.net.au; ABC News. https://www.abc.net.au/news/2025-03-06/hilda-report-graphs-australian-life-changed-20-years/105009846 (https://www.abc.net.au/news/2025-03-06/hilda-report-graphs-australian-life-changed-20-years/105009846)