Hours Worked

Telha H. Rehman

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BISMILLAH AR-RAHMAN AR-RAHEEM

```
Sys.time()
```

```
## [1] "2024-09-26 09:53:53 PDT"
```

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document.

Setting WD

Loading Packages

Loading Data

```
hours_worked <- read_csv(file = "DATA/hours_worked.csv")  #loads data
```

```
## Rows: 11 Columns: 5
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (1): week_ending_AH
## dbl  (3): hours_worked, mins_worked, target_hours
## date (1): week_ending_AD
##
## 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.
```

Factors

```
str(hours_worked , give.attr = F)
```

```
## spc_tbl_ [11 x 5] (S3: spec_tbl_df/tbl_df/tbl/data.frame)
##  $ week_ending_AH: chr [1:11] "05-Muharram-1446" "12-Muharram-1446" "19-Muharram-1446" "26-Muharram-
##  $ week_ending_AD: Date[1:11], format: "2024-07-12" "2024-07-19" ...
##  $ hours_worked  : num [1:11] 40 44 41 33 35 36 36 38 35 25 ...
##  $ mins_worked   : num [1:11] 26 49 21 7 3 12 52 20 48 49 ...
##  $ target_hours  : num [1:11] 35 35 35 35 35 35 35 35 35 28 ...
```

```r
hours_worked <- hours_worked %>%
  mutate(week_ending_AH = factor(week_ending_AH),
         year = 2024,
         year = factor(year))

str(hours_worked , give.attr = F)
```

```
## tibble [11 x 6] (S3: tbl_df/tbl/data.frame)
##  $ week_ending_AH: Factor w/ 11 levels "02-RabiAlAwal-1446",..: 3 6 9 11 2 5 8 10 1 4 ...
##  $ week_ending_AD: Date[1:11], format: "2024-07-12" "2024-07-19" ...
##  $ hours_worked  : num [1:11] 40 44 41 33 35 36 36 38 35 25 ...
##  $ mins_worked   : num [1:11] 26 49 21 7 3 12 52 20 48 49 ...
##  $ target_hours  : num [1:11] 35 35 35 35 35 35 35 35 35 28 ...
##  $ year          : Factor w/ 1 level "2024": 1 1 1 1 1 1 1 1 1 1 ...
```

Wrangling

```r
hours_worked <- hours_worked %>%
  mutate(hours_worked_decimal = mins_worked/60,
         hours_worked_decimal_r = round(hours_worked_decimal , digits = 2) ,
         hours_worked_total = hours_worked + hours_worked_decimal_r ,
         difference = hours_worked_total - target_hours) #calculates the difference for each week worke

sum_of_all_weeks <- hours_worked %>%
  group_by(year) %>%
  summarise(total_difference = sum(difference, na.rm = TRUE)) #takes the sum of all weeks

print(sum_of_all_weeks$total_difference)
```

```
## [1] 28.49
```

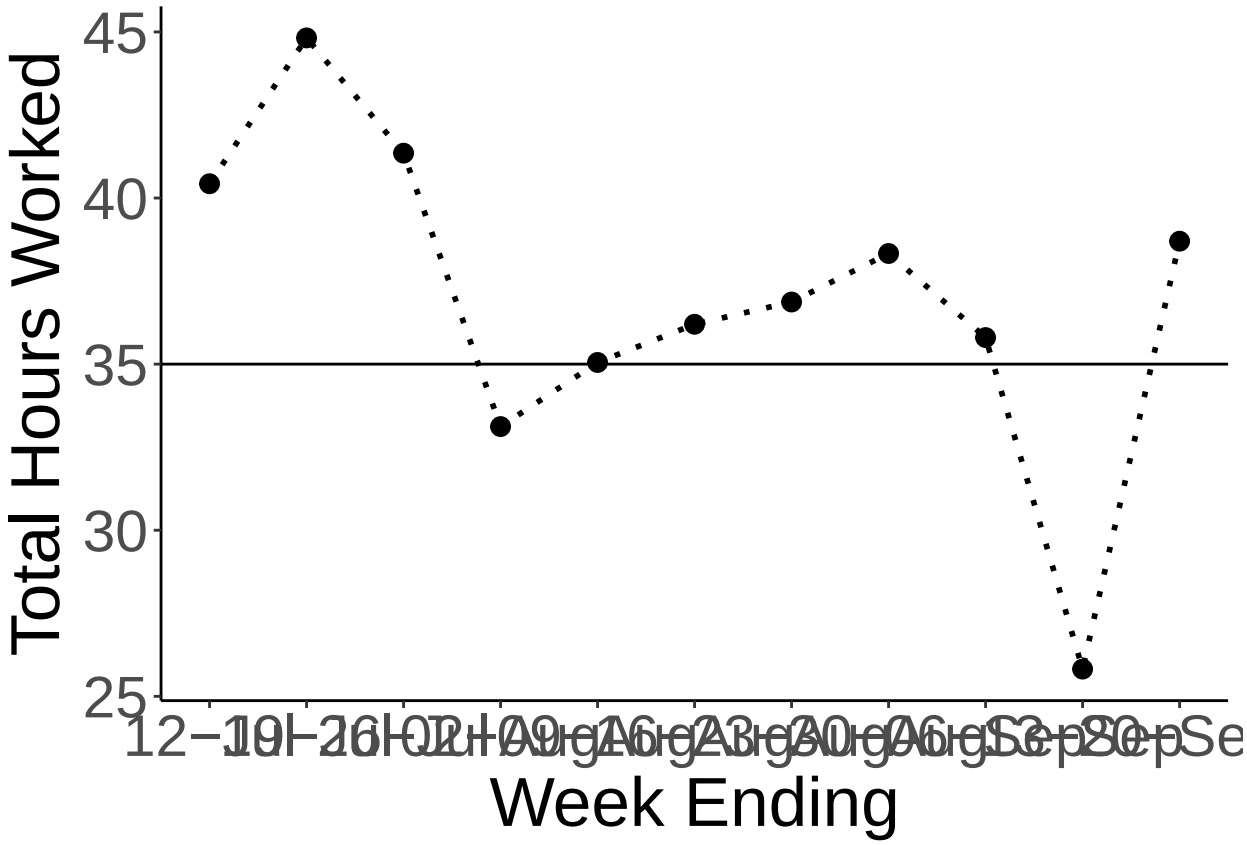
Plots

hours_plot

```r
hours_plot <- ggplot(data = hours_worked,
                          aes(
                              x = week_ending_AD,
                              y = hours_worked_total,
                              )) +
  geom_line(data = hours_worked, aes(x = week_ending_AD,
                                     y = hours_worked_total,
                                     ),
            linetype = "dotted",
            linewidth = 1) +
  geom_point(data = hours_worked, aes(
                                      x = week_ending_AD,
                                      y = hours_worked_total),
             size = 3) +
  scale_shape_manual(values = seq(1:20)) +
  scale_y_continuous(breaks = seq(20 ,50, by = 5)) +
  scale_x_date(breaks = seq(min(hours_worked$week_ending_AD),
                            max(hours_worked$week_ending_AD),
                            by = "7 days"),
```

```
            date_labels = "%d-%b") +
  theme_classic() +
  labs( x = "Week Ending" ,
        y = expression("Total Hours Worked")
        ) +
  theme(axis.text = element_text(size = 22) ,
        axis.title = element_text(size = 26) ,
        legend.text = element_text(size = 20),
        legend.title = element_text(size = 22)) +
  geom_hline(yintercept = 35) #creates a plot


hours_plot
```



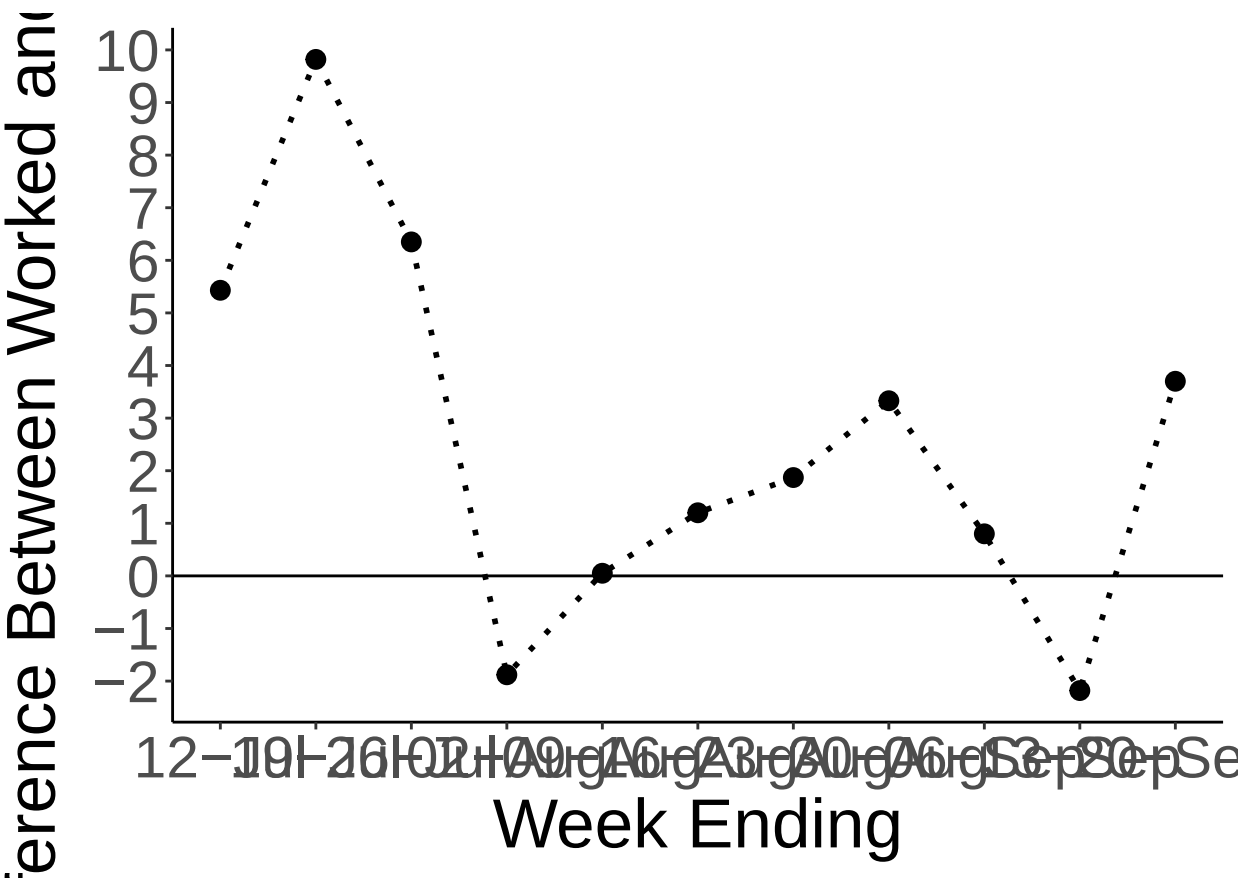

```
ggsave("FIGURES/hours_plot.jpg" , hours_plot ,  width = 15 , height = 10 , dpi = 300)
```

difference_plot

```
difference_plot <- ggplot(data = hours_worked,
                          aes(
                              x = week_ending_AD,
                              y = difference,
                              )) +
  geom_line(data = hours_worked, aes(x = week_ending_AD,
                                     y = difference,
                                     ),
```

```
            linetype = "dotted",
            linewidth = 1) +
  geom_point(data = hours_worked, aes(
                                  x = week_ending_AD,
                                  y = difference),
             size = 3) +
  scale_shape_manual(values = seq(1:20)) +
  scale_y_continuous(breaks = seq(-10 , 10 , by = 1)) +
  scale_x_date(breaks = seq(min(hours_worked$week_ending_AD),
                            max(hours_worked$week_ending_AD),
                            by = "7 days"),
             date_labels = "%d-%b") +
  theme_classic() +
  labs( x = "Week Ending" ,
        y = expression("Difference Between Worked and Target")
        ) +
  theme(axis.text = element_text(size = 22) ,
        axis.title = element_text(size = 26) ,
        legend.text = element_text(size = 20),
        legend.title = element_text(size = 22)) +
  geom_hline(yintercept = 0) #creates a plot


difference_plot
```

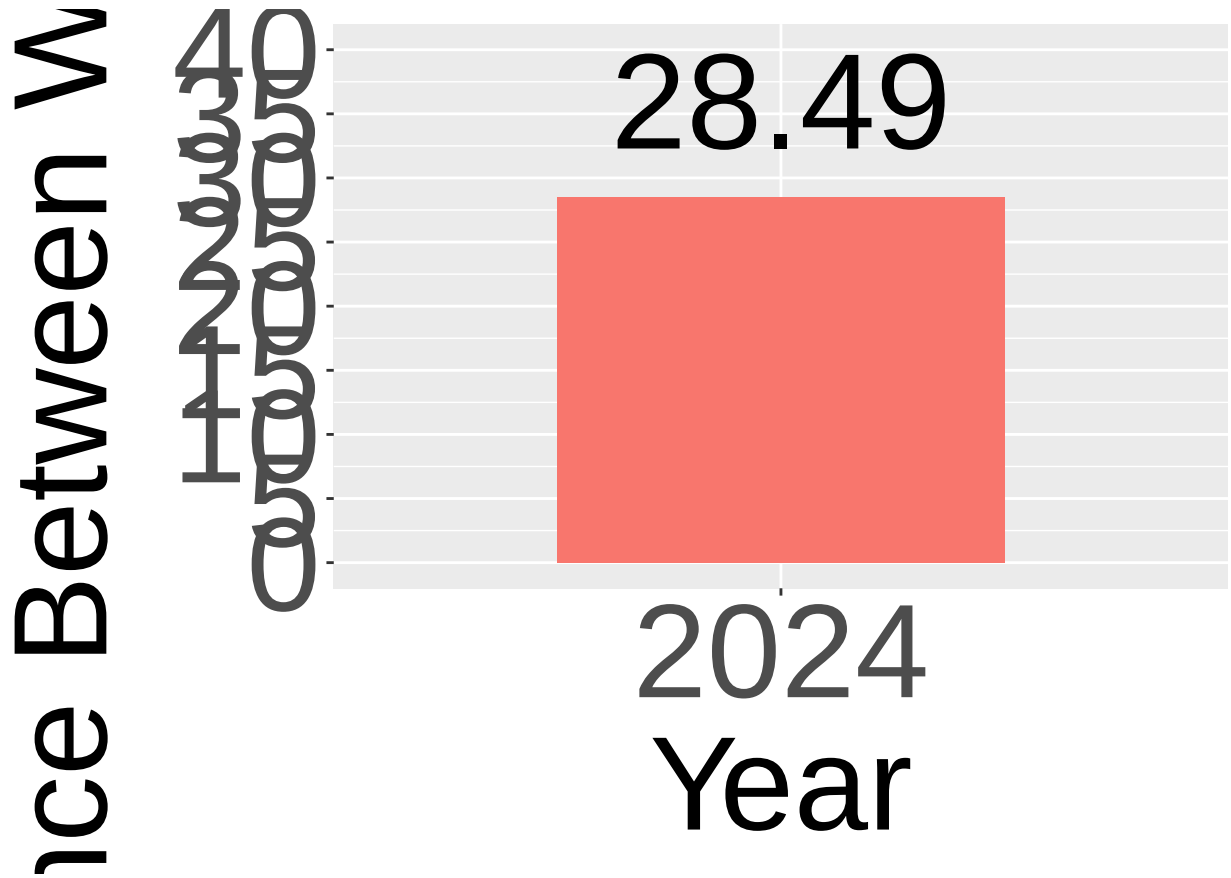


```
ggsave("FIGURES/difference_plot.jpg" , difference_plot ,  width = 15 , height = 10 , dpi = 300)
```

total_difference

```
total_difference <- ggplot(data = sum_of_all_weeks ,
                aes ( x = year  ,
                      y = total_difference,
                     fill = year)) +
  geom_bar(position = position_dodge() ,
           stat = "identity" ,
           width = 0.6) +
  geom_text(aes(label = total_difference), vjust = -0.5 , size = 18) +
  labs( x = "Year" ,
        y = expression("Total Difference Between Worked and Target")
        ) +
  scale_y_continuous(breaks = seq(0 , 40 , by = 5)) +
  coord_cartesian(ylim = c(0, 40)) +
  theme(axis.text = element_text(size = 50) ,
        axis.title = element_text(size = 50) ,
        legend.position = "none") #creates a plot

total_difference
```




```
ggsave("FIGURES/total_difference.jpg" , total_difference ,  width = 22 , height = 18 , dpi = 300)
```