coding challenge 5

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```
div.data <- read.csv("C:/Users/katie/Downloads/DiversityData.csv")
meta.data<- read.csv("C:/Users/katie/Downloads/Metadata.csv")
library(tidyverse)
```

Question 1

```
## Warning: package 'tidyverse' was built under R version 4.4.2
```

```
## Warning: package 'dplyr' was built under R version 4.4.2
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become error
```

```
alpha <- merge.data.frame(div.data, meta.data, by = "Code") #you can use the merge() function to add da
```

Question 2

```
alpha_even <- alpha %>%
  mutate(Pielou = (shannon/log(richness)))
```

Question 3

```
alpha_average <- alpha_even %>%
  group_by(Crop, Time_Point) %>%
  summarise(Mean.even = mean(Pielou),
            n = n(),
            sd.dev = sd(Pielou))%>%
  mutate(std.err = sd.dev/sqrt(n))
```

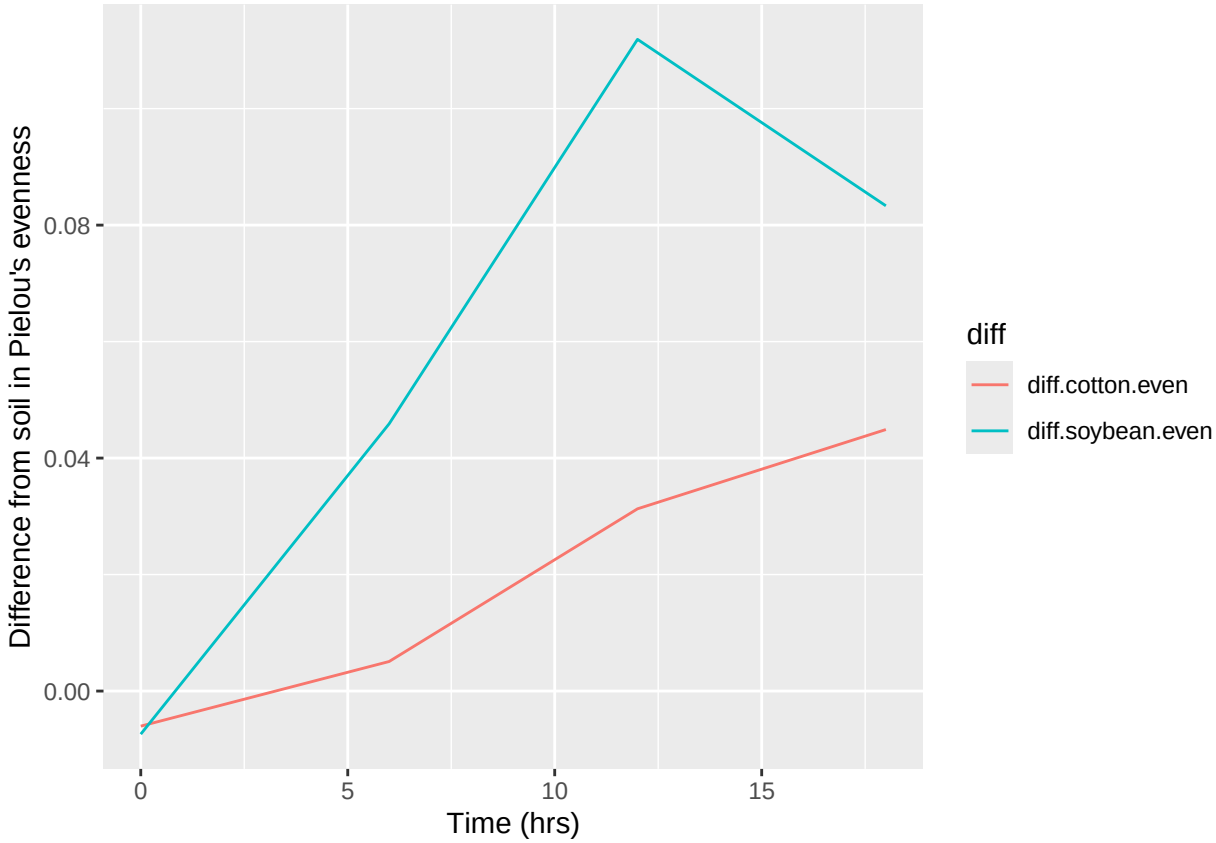
Question 4

```
## `summarise()` has grouped output by 'Crop'. You can override using the
## `.groups` argument.
```

```
alpha_average2 <- alpha_average %>%
  select(Time_Point, Crop, Mean.even) %>%
  pivot_wider(names_from = Crop, values_from = Mean.even) %>%
  mutate(diff.cotton.even = Soil - Cotton) %>%
  mutate(diff.soybean.even = Soil - Soybean)
```

Question 5

```
alpha_average2%>%
  select(Time_Point, diff.cotton.even, diff.soybean.even)%>%
  pivot_longer(c(diff.cotton.even, diff.soybean.even), names_to = "diff")%>%
  ggplot(aes(x = Time_Point, y = value, color = diff)) +
  geom_line() +
  xlab("Time (hrs)") +
  ylab("Difference from soil in Pielou's evenness")
```


Difference from soil in Pielou's evenness
0.08
0.04
0.00
0
5
10
15
Time (hrs)
diff
diff.cotton.even
diff.soybean.even

Question 6