Milestone 4 Graphs

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R Markdown

```
library(readr)
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.1 --
```

```
## v ggplot2 3.3.5     v dplyr   1.0.8
## v tibble  3.1.6     v stringr 1.4.0
## v tidyr   1.2.0     v forcats 0.5.1
## v purrr   0.3.4
```

```
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(patchwork)
nj <- read_csv("njsurvey.csv")
```

```
## Rows: 126 Columns: 36
```

```
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (6): Gender, Employment Status, Race/Ethnicity, Relationship Status, Cu...
## dbl (30): Age, Q1, Q2, Q3, Q4, Q5, Q6, Q8, Q9, Q10, Q11, Q12, Q13, Q14, Q15,...
##
## 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.
```

```
q <- read_csv("questions.csv")
```

```
## Rows: 30 Columns: 3
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr (3): Question Code, Full Question, Construct Name
##
## 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.
```

```
nj <- nj %>%
  subset(Gender != "Male")

nj <- subset (nj, select = -Q7) %>%
  rename(employ = "Employment Status")

financial <- nj %>%
```

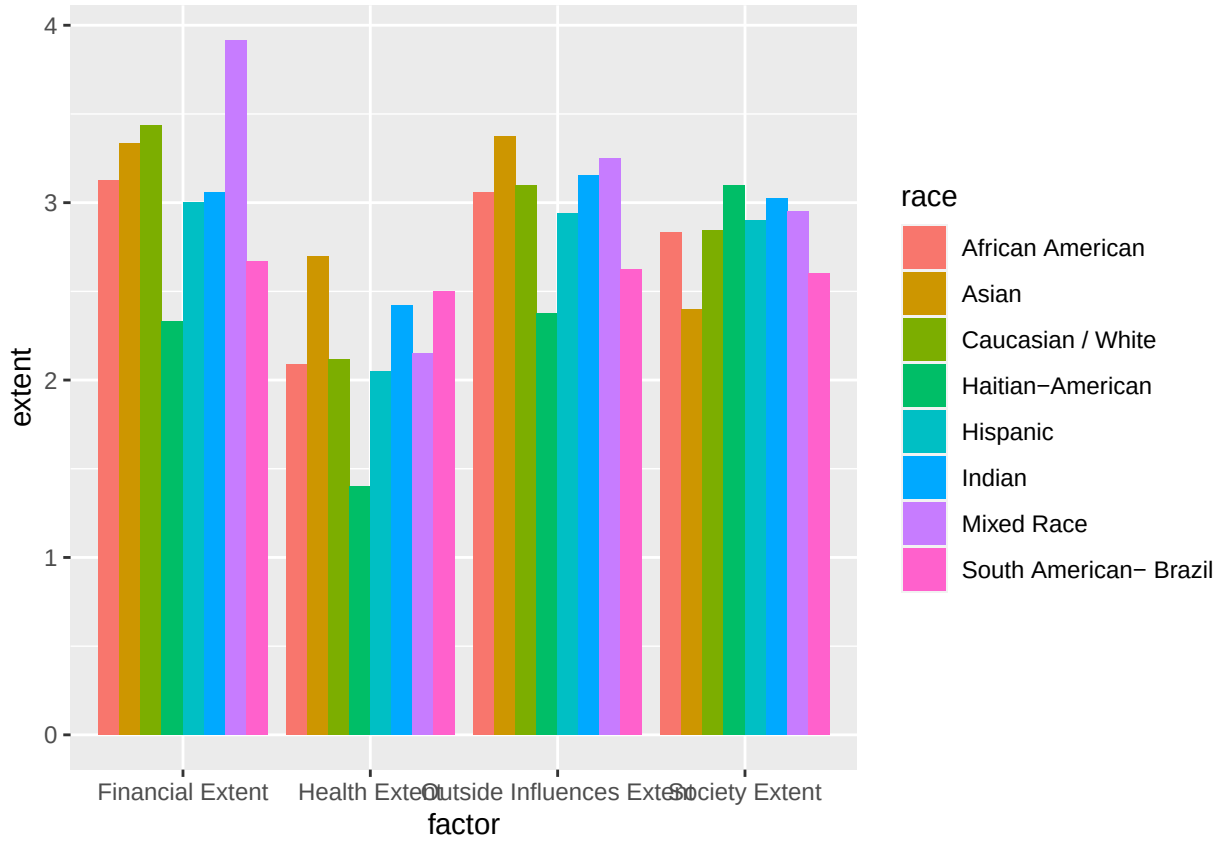
```
  subset(select = -c(Q8:Q30)) %>%
  rename(race = "Race/Ethnicity")
financial <- financial %>% pivot_longer(
    cols = starts_with("Q"),
    names_to = "question",
    values_to = "extent",
    values_drop_na = TRUE
  )

society <- nj %>%
  subset(select = -c(Q1:Q6, Q13:Q30)) %>%
  rename(race = "Race/Ethnicity")
society <- society %>% pivot_longer(
    cols = starts_with("Q"),
    names_to = "question",
    values_to = "extent",
    values_drop_na = TRUE
  )

outinfluences <- nj %>%
  subset(select = -c(Q1:Q12, Q21:Q30)) %>%
  rename(race = "Race/Ethnicity")
outinfluences <- outinfluences %>% pivot_longer(
    cols = starts_with("Q"),
    names_to = "question",
    values_to = "extent",
    values_drop_na = TRUE
  )

health <- nj %>%
  subset(select = -c(Q1:Q20)) %>%
  rename(race = "Race/Ethnicity")
health <- health %>% pivot_longer(
    cols = starts_with("Q"),
    names_to = "question",
    values_to = "extent",
    values_drop_na = TRUE
  )
```

```
race_financial <- financial %>%
  group_by(race) %>%
  summarise(mean(extent))%>%
  rename("Financial Extent" = "mean(extent)")

race_society <- society %>%
  group_by(race) %>%
  summarise(mean(extent)) %>%
  rename("Society Extent" = "mean(extent)")

race_outinfluences <- outinfluences %>%
  group_by(race) %>%
  summarise(mean(extent)) %>%
  rename("Outside Influences Extent" = "mean(extent)")
```

```
race_health <- health %>%
  group_by(race) %>%
  summarise(mean(extent)) %>%
  rename("Health Extent" = "mean(extent)")

df_list <- list(race_financial, race_society, race_outinfluences, race_health)

race_factors <- df_list %>% reduce(full_join, by='race')
```

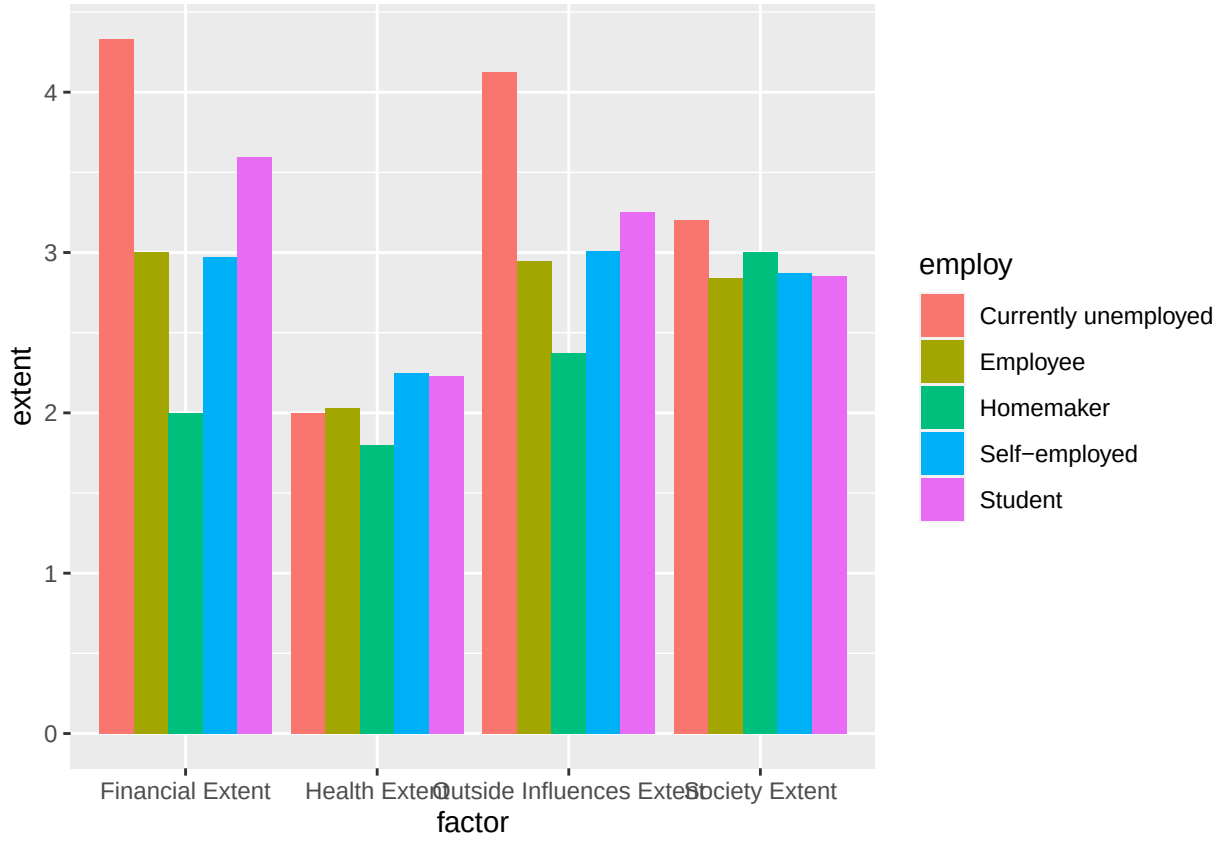
```
race_factors <- pivot_longer(race_factors, cols = !race, names_to = "factor", values_to = "extent")
```

```
ggplot(race_factors, aes(x= factor, y = extent)) +
  geom_bar(aes(fill = race), stat = "identity",position = "dodge")
```




```
employ_financial <- financial %>%
  group_by(employ) %>%
  summarise(mean(extent))%>%
  rename("Financial Extent" = "mean(extent)")

employ_society <- society %>%
  group_by(employ) %>%
  summarise(mean(extent)) %>%
  rename("Society Extent" = "mean(extent)")

employ_outinfluences <- outinfluences %>%
  group_by(employ) %>%
  summarise(mean(extent)) %>%
```

```
  rename("Outside Influences Extent" = "mean(extent)")

employ_health <- health %>%
  group_by(employ) %>%
  summarise(mean(extent)) %>%
  rename("Health Extent" = "mean(extent)")

df_list <- list(employ_financial, employ_society, employ_outinfluences, employ_health)

employ_factors <- df_list %>% reduce(full_join, by='employ')

employ_factors <- pivot_longer(employ_factors, cols = !employ, names_to = "factor", values_to = "extent

ggplot(employ_factors, aes(x= factor, y = extent)) +
  geom_bar(aes(fill = employ), stat = "identity",position = "dodge")
```




```
question_nums <- unique(health$question)
question_text <- c("Middle aged women are probably infertile", "Middle aged women will face health compl

health$question_text <- plyr::mapvalues(health$question,
          from = question_nums,
          to = question_text)

health <- health %>%
  group_by(question_text) %>%
  mutate(avg_extent = mean(extent))
```

```r
p1 <- ggplot(health, aes(x = extent, y= reorder(question_text, extent, mean), fill = avg_extent)) +
  geom_violin() +
  labs(title = "Health Factors",
       subtitle = "To what extent do the following reasons influence a woman's decision to not have a ch
       x = "1 = Strongly Disagree, 5 = Strongly Agree",
       y = element_blank(),
       fill = "Average Rating") +
  scale_fill_distiller(palette = "RdPu", direction = 1, limits = c(0, 5)) +
  scale_y_discrete(labels = function(x) stringr::str_wrap(x, width = 30)) +
  theme_minimal() +
  theme(legend.position = "bottom",
        legend.text=element_text(size=10),
        axis.text=element_text(size=8),
        plot.title=element_text(size=12),
        plot.subtitle=element_text(size=10))
```

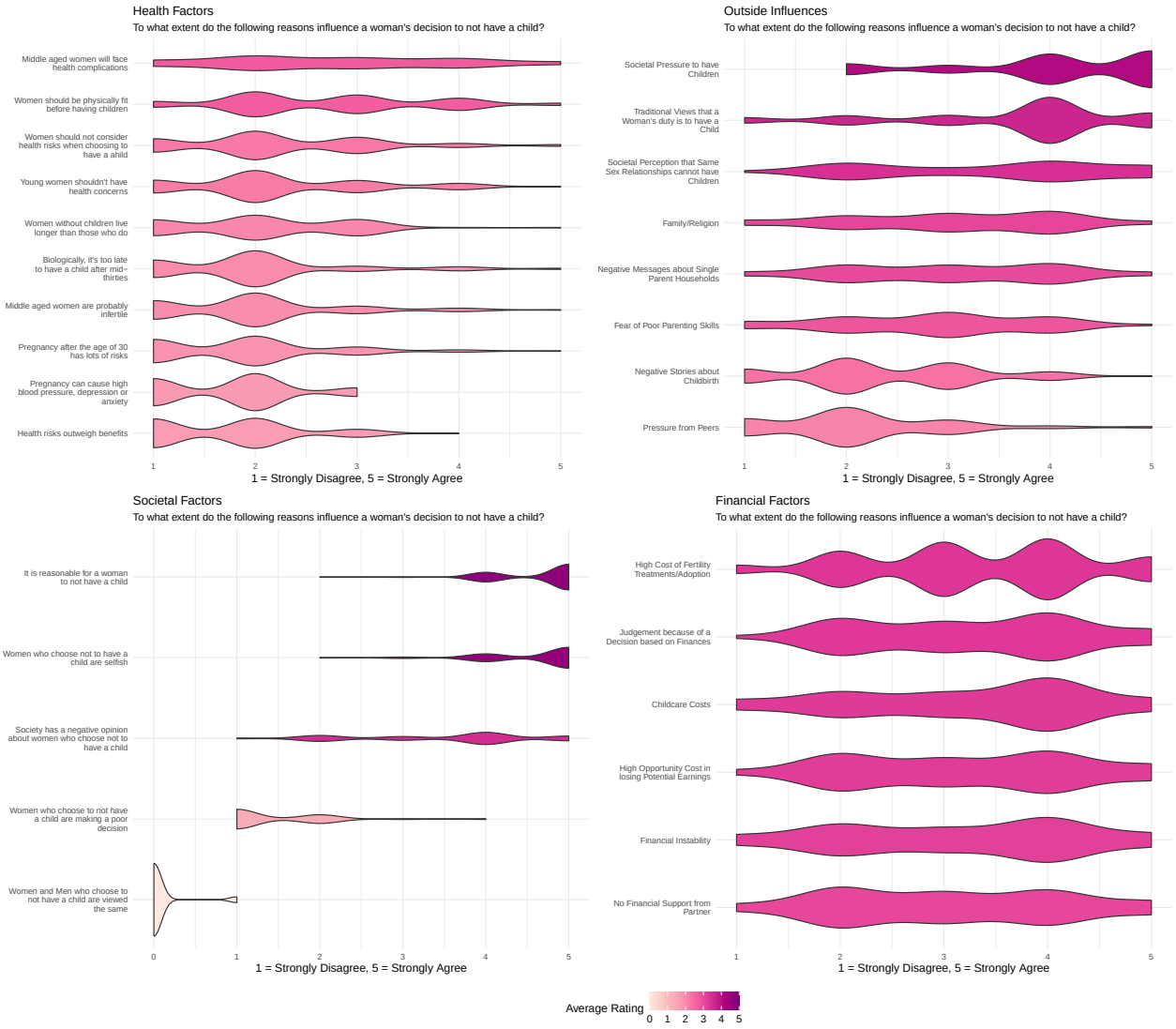
```r
question_nums <- unique(outinfluences$question)
question_text <- c("Negative Stories about Childbirth", "Negative Messages about Single Parent Household

outinfluences$question_text <- plyr::mapvalues(outinfluences$question,
          from = question_nums,
          to = question_text)

outinfluences <- outinfluences %>%
  group_by(question_text) %>%
  mutate(avg_extent = mean(extent))

p2 <- ggplot(outinfluences, aes(x = extent, y= reorder(question_text, extent, mean), fill = avg_extent))
  geom_violin() +
  labs(title = "Outside Influences",
       subtitle = "To what extent do the following reasons influence a woman's decision to not have a ch
       x = "1 = Strongly Disagree, 5 = Strongly Agree",
       y = element_blank(),
       fill = "Average Rating") +
  scale_fill_distiller(palette = "RdPu", direction = 1, limits = c(0, 5)) +
  scale_y_discrete(labels = function(x) stringr::str_wrap(x, width = 30)) +
  theme_minimal() +
  theme(legend.position = "bottom",
        legend.text=element_text(size=10),
        axis.text=element_text(size=8),
        plot.title=element_text(size=12),
        plot.subtitle=element_text(size=10))
```

```r
question_nums <- unique(society$question)
question_text <- c("It is reasonable for a woman to not have a child", "Society has a negative opinion a

society$question_text <- plyr::mapvalues(society$question,
          from = question_nums,
          to = question_text)

society <- society %>%
  group_by(question_text) %>%
  mutate(avg_extent = mean(extent))
```

```r
p3 <- ggplot(society, aes(x = extent, y= reorder(question_text, extent, mean), fill = avg_extent)) +
  geom_violin() +
  labs(title = "Societal Factors",
       subtitle = "To what extent do the following reasons influence a woman's decision to not have a ch
       x = "1 = Strongly Disagree, 5 = Strongly Agree",
       y = element_blank(),
       fill = "Average Rating") +
  scale_fill_distiller(palette = "RdPu", direction = 1, limits = c(0, 5)) +
  scale_y_discrete(labels = function(x) stringr::str_wrap(x, width = 30)) +
  theme_minimal() +
  theme(legend.position = "bottom",
        legend.text=element_text(size=10),
        axis.text=element_text(size=8),
        plot.title=element_text(size=12),
        plot.subtitle=element_text(size=10))
```

```r
question_nums <- unique(financial$question)
question_text <- c("Financial Instability", "Childcare Costs", "Judgement because of a Decision based on

financial$question_text <- plyr::mapvalues(financial$question,
          from = question_nums,
          to = question_text)

financial <- financial %>%
  group_by(question_text) %>%
  mutate(avg_extent = mean(extent))

p4 <- ggplot(financial, aes(x = extent, y= reorder(question_text, extent, mean), fill = avg_extent)) +
  geom_violin() +
  labs(title = "Financial Factors",
       subtitle = "To what extent do the following reasons influence a woman's decision to not have a ch
       x = "1 = Strongly Disagree, 5 = Strongly Agree",
       y = element_blank(),
       fill = "Average Rating") +
  scale_fill_distiller(palette = "RdPu", direction = 1, limits = c(0, 5)) +
  scale_y_discrete(labels = function(x) stringr::str_wrap(x, width = 30)) +
  theme_minimal() +
  theme(legend.position = "bottom",
        legend.text=element_text(size=10),
        axis.text=element_text(size=8),
        plot.title=element_text(size=12),
        plot.subtitle=element_text(size=10))
```

```r
(p1 + p2) / (p3 + p4) + plot_layout(guides = "collect") &
  theme(legend.position = "bottom")
```


Health Factors
To what extent do the following reasons influence a woman's decision to not have a child?
Middle aged women will face health complications
Women should be physically fit before having children
Women should not consider health risks when choosing to have a ahild
Young women shouldn't have health concerns
Women without children live longer than those who do
Biologically, it's too late to have a child after mid-thirties
Middle aged women are probably infertile
Pregnancy after the age of 30 has lots of risks
Pregnancy can cause high blood pressure, depression or anxiety
Health risks outweigh benefits
1 2 3 4 5
1 = Strongly Disagree, 5 = Strongly Agree
Outside Influences
To what extent do the following reasons influence a woman's decision to not have a child?
Societal Pressure to have Children
Traditional Views that a Woman's duty is to have a Child
Societal Perception that Same Sex Relationships cannot have Children
Family/Religion
Negative Messages about Single Parent Households
Fear of Poor Parenting Skills
Negative Stories about Childbirth
Pressure from Peers
1 2 3 4 5
1 = Strongly Disagree, 5 = Strongly Agree
Societal Factors
To what extent do the following reasons influence a woman's decision to not have a child?
It is reasonable for a woman to not have a child
Women who choose not to have a child are selfish
Society has a negative opinion about women who choose not to have a child
Women who choose to not have a child are making a poor decision
Women and Men who choose to not have a child are viewed the same
0 1 2 3 4 5
1 = Strongly Disagree, 5 = Strongly Agree
Financial Factors
To what extent do the following reasons influence a woman's decision to not have a child?
High Cost of Fertility Treatments/Adoption
Judgement because of a Decision based on Finances
Childcare Costs
High Opportunity Cost in losing Potential Earnings
Financial Instability
No Financial Support from Partner
1 2 3 4 5
1 = Strongly Disagree, 5 = Strongly Agree
Average Rating
0 1 2 3 4 5