# Plots Used for STAT 892 Experiment

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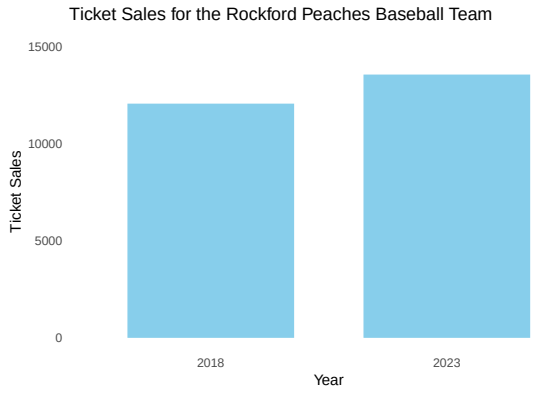
## Introduction

This document is contains the plots that will (or could) be used in the experiment for the STAT 892 final paper. For more information on this experiment see the project's GitHub page.

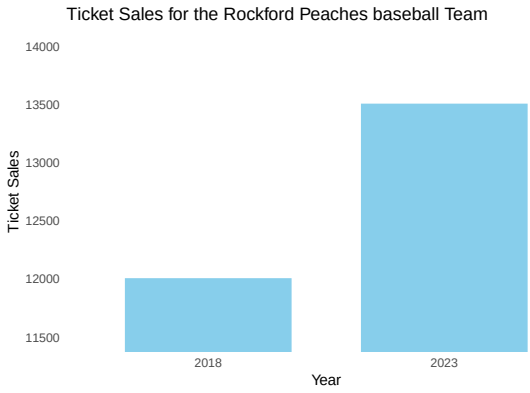
Note, the data for the noncontroversial plots is made up, but the data for the controversial plots is sourced. The *References* section will lead you to the original data. Also, the *R Code Used* section shows how each plot was created.

# Noncontroversial Plots

## Bar Graphs

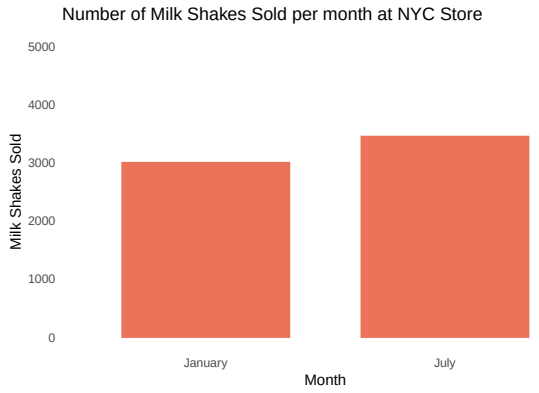



(a) Control

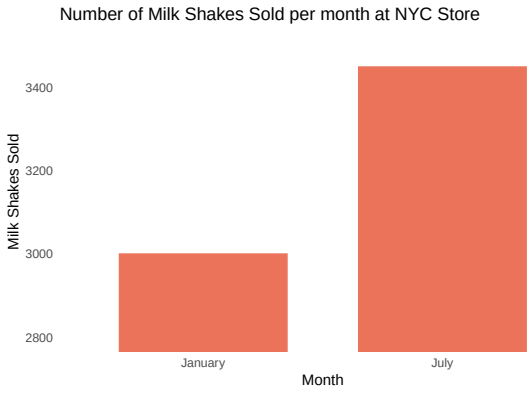



(b) Deceptive

**Question:** How large was the increase in ticket sales from 2018 to 2023?



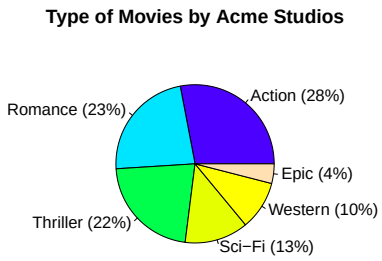

(a) Control



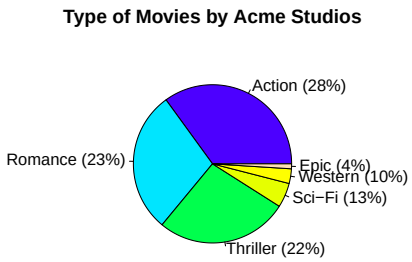

(b) Deceptive

**Question:** How much did milk shake sales increase from January to July?

## Pie Charts

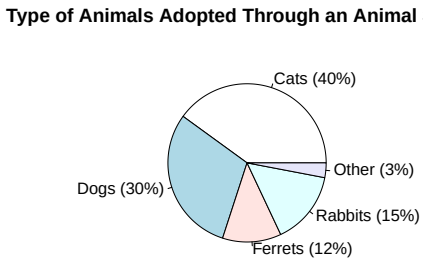



(a) Control

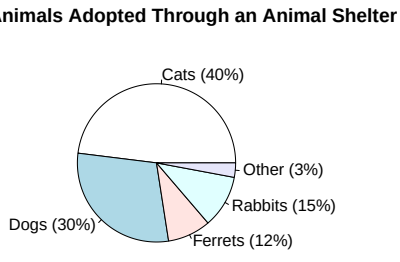



(b) Deceptive

**Question:** How many more romance movies were made than westerns?



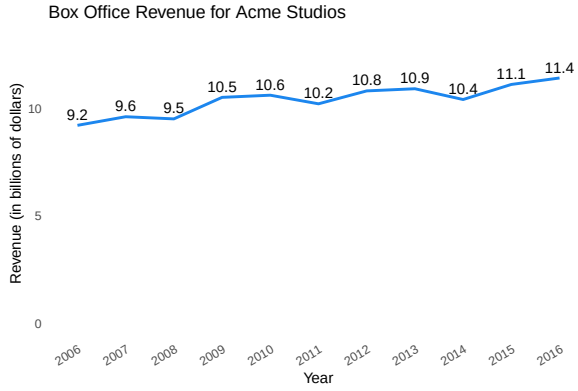

(a) Control



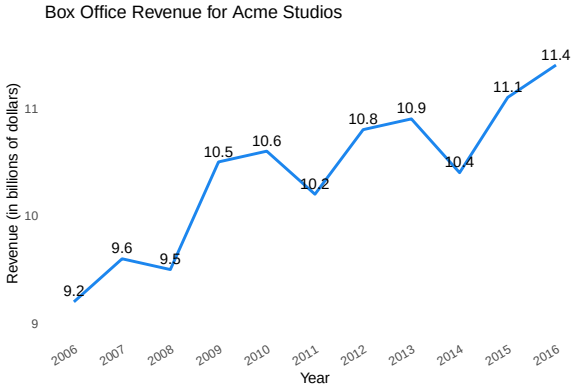

(b) Deceptive

**Question:** How many more cats were adopted than dogs?

## Line Graphs

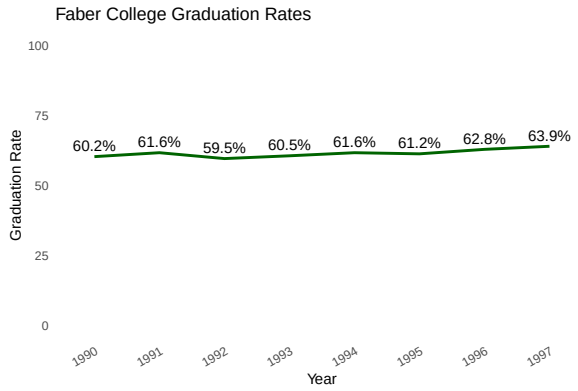



(a) Control

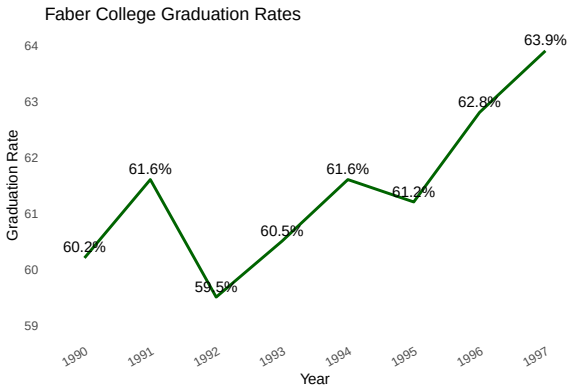



(b) Deceptive

**Question:**




(a) Control

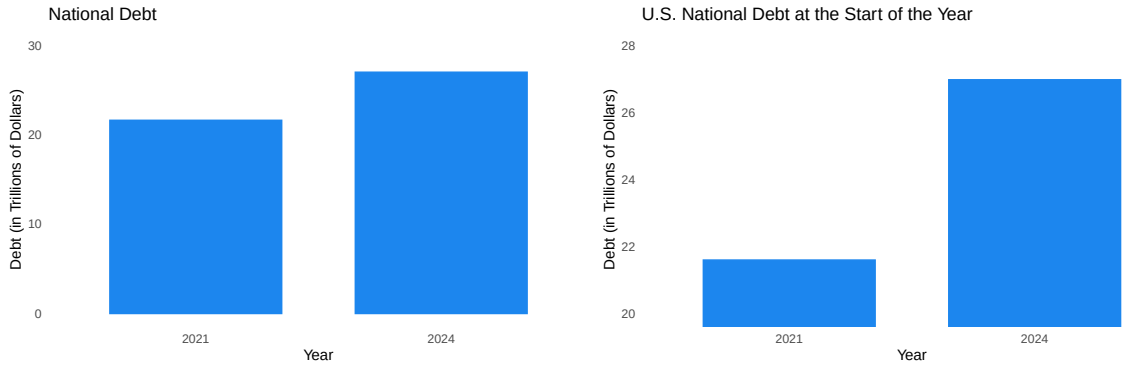



(b) Deceptive

**Question:** What was the increase in graduation rates from 1990 to 1997?

# Controversial Plots

## Bar Graphs

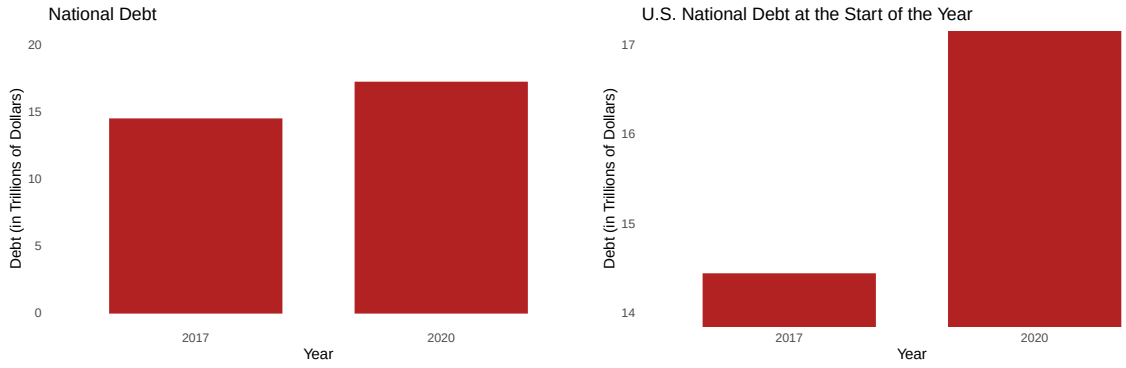



(a) Control (b) Deceptive

Figure 7: Data from FiscalData (2024)

**Question:** How much did the U.S. national debt increase from 2021 to 2024?

**Lean:** Right - Rising debt during Joe Biden's term is more likely to be overstated by right-leaning individuals.




(a) Control (b) Deceptive

Figure 8: Data from FiscalData (2024)

**Question:** How much did the U.S. national debt increase from 2017 to 2020?

**Lean:** Left - Rising debt during Donald Trump's first term is more likely to be overstated by left-leaning individuals.

## Pie Charts

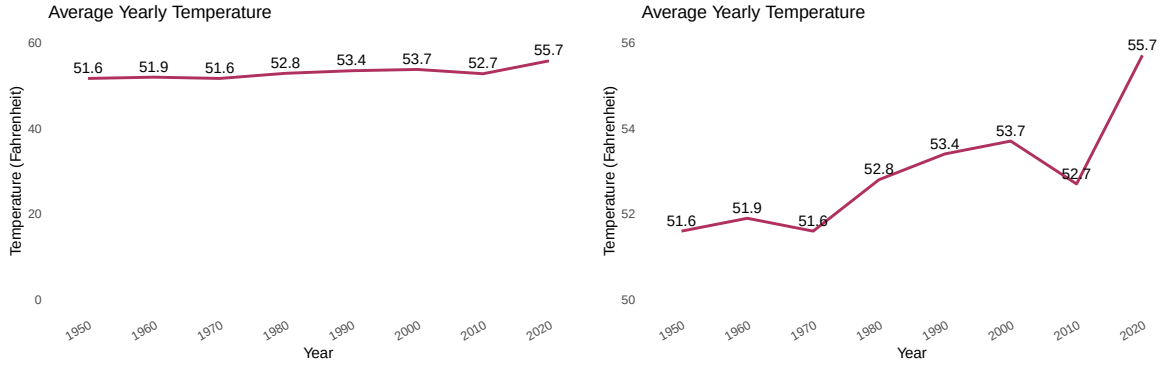
**Question:**

**Lean:**

**Question:**

**Lean:**

## Line Graphs

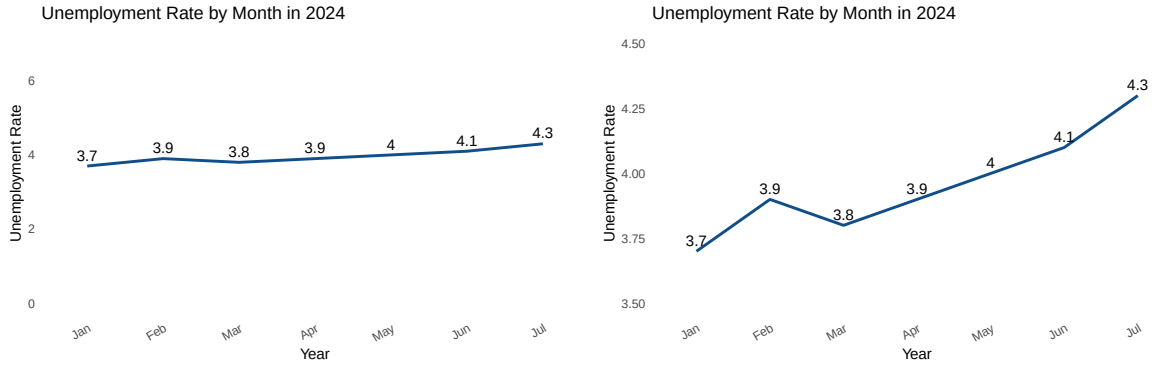



(a) Control (b) Deceptive

Figure 9: Data from NOAA (2023)

**Question:** How much did the global temperature rise from 1950 to 2020?

**Lean:** Left - Expect left-leaning individuals to possibly overstate the rise in their answers.




(a) Control (b) Deceptive

Figure 10: Data from U.S. Bureau of Labor Statistics (2024)

**Question:** How much did the employment rate rise in the first seven months of 2023?

**Lean:** Right - Expect right leaning individuals to overstate rising unemployment rate during Joe Biden's presidency.

## References

FiscalData. 2024. "Debt to the Penny." Treasury.gov. 2024. https://fiscaldata.treasury.gov/datasets/debt-to-the-penny/debt-to-the-penny.

NOAA. 2023. "Average Annual Temperature by Year." National Weather Service. https://www.weather.gov/media/slc/ClimateBook/Annual%20Average%20Temperature%20By%20Year.pdf.

U.S. Bureau of Labor Statistics. 2024. "Unemployment Rate [UNRATE]."

# R Code Used

## Libraries Used

```
library(ggplot2)
```

## Noncontroversial Plots

### Bar Graphs

```
RubberDucks <- data.frame(
  Year = c("2018", "2023"),
  Sales = c(12000, 13500)
)

ggplot(RubberDucks, aes(x = Year, y = Sales)) +
  geom_bar(stat = "identity", color = "skyblue", fill = "skyblue", width = 0.7)
+ coord_cartesian(ylim = c(0, 15000)) +
  labs(title = "Ticket Sales for the Rockford Peaches baseball Team",
       x = "Year",
       y = "Ticket Sales") +
  theme_minimal() + theme(panel.grid = element_blank())

ggplot(RubberDucks, aes(x = Year, y = Sales)) +
  geom_bar(stat = "identity", color = "skyblue", fill = "skyblue", width=0.7)
+ coord_cartesian(ylim = c(11500, 14000)) +
  labs(title = "Ticket Sales for the Rockford Peaches baseball Team",
       x = "Year",
       y = "Ticket Sales") +
  theme_minimal() + theme(panel.grid = element_blank())
```

### Pie Charts

```r
control_movies <- data.frame(
  Genre = c("Action",
            "Romance",
            "Thriller",
            "Sci-Fi",
            "Western",
            "Epic"),
  Percentage = c(28, 23, 22,
                 13, 10, 4)
)

deceptive_movies <- data.frame(
  Genre = c("Action",
            "Romance",
            "Thriller",
            "Sci-Fi",
            "Western",
            "Epic"),
  Percentage = c(35, 29, 27,
                 5, 3, 1)
)

pie(control_movies$Percentage,
    labels = paste(control_movies$Genre,
                   " (", control_movies$Percentage, "%)", sep = ""),
    main = "Type of Movies by Acme Studios",
    col = topo.colors(nrow(control_movies)))

pie(deceptive_movies$Percentage,
    labels = paste(deceptive_movies$Genre,
                   " (", control_movies$Percentage, "%)", sep = ""),
    main = "Type of Movies by Acme Studios",
    col = topo.colors(nrow(deceptive_movies)))
```

**Line Graphs**

```r
box_office <- data.frame(
  Year = c("2006", "2007",
           "2008", "2009",
           "2010", "2011",
           "2012", "2013",
           "2014", "2015", "2016"),
  Dollars = c(9.2, 9.6,
              9.5, 10.5,
              10.6, 10.2,
              10.8, 10.9,
              10.4, 11.1,
              11.4)
)

ggplot(box_office, aes(x = Year, y = Dollars, group = 1)) +
  geom_line(color = "dodgerblue2", size = 1) +
  geom_text(aes(label = Dollars),
            vjust = -0.5, size = 4, color = "black") +
  labs(title = "Box Office Revenue for Acme Studios",
       x = "Year",
       y = "Revenue (in billions of dollars)") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 30, hjust = 1)) +
  ylim(0, 13) +
  theme(panel.grid = element_blank())

ggplot(box_office, aes(x = Year, y = Dollars, group = 1)) +
  geom_line(color = "dodgerblue2", size = 1) +
  geom_text(aes(label = Dollars),
            vjust = -0.5, size = 4, color = "black") +
  labs(title = "Box Office Revenue for Acme Studios",
       x = "Year",
       y = "Revenue (in billions of dollars)") +
  theme_minimal() +
  theme(axis.text.x = element_text(angle = 30, hjust = 1)) +
  ylim(9, 11.6) +
  theme(panel.grid = element_blank())
```

## Controversial Plots

### Bar Graphs

### Pie Charts

### Line Graphs