

# PS4

Luke Maloney

2024-03-06

1. See the graph created below:

```
ssd = read.csv("senate_seat_distribution_2022.csv")

df = subset(ssd, grepl("_deluxe", expression))

# Select only the desired columns
prob = df[, c("seatsheld", "seatprob_Dparty")]

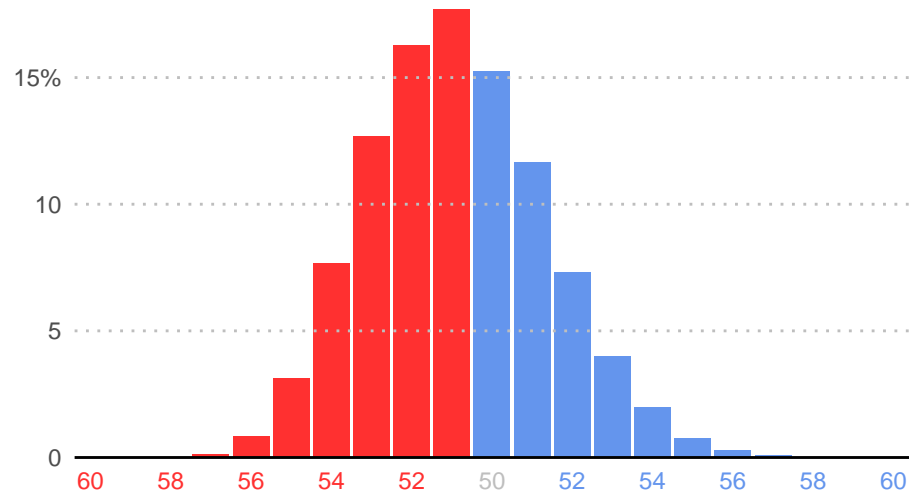
use = prob[prob$seatsheld >= 40 & prob$seatsheld <= 60, ]

#labels for axes
cusy = c('0', '5', '10', '15%')
cusx = c("60", "58", "56", "54", "52", "50", "52", "54", "56", "58", "60")
xcol = c("firebrick1", "firebrick1", "firebrick1", "firebrick1",
        "firebrick1", "gray", "cornflowerblue", "cornflowerblue",
        "cornflowerblue", "cornflowerblue", "cornflowerblue")

#graph
ggplot(use, aes(x = seatsheld, y = seatprob_Dparty * 100, fill = factor(seatsheld >= 50))) +
  geom_col(color = "white") +
  geom_col() +
  geom_hline(yintercept = c(5, 10, 15), linetype = "dotted", color = "gray") +
  geom_hline(yintercept = c(0)) +
  labs(title = "How many Senate seats we expect each party to win",
       subtitle = "Party seat count based on who wins the Senate in our Deluxe model's 40,000 simulations",
       y = '',
       x = '') +
  scale_fill_manual(values = c("firebrick1", "cornflowerblue"), guide = FALSE) +
  scale_x_continuous(breaks = c(40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60),
                    labels = cusx) +
  scale_y_continuous(breaks = c(0, 5, 10, 15),
                    labels = cusy) +
  theme(panel.grid = element_blank(), # Remove grid lines
        panel.background = element_blank(),
        plot.title = element_text(size = 12, hjust = 0.5),
        plot.subtitle = element_text(size = 8, color = "gray", hjust = 0.5),
        axis.text.x = element_text(color = xcol, vjust = 5),
        axis.ticks.x = element_blank(),
        axis.ticks.y = element_blank())
```

## How many Senate seats we expect each party to win

Party seat count based on who wins the Senate in our Deluxe model's 40,000 simulations



2. See graph below

```
##Manipulate data
load('blue_jays.rda')

BJD = blue_jays |>
  count(Mass) |>
  mutate(Head = n/sum(n))

##Creating the Plot
BJPlot = blue_jays |>
  ggplot(aes(x= Mass, y= Head, color = KnownSex, size = Skull, fill = KnownSex)) +
  geom_point(shape = 21, alpha = 1, color = 'white') +
  labs(
    x = 'bod mass (g)',
    y = 'head length (mm)',
  ) +
  scale_y_continuous(
    breaks =c(52,54,56,58,60) ##Breaks to represent actual values
  )+
  scale_color_manual(values = c("blue", "red")) + ##Blue is Male and Red is female.
  scale_fill_manual(values = c("blue", "red")) +
  scale_size(range = c(1, 3)) +
  annotate(
    "text", x = max(blue_jays$Mass), y = max(blue_jays$Head),
    label = "Note: The plot shows the relationship between body mass and head length in Blue Jays.",
    hjust = 0.5, vjust = 0.5, size = 2, color = "black"
  ) +
  theme_minimal() +
  theme(
    plot.title = element_text(hjust = 0.5), ##Title in Center
```

```

plot.background = element_rect(fill = "white"), ##Set background color
panel.grid.major = element_line(color = "gray", linetype = "dashed"),
panel.grid.minor = element_blank(),
axis.line = element_line(color = "black"),
axis.text = element_text(color = "black"),
axis.title = element_text(color = 'black'),
legend.position = "top" # Move legend to top
) +
guides(
  size = guide_legend(title = "Skull Size")
)
print(BJPlot)

```

