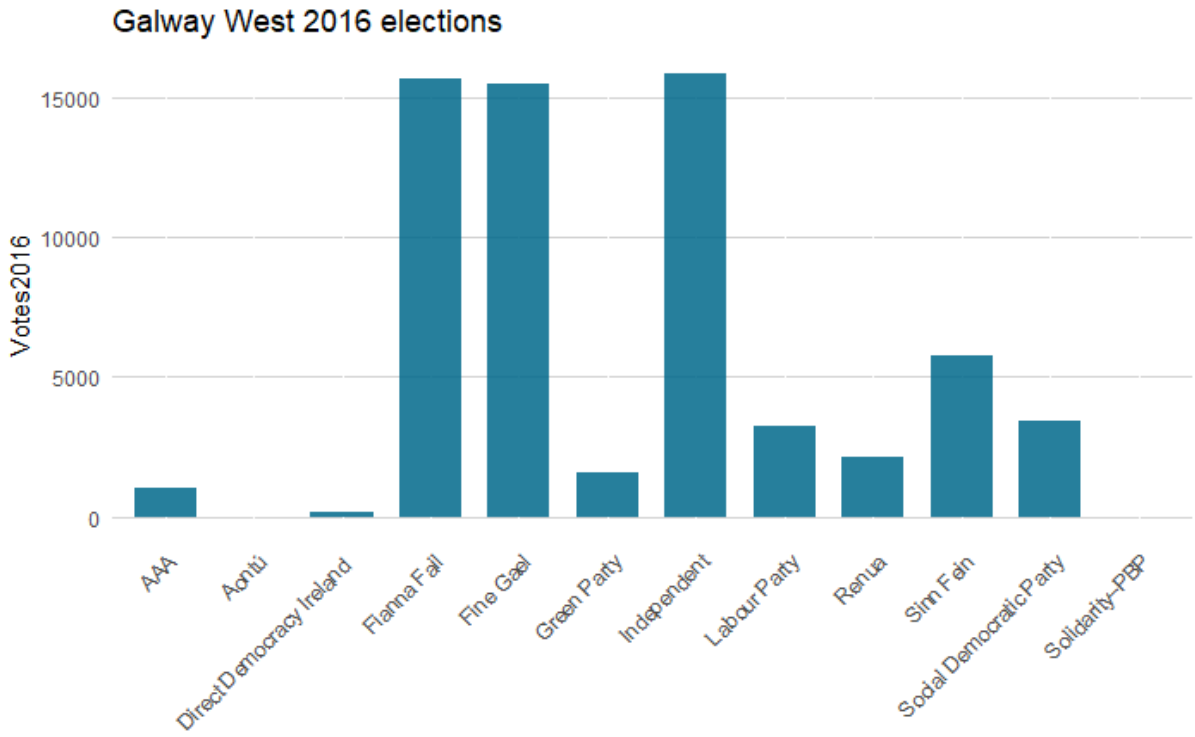
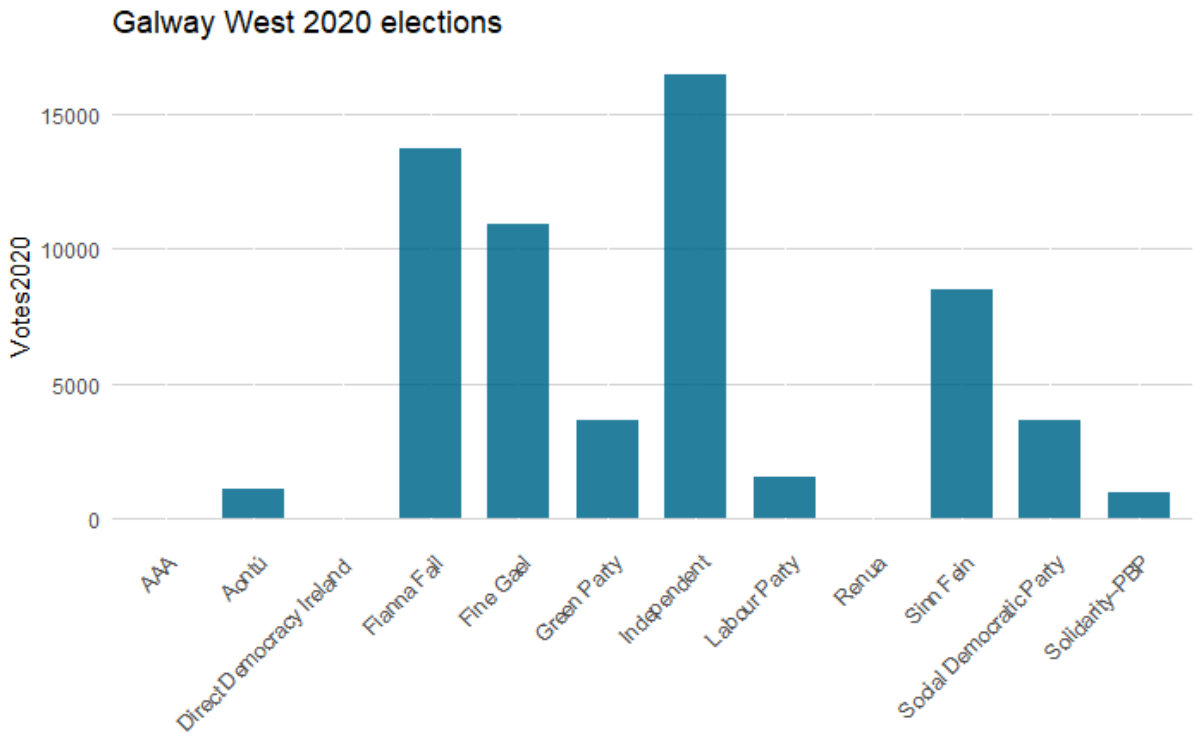
Assignment_3_Data_Visualisation
Name - Tapan Auti
ID - 20231499

1. The vote per party in each election for Galway West

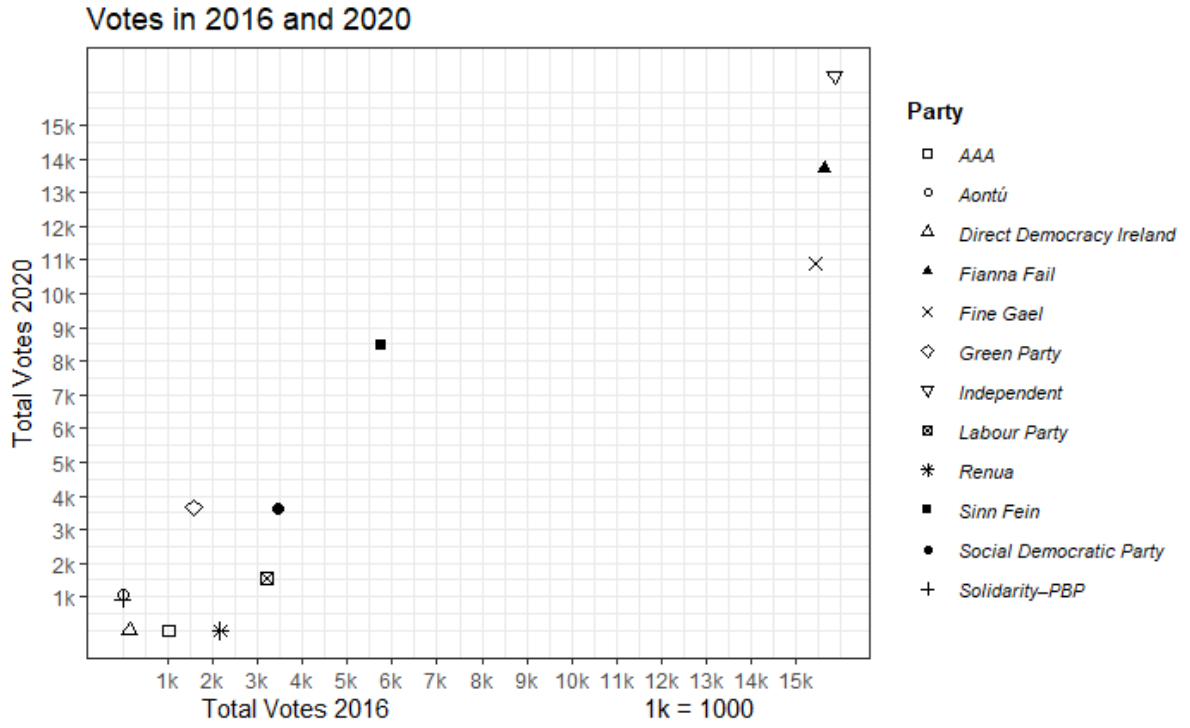
The votes per party in the respective 2016 and 2020 elections are plotted in a bar graph depicting the votes and party name. It is easy to make sense of votes through a bar chart and for comparison purposes.
There was some discrepancy in the data, some party were new in each year so to keep the similarity in plot , the party which were not present in that election have been considered as zero and are seen with NULL graph.





2. The change in vote per party from 2016-2020 for Galway West

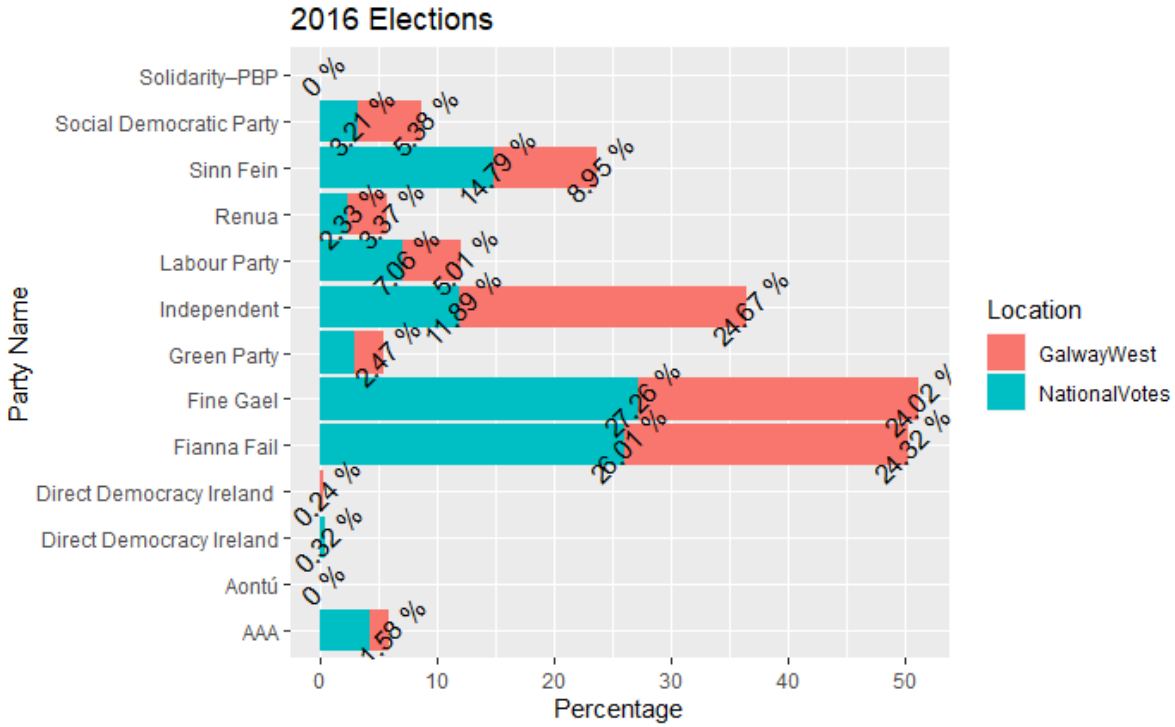
This plot depicts the comparison of each party's votes in the years 2016 and 2020. To show the different Parties and clearly extract information from graph, Scatter plot is used and the parties are shown in a different shape for each. To make the plot clear 1000 is shown as 1k and the parties not present have one axis as zero.

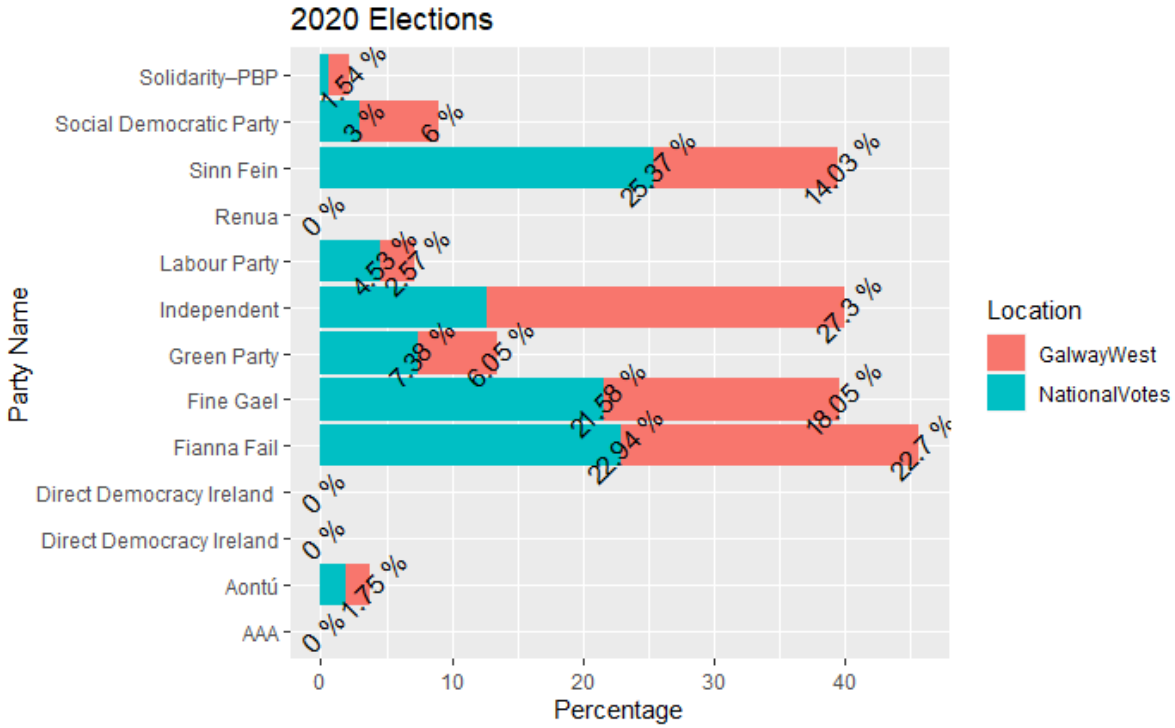


3. A comparison of Galway West to the national average for party share of the vote for 2016 and 2020

Each Party's' Galway West's and National performance is plotted in a stacked bar. The votes were converted to percentage and the type(Galway West and National) of votes and percentage is shown on the graph. The percentage

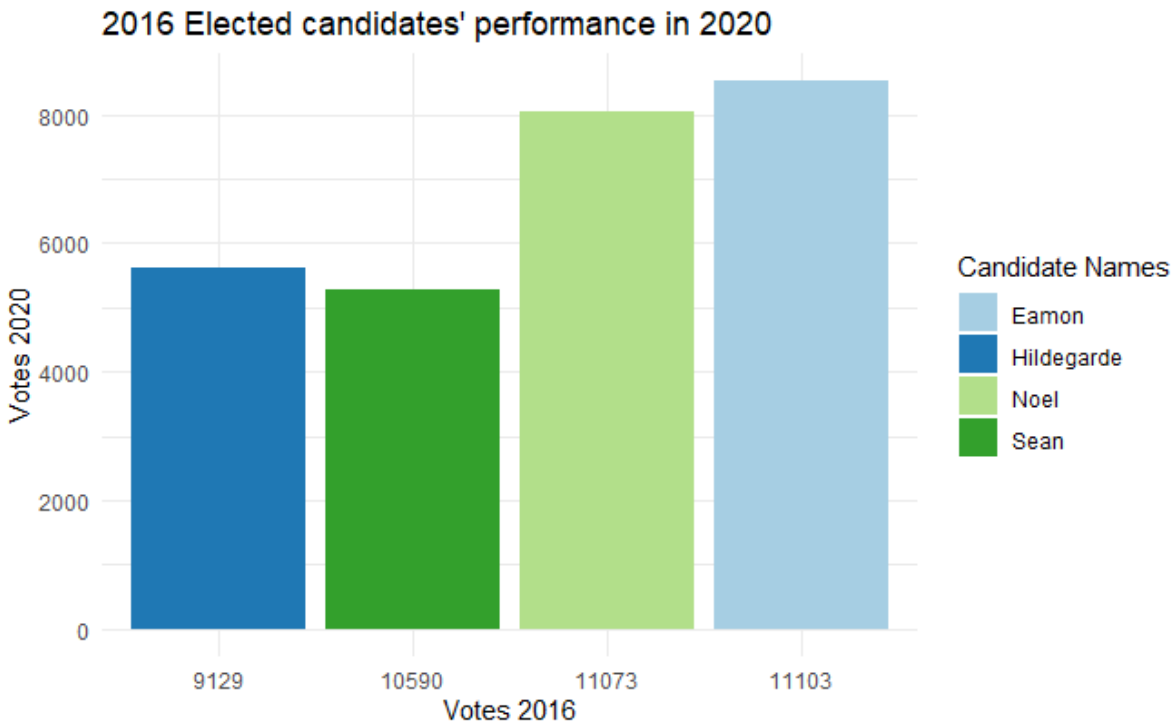
shows the respective share of votes for each type. New party's are showed as 0%. The colors used for plotting are CVD friendly.





4. The change in vote for the most significant candidates in both elections in Galway West.

The Vote count for Candidates that were elected in 2016 and 2020 is collected and comparison of the performance is plotted in a bar format such that the plot is based on name and axis represents the election period.



Appendix

```
library("readxl")
library(ggplot2)
library (dplyr)

# Data Wrangling for plotting

election2016 <- read.csv(file = 'elections2016.csv')
new_csv <- subset(election2016,  Count.Number==1 )
demo = aggregate(new_csv$Total.Votes, by=list(Party=new_csv$Party),FUN=sum)
names(demo)[names(demo)== 'x'] <- 'Votes2016'

new_xl <- read_excel('2020-election.xlsx')
new_xl$...5 <- as.numeric(new_xl$...5)
demo2 = aggregate(new_xl$...5, by=list(Party=new_xl$...2),FUN=sum)
names(demo2)[names(demo2)== 'x'] <- 'Votes2020'
demo$Party[6] <- 'Independent'
demo2$Party[2] <- 'Fianna Fail'
demo2$Party[7] <-'Sinn Fein'
demo$Party[4] <-'Fine Gael'
demo2$Party[8] <-'Social Democratic Party'

zz <- merge(demo, demo2, all = TRUE)
zz[is.na(zz)] <- 0


last_part <- subset(election2016 , Result == 'Elected')
last_part <- select(last_part,Candidate.First.Name,Total.Votes)
last_part$Candidate.First.Name[1] <-"Eamon"


last_part_2 <- select(new_xl, ...3,...5)
last_part_2$...5 <- as.numeric(new_xl$...5)
names(last_part_2)[names(last_part_2)== '...5'] <- 'Total.Votes2020'
names(last_part_2)[names(last_part_2)== '...3'] <- 'Candidate.First.Name'

last_part_2 <-last_part_2[-c(1,4,5,8,9,10,11,12,13,14,15,16,17),]
last_part <-last_part[-c(5),]
last_part <-arrange(last_part,Candidate.First.Name)
last_part_2 <-arrange(last_part_2,Candidate.First.Name)
last_part_2 <- last_part_2[-c(1)]
last_part_2 <- cbind(last_part_2,last_part$Candidate.First.Name)
names(last_part_2)[names(last_part_2)== 'last_part$Candidate.First.Name'] <- 'Candidate.First.Name'
last_part <-merge(last_part,last_part_2)

# Part 4 plot

last_part$Total.Votes <- as.factor(last_part$Total.Votes)
```

```
mx <-ggplot(data=last_part, aes(x=Total.Votes, y=Total.Votes2020, fill=Candidate.First.Name)) +
  geom_bar(stat="identity", position=position_dodge(),xlab = "Votes 2016", ylab = "Votes 2020")+
  scale_fill_brewer(palette="Paired")+labs(title = "2016 Elected candidates' performance in 2020", x = "Votes 2016", y = "Votes 2020",
  theme_minimal()

# Part 1 plot
 # Data Wrangling Part 1
zz$Type <- 'GalwayWest'
nv <- read.csv(file = "NationalVotes.csv")
colnames(nv)[2] <- "Votes2016"
colnames(nv)[3] <- "Votes2020"
colnames(nv)[1] <- "Party"
nv$Party[2] <- "Aontú"
nv$Party[12] <-"Solidarity–PBP"
nv$Type <-"NationalVotes"

zz <- zz%>%mutate(Percentage2016=paste0(round(Votes2016/sum(Votes2016)*100,2),"%"))
zz <- zz%>%mutate(Percentage2020=paste0(round(Votes2020/sum(Votes2020)*100,2),"%"))

nv <- nv%>%mutate(Percentage2016=paste0(round(Votes2016/sum(Votes2016)*100,2),"%"))
nv <-nv%>%mutate(Percentage2020=paste0(round(Votes2020/sum(Votes2020)*100,2),"%"))
national_votes <- rbind(zz,nv)

# Part 1 2016 plot

g <-ggplot(zz, (aes(x= Party , y=Votes2016))) +
  geom_col(alpha=0.85, width = 0.7, fill = "deepskyblue4") +
    theme(panel.background = element_rect(fill = "white"),
      axis.line.y = element_blank(),
      axis.ticks.y = element_blank(),
      axis.line.x = element_blank(),
      axis.ticks.x = element_blank(),
      axis.text.x = element_text(angle = 45, vjust = 1, hjust = 1),
      axis.title.x = element_blank(),
      plot.margin = margin(3, 6, 3, 3),
      panel.grid.major.y = element_line(size = 0.2, linetype = 'solid',colour = "lightgrey"))+
  ggtitle("Galway West 2016 elections")

# Part 1 2020 plot

gg <-ggplot(zz, (aes(x= Party , y=Votes2020))) +
  geom_col(alpha=0.85, width = 0.7, fill = "deepskyblue4") +
    theme(panel.background = element_rect(fill = "white"),
      axis.line.y = element_blank(),
      axis.ticks.y = element_blank(),
      axis.line.x = element_blank(),
      axis.ticks.x = element_blank(),
      axis.text.x = element_text(angle = 45, vjust = 1, hjust = 1),
      axis.title.x = element_blank(),
      plot.margin = margin(3, 6, 3, 3),
      panel.grid.major.y = element_line(size = 0.2, linetype = 'solid',colour = "lightgrey"))+
  ggtitle("Galway West 2020 elections")

# Part 2 plot

cb <-ggplot(zz , aes(x=Votes2016,y=Votes2020, group = Party) ) +
geom_point(aes(shape = Party, size=Party)) +
  xlim(0,18000)+ylim(0,18000)+
  scale_x_continuous(breaks = c(1000,2000,3000,4000,5000,6000,7000,8000,9000,10000,11000,12000,13000,14000,15000), labels = c('1k','2k
+scale_y_continuous(breaks = c(1000,2000,3000,4000,5000,6000,7000,8000,9000,10000,11000,12000,13000,14000,15000), labels = c('1k','2k'
scale_shape_manual(values=c(0,1,2,17,4,5,6,7,8,15,16,3,12),name = "Party",
labels = c("AAA", "Aontú","Direct Democracy Ireland","Fianna Fail","Fine Gael","Green Party","Independent","Labour Party","Renua","Sin
scale_size_manual(values=c(2,2,2,2,2,2,2,2,2,2,2,2),guide = FALSE)+
ggtitle("Votes in 2016 and 2020")+
xlab("Total Votes 2016                                    1k = 1000") +
ylab("Total Votes 2020") +
theme_bw() +
theme(legend.title = element_text(face = "bold",size = 10) ,
legend.text =element_text (face = "italic",size = 8) )


# Part 3 plot
# converting values to percentage

national_votes$Percentage2016 <- as.numeric(sub("%","",national_votes$Percentage2016))
national_votes$Percentage2020 <- as.numeric(sub("%","",national_votes$Percentage2020))

# 2016 plot

p3 <-ggplot(national_votes, aes(x = Party, y = Percentage2016, fill = Type),xlim = c(0,100))+
  geom_bar(stat = "identity")+
  geom_text(aes(label = paste(Percentage2016,"%")),
            position = position_stack( vjust = 1),check_overlap = TRUE,angle = 45)+
  coord_flip()+
  labs(x = "Party Name", y = "Percentage",fill = "Location")+ggtitle("2016 Elections")

# 2020 plot
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```
p3.2 <-ggplot(national_votes, aes(x = Party, y = Percentage2020, fill = Type),xlim = c(0,100))+
  geom_bar(stat = "identity")+
  geom_text(aes(label = paste(Percentage2020,"%")),
            position = position_stack( vjust = 1),check_overlap = TRUE, angle = 45)+
  coord_flip()+
  labs(x = "Party Name", y = "Percentage",fill = "Location")+ggtitle("2020 Elections")
g
gg
cb
p3
p3.2
mx
```