HW_dataviz_evcars

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[Source.] (https://www.kaggle.com/datasets/willianoliveiragibin/electric-vehicle-population/)

```r
library(dplyr)
library(tidyverse)

#import data from csv file
EV_cars <-read.csv("Electric_Vehicle_Population_Data.csv", stringsAsFactors = FALSE)

## BEV, PHEV
Type <-EV_cars  %>%
  group_by(Make)%>%
  count(Electric.Vehicle.Type) %>%
  arrange(-n) %>%
  head(10)

 ## change col name
Type <- Type%>%
  rename(cars = n,
         type_make= Make,
         ev_type =Electric.Vehicle.Type)

#graph for type EV car
ggplot(Type, aes(cars,type_make,fill=ev_type))+
  geom_col()+
  theme_minimal()+
    labs(
    title = "1.Top 10 EV car brand by BEV and PHEV type ",
    subtitle = "people choose BEV (100% EV) more than PHEV (combine ICE and EV )",
    x = "Cars",
    y = "Brand",
    caption = ""
  )
```
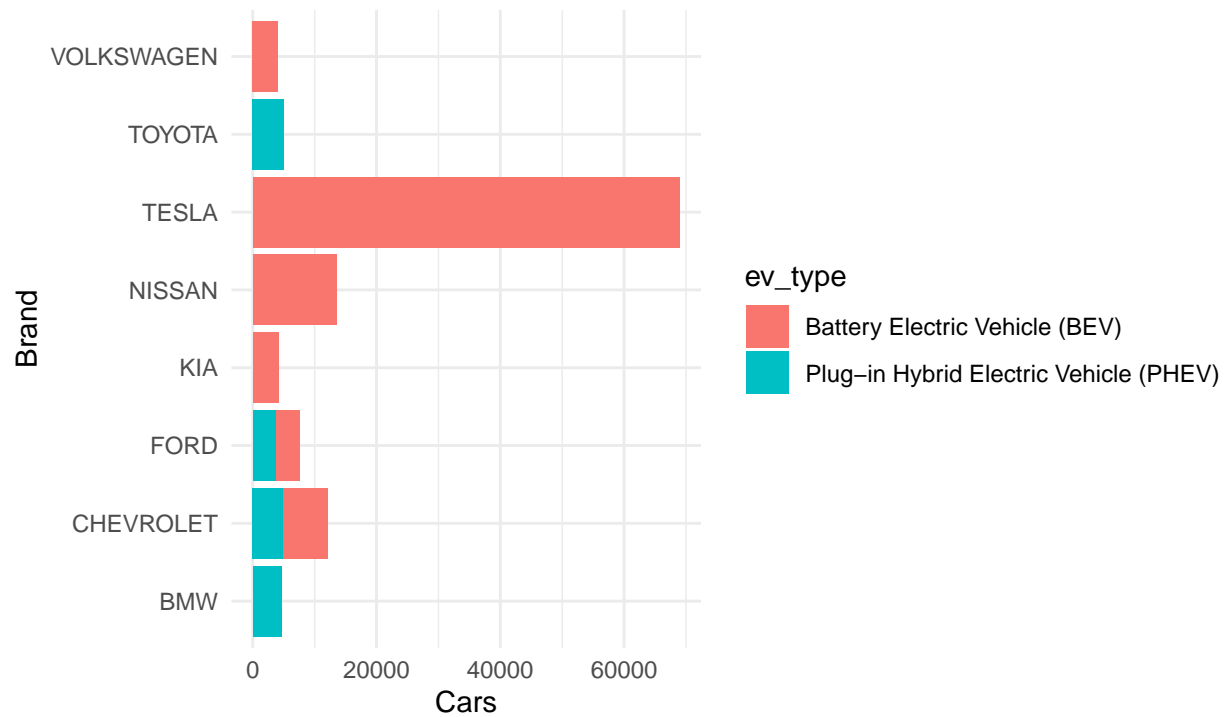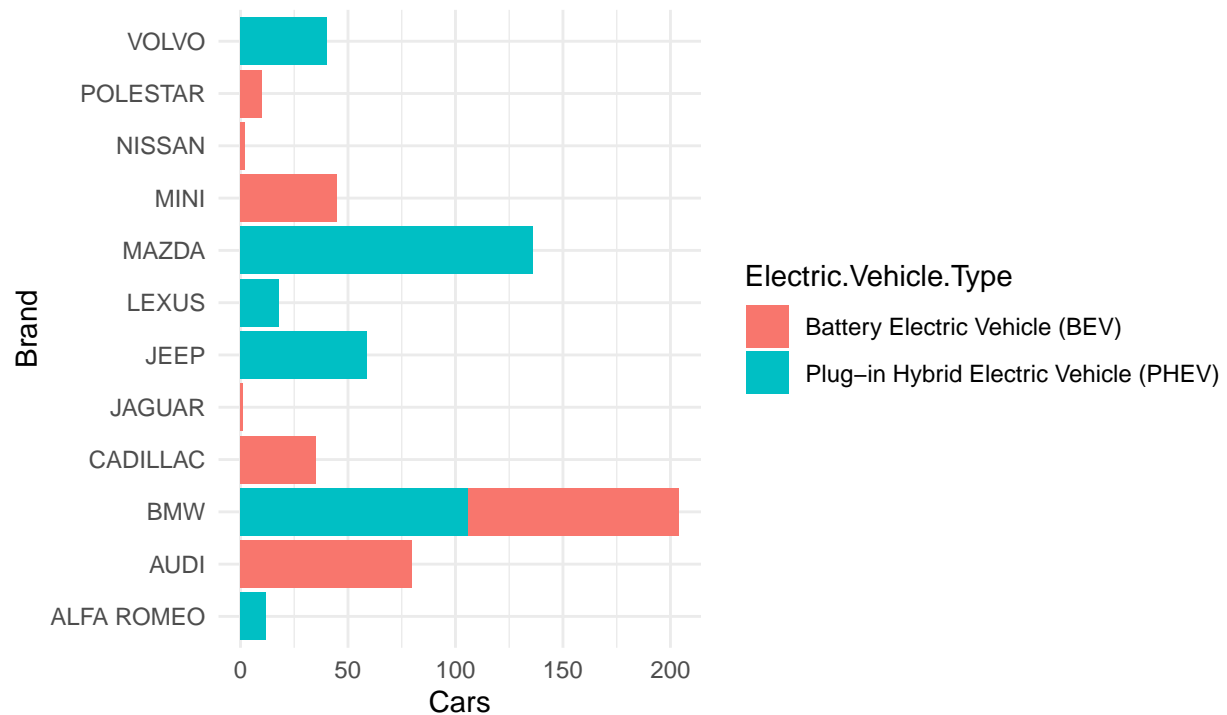
1.Top 10 EV car brand by BEV and PHEV type
people choose BEV (100% EV) more than PHEV (combine ICE and EV)


```
ggplot(EV_cars %>%
        filter(Model.Year > 2023) %>%
        count(Make,Model,Electric.Vehicle.Type),  aes(n,Make, fill =Electric.Vehicle.Type))+
  geom_col()+
  theme_minimal()+
  labs(
    title = "2.Model 2024 by BEV and PHEV type ",
    subtitle = "",
    x = "Cars",
    y = "Brand",
    caption = ""
  )
```

2.Model 2024 by BEV and PHEV type

"Although EV cars BEV popular than PHEV but the 2024 model some brands still choose PHEV such as BMW,MA

```r
EV_state <- EV_cars %>%
  group_by(State)%>%
  count(State)%>%
  arrange(-n)

Top_state <- EV_state %>% head(1)

other_state<-EV_state %>%
  filter ( State !="WA")

sum_state <-data.frame(id = 1:2,
    state = c(Top_state$State, "Otherstate"),
    cars = c(Top_state$n,sum(other_state$n)))
ggplot(sum_state,aes(state,cars,fill= cars))+
  geom_col()+
  theme_minimal()+
   labs(
   title = "3.State of Washington have EV cars 98% ",
   subtitle = "",
   x = "State",
   y = "cars",
   caption = ""
  )
```
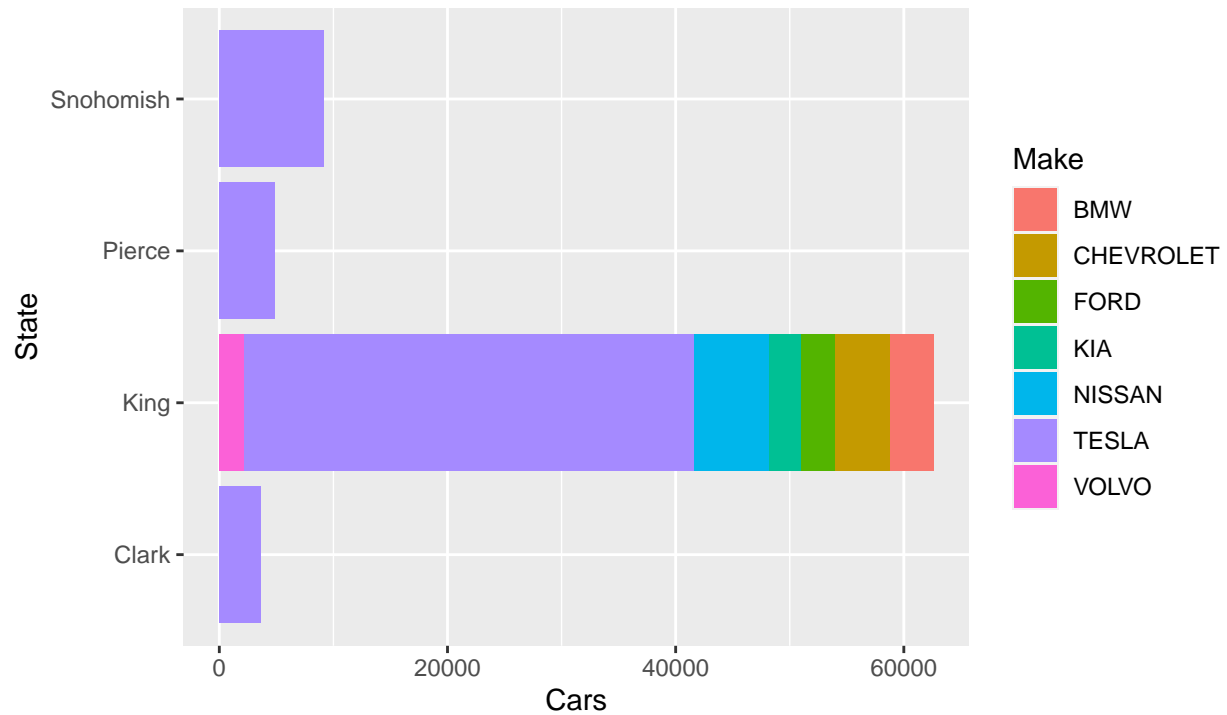
3.State of Washington have EV cars 98%
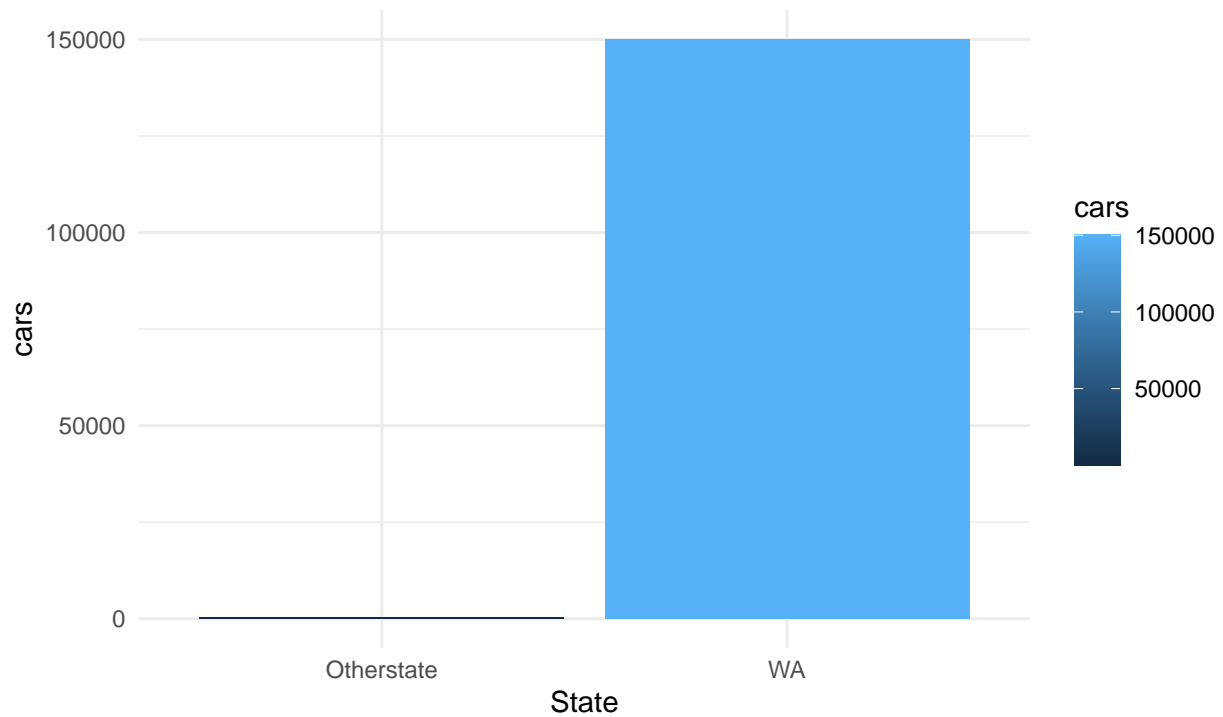

```
"State of Washington have EV Cars about 98 % (150,141 cars)"
```

```
wa <-EV_cars %>%
  filter ( State == "WA")

ggplot (
        wa %>%
        group_by(County)%>%
        count(Make) %>%
        arrange(-n)%>%
        head(10),
  aes(n,County,fill= Make)) +
  geom_col()+
  labs(
    title = "4.Distribution of EV cars in state of WA  ",
    subtitle = "",
    x = "Cars",
    y = "State",
    caption = ""
  )
```

4.Distribution of EV cars in state of WA

"Tesla has distribution other countries such as Clark, Snohomish , most popular at the King County"

```
ggplot(EV_cars %>%
        filter (Make == "TESLA") %>%
        group_by (State,Model.Year) %>%
        count(State)%>%
        arrange(-n) %>%
        head(5), aes(Model.Year,n,fill = Model.Year))+
 geom_point()+
 geom_smooth ()+
 theme_minimal()+
 geom_text(aes(label = n),hjust = 1.5, size = 2.6)+
  labs(
  title = "5.Growth of Tesla user on 2018-2023",
  subtitle = "",
  x = "Model year",
  y = "Cars",
  caption = ""
 )
```

5.Growth of Tesla user on 2018–2023
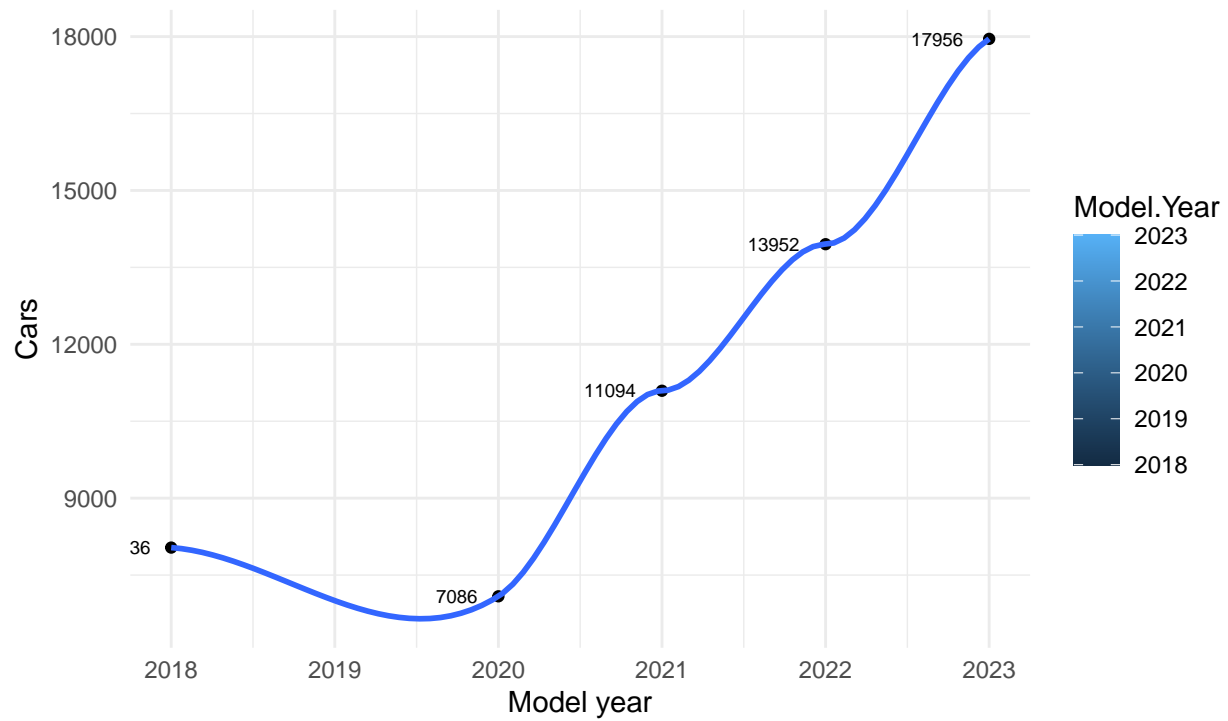
"Growth of tesla user 2023 = 253 % from 2020"