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ELECTRIC VEHICLES

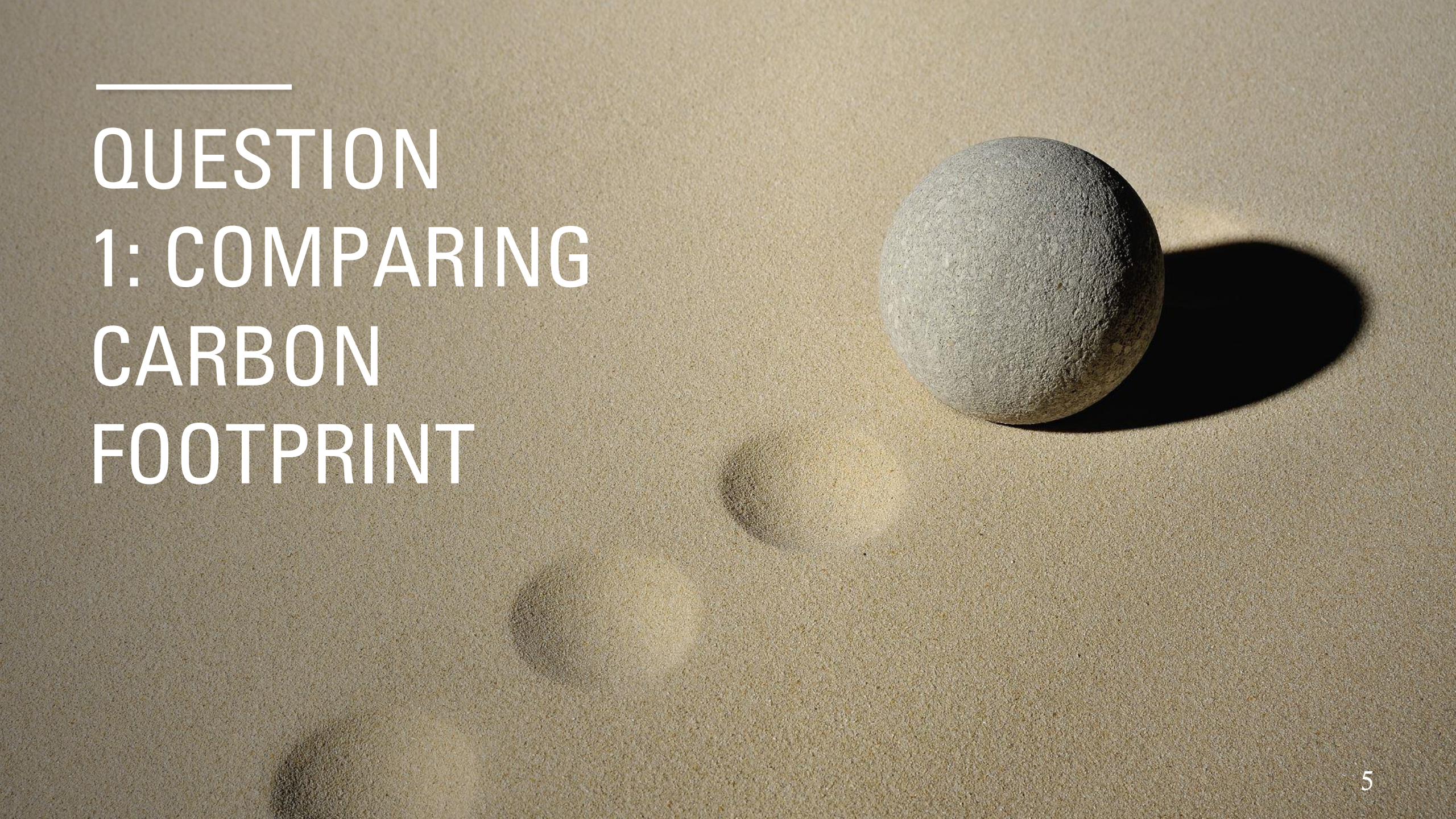
- Electric Vehicles are becoming increasingly popular
- Many Companies have 2030 goals to convert their fleet by at least 50% to alternative fuels
- EV's can charge at home, work, and in public
- Air pollution decrease in heavily dense cities can solve health concerns as well

INTERNAL COMBUSTION ENGINE VEHICLES (I.C.E)

- Powered by fuel (Gasoline or diesel)
- Common type of vehicle you see in present day
- Infrastructure of gas stations at every corner

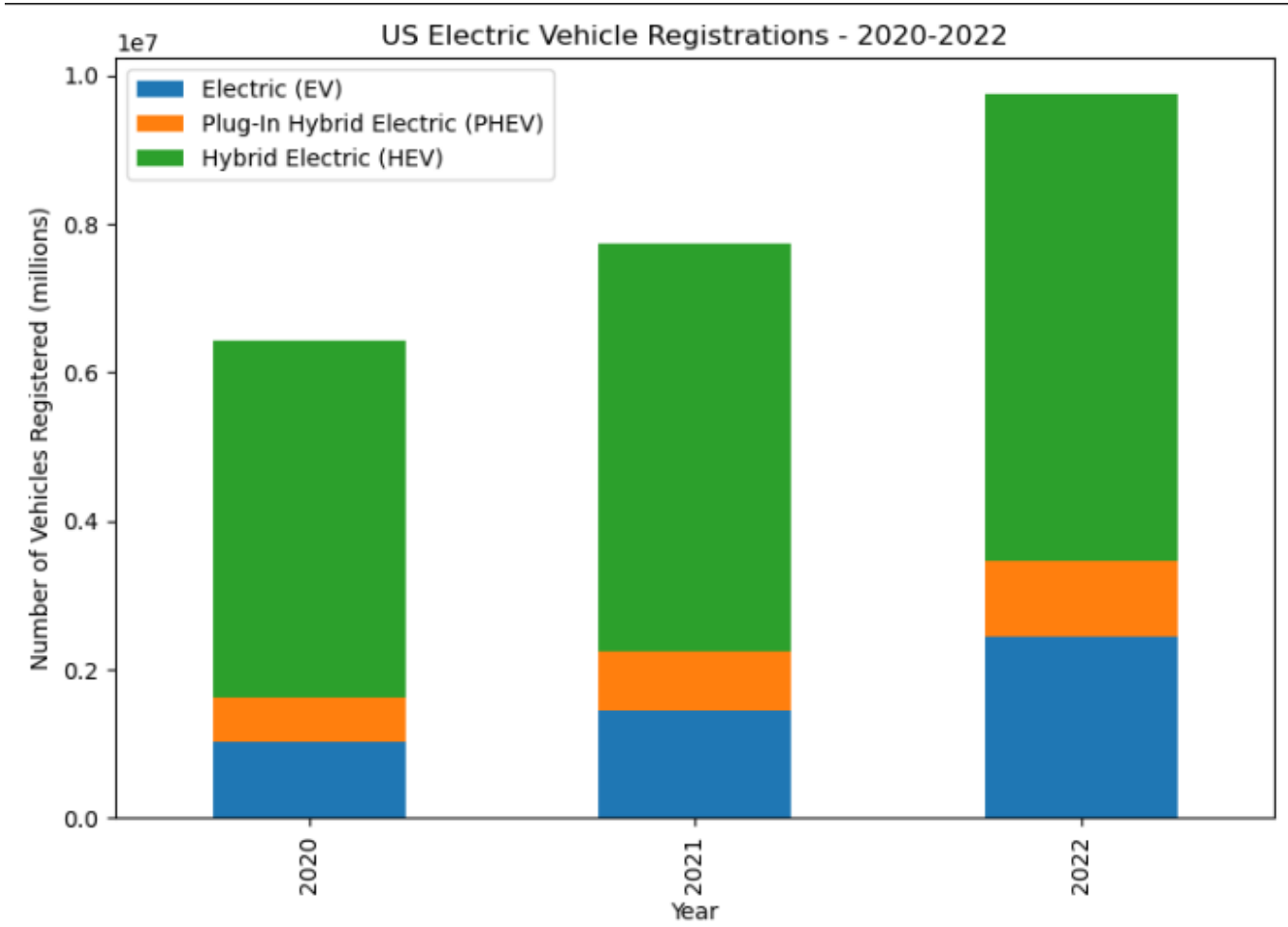
QUESTIONS RAISING CONCERN

QUESTION 1: COMPARING CARBON FOOTPRINT



QUESTION 1: COMPARING CARBON FOOTPRINT OF ICE VS EV

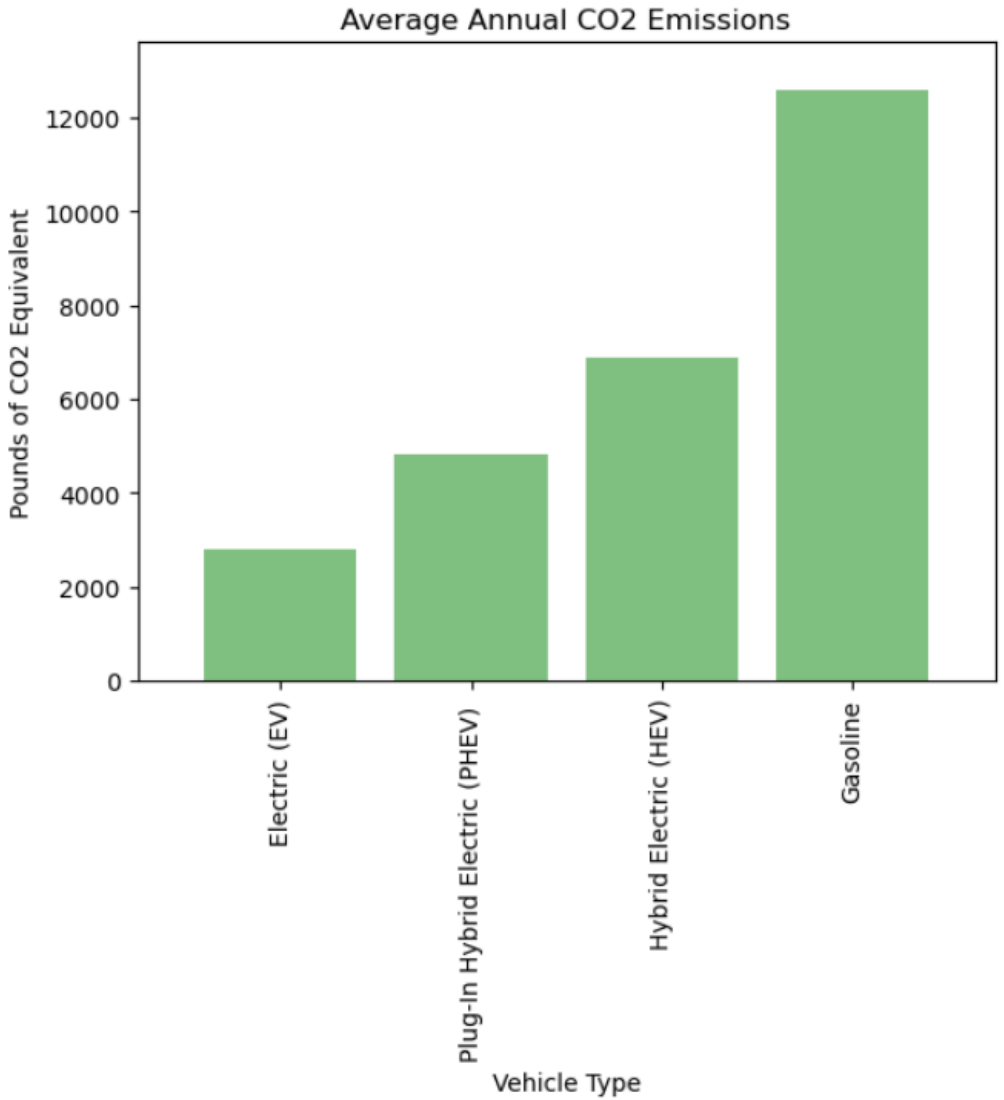
- EV, PHEV, & HEV registrations have increase about 20-25% YoY the past 3 years and increased by 52% from 2020 to 2022.
- Hybrid Electric vehicles continue to make up the majority of electric vehicles registered. However, fully electric vehicle registrations more than doubled from 2020 to 2022.



Source: https://afdc.energy.gov/vehicle-registration

QUESTION 1: COMPARING CARBON FOOTPRINT OF ICE VS EV

- EV's produce zero tail pipe emissions however the source of electricity used to charge the vehicle as well as the emissions created during the production of the vehicle are to be considered when determining the total
- Gasoline vehicles produce about 4.5 more pounds of CO2 equivalent annually than fully electric vehicles.
  - EV's produce 2817 pounds of CO2 versus gasoline vehicles producing 12,594 pounds of CO2



Source: https://afdc.energy.gov/vehicles/electric_emissions.html

QUESTION 1: CONCLUSION

There are many factors to be considered when determining the total life cycle GHG emissions of an EV, PHEV, or HEV. While these vehicles produce zero tailpipe GHG emissions when running on 100% electricity, the source of electricity used to charge the vehicle as well as the all aspects of production of the vehicle should be considered.

Overall, gasoline powered vehicles produce less emissions than EV's during initial production but more emissions during the overall life cycle of the vehicle.

QUESTION 3: WHICH FUEL IS MORE COST EFFICIENT?

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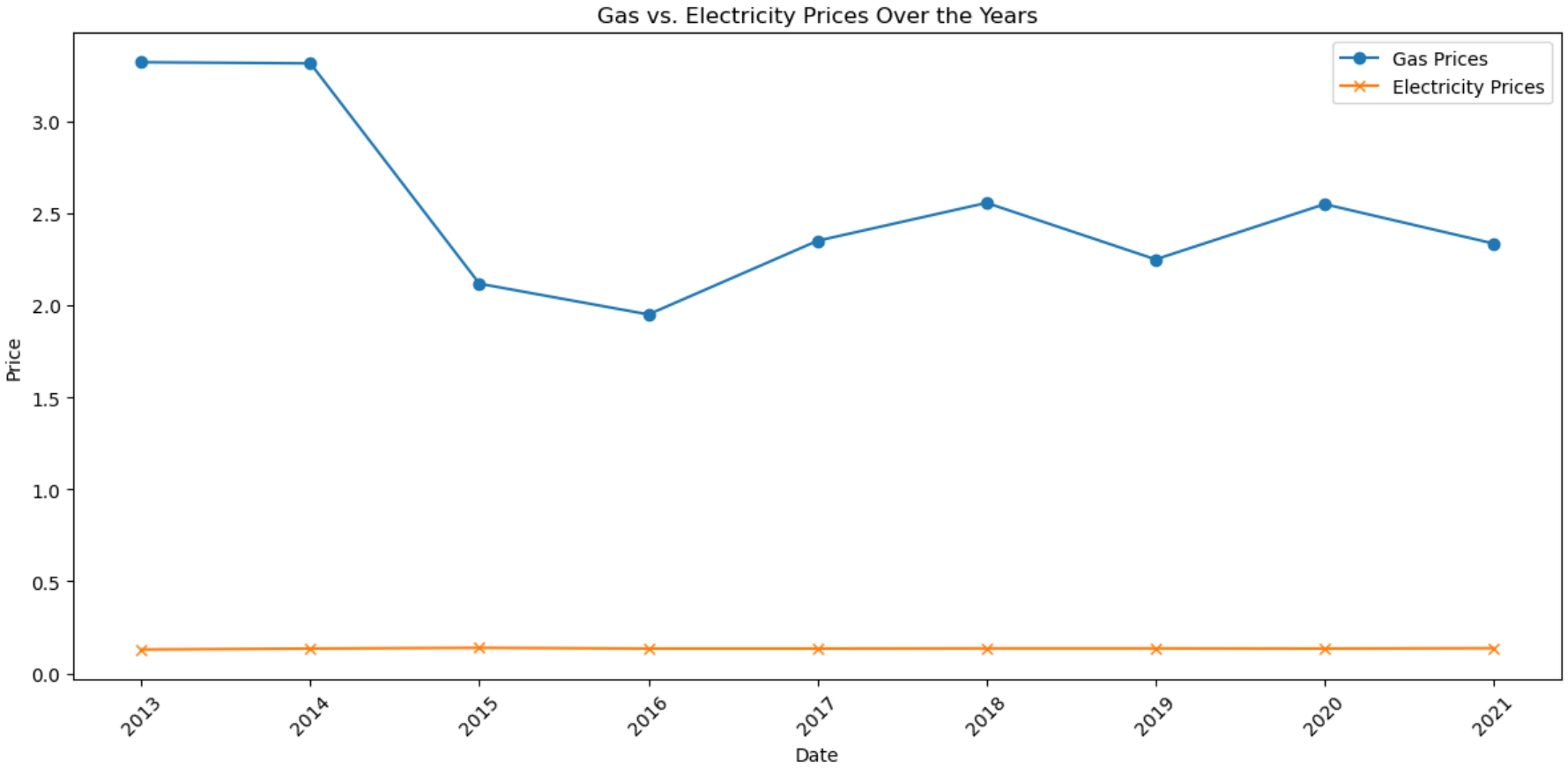
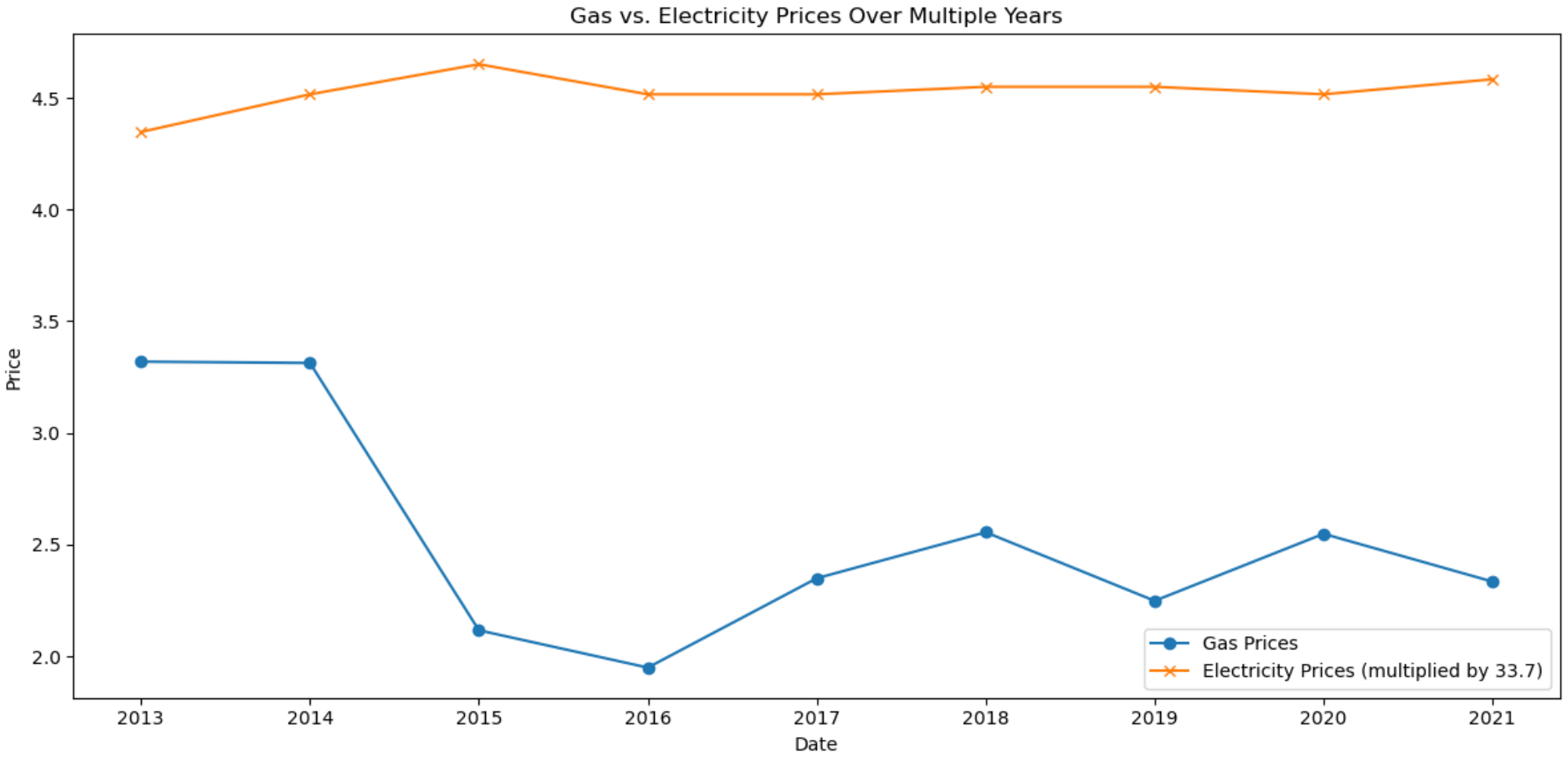
Prices from 2013 to 2021



What does this show me?

- Fluctuation of price in gas versus electric
- Steady pricing of fuel
- Changes throughout the years
- Fuel for electricity demonstrated as KWH
- Sourced from EIA (Energy info admin)

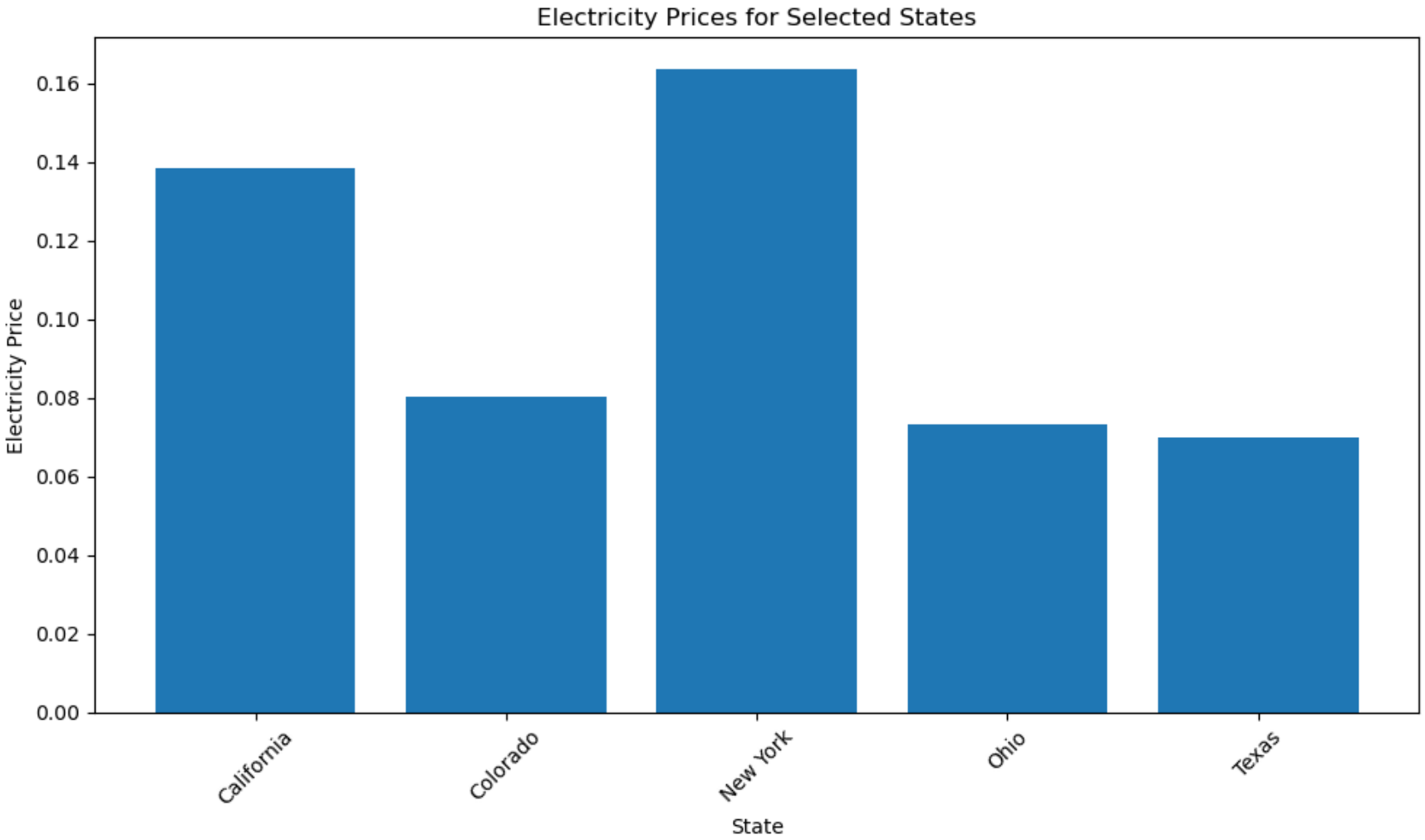
QUESTION 3: WHICH FUEL IS MORE COST EFFICIENT?



What does this show me?

- One gallon of gas = 33.7 kilowatts
- A 100 kilowatt battery would take around 3 gallons of fuel

QUESTION 3: WHICH FUEL IS MORE COST EFFICIENT?



What does this show me?

- Comparison of electric as fuel from selected states
- Price is by KWH
- Sourced from Bureau of labor stats

QUESTION 3: CONCLUSION

How does the information shown help me?

- Prices shown over the years for electricity as fuel have been steady giving us a conclusion of fair fuel prices in the past
- With gas prices not being as consistent, the price of gas can always fluctuate.
- Even with the gallon equalness of electricity being higher than gas, it is still cheaper because you don't need as many gallons

QUESTION 4: WHAT CONSIDERATIONS SHOULD THERE BE FOR CHARGING YOUR EV?

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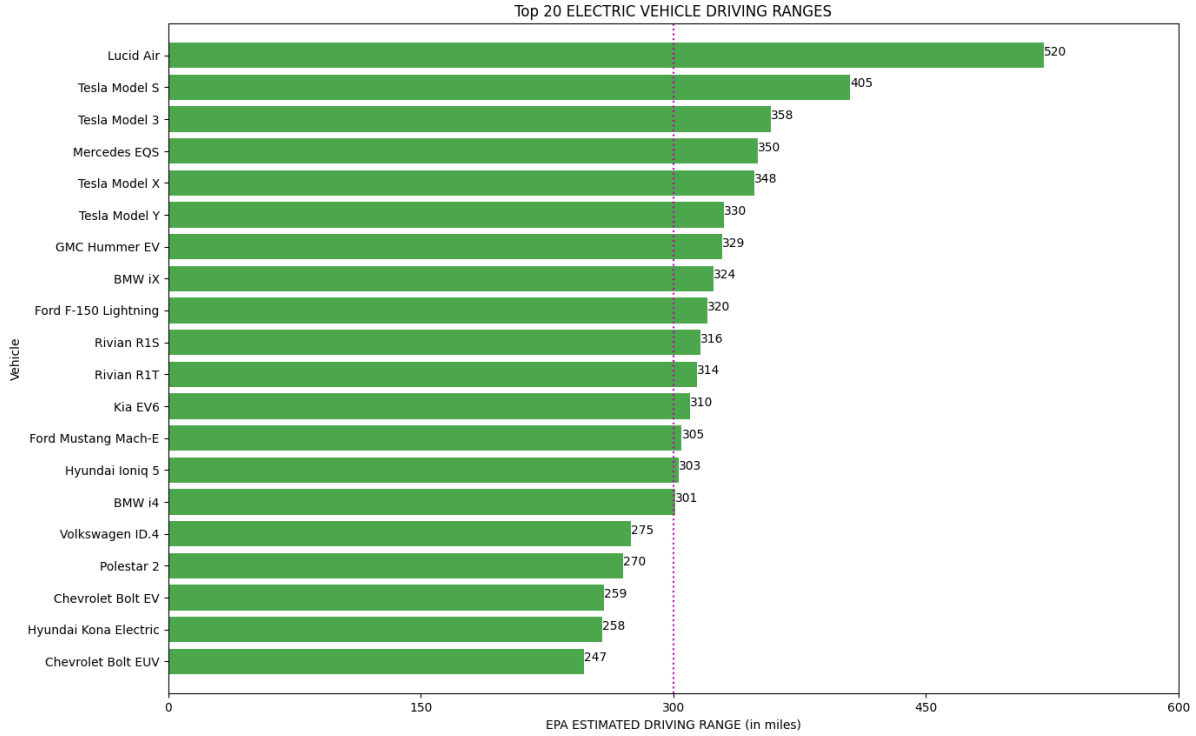
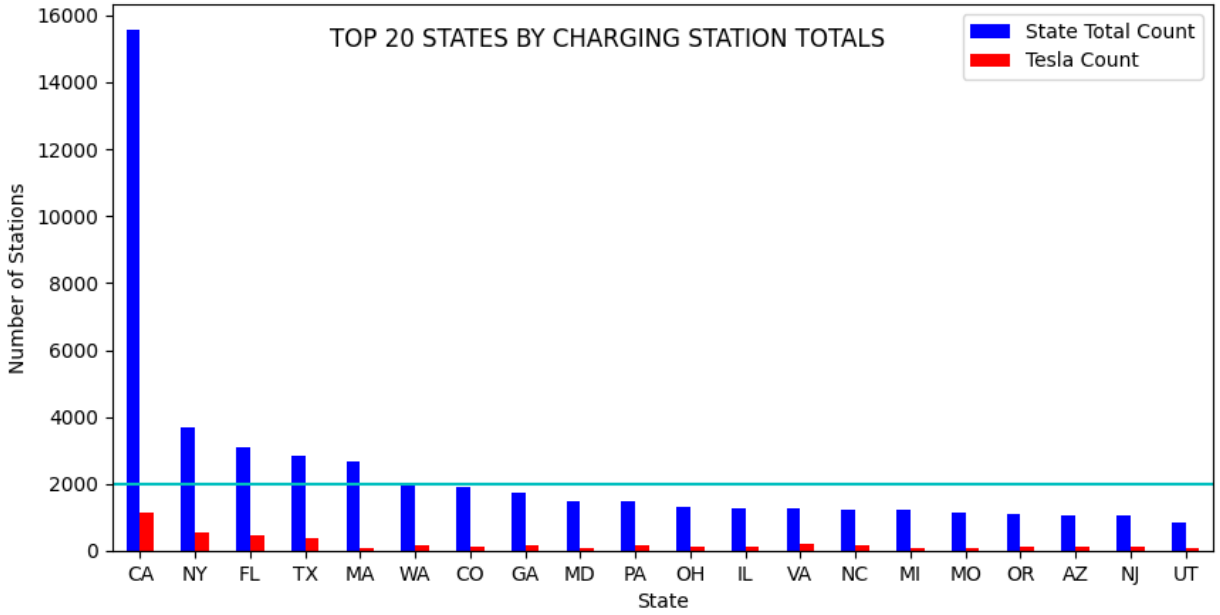
- Most of the top 20 vehicles in terms of driving range are in excess of 300 miles
- Tesla has the most models with high driving ranges - 4 in the top 10 (330 to 405 miles)



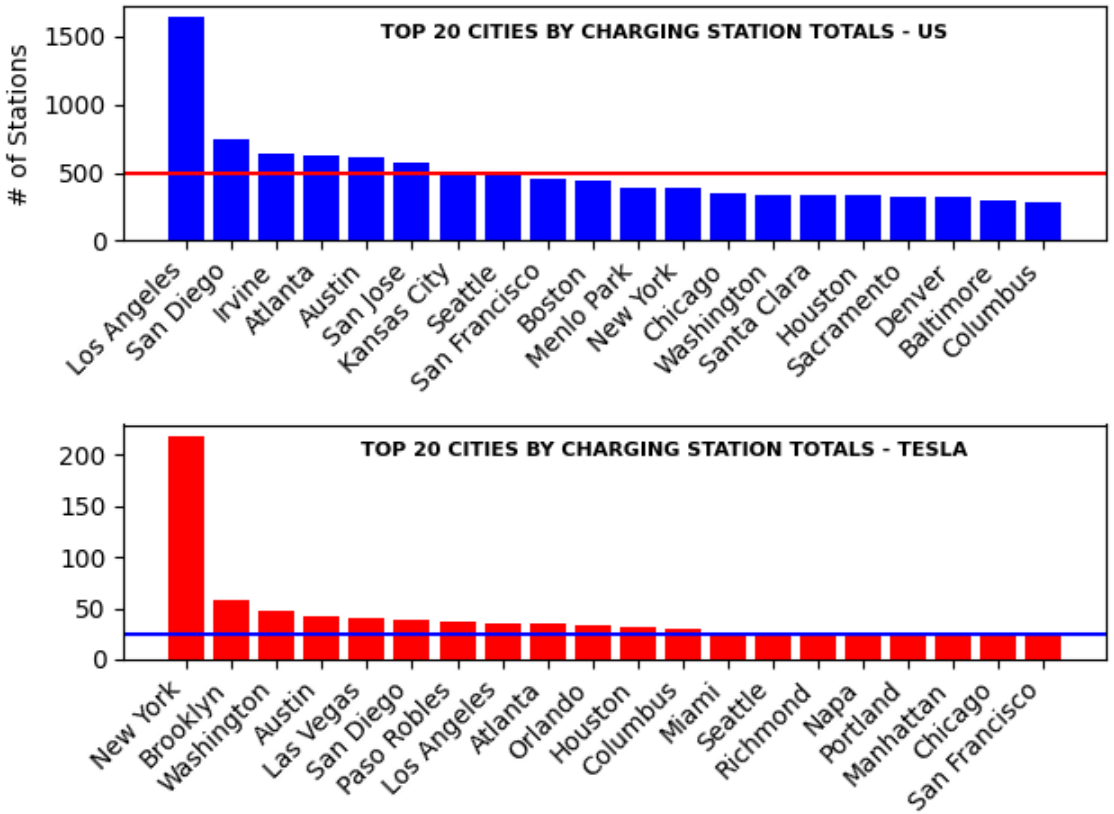
QUESTION 4: WHAT CONSIDERATIONS SHOULD THERE BE FOR CHARGING YOUR EV?

- Availability of charging stations abounds in California
- After California, a few states have more than 2,000 stations per state
- Most other states are below 2,000 stations
- Tesla stations account for only a fraction of total state stations



QUESTION 4: WHAT CONSIDERATIONS SHOULD THERE BE FOR CHARGING YOUR EV?

- Most cities across the US have fewer than 500 charging stations.
- And with the exception of New York, Tesla has 50 or fewer stations per city



QUESTION 4: CONCLUSION

When deciding on an electric vehicle, considerations to include should be:

- What is the driving range of the vehicle when fully charged?
  - and -
- How many charging stations are available in my city and state?

Both considerations will be important for daily driving needs as well as planning trips by car.

SUMMARY

- ICE vehicles produce almost 5 times more GHG emissions annually than fully electric vehicles
- Vehicle driving range and charging station availability will be important considerations in decision-making about an electric vehicle.
- Electric vehicles have a cheaper fuel nationally. Concluding a cheaper way to travel from place to place.

THANK YOU!