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# Load packages -----

library(tidyverse)
library(sf)

# Original scatterplot -----

# Read in the initial dataset

# motor gasoline price for each state, from EIA, in 2021

gasoline_21 <-
  read_csv('data_own/fuel_mg.csv') %>%
  filter(MSN == 'MGACD') %>%
  rename(motor_gasoline = '2021')

# all sector electricity price for each state, from EIA, in 2021

electricity_21 <-
  read_csv('data_own/fuel_es.csv') %>%
  filter(MSN == 'ESTCD') %>%
  rename(electricity = '2021')

# join the two forms into one

price_21 <-
  left_join(gasoline_21,
            electricity_21,
            by = 'State') %>%
  select(State, motor_gasoline, electricity)

# create an elementary scatterplot

scatter_temp <-
  price_21 %>%
  ggplot(
    aes(x = motor_gasoline,
        y = electricity)) +
  geom_point(colour = 'blue')

# It seems there exists an outlier, so descending the electricity price and
# remove the outlier, and create the scatterplot again

scatter_fin <-
  price_21 %>%
  arrange(desc(electricity)) %>%
  filter(State != 'HI') %>%
  ggplot(
    aes(x = motor_gasoline,
        y = electricity,
        label = State)) +
  geom_point(colour = '#3182bd',

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      alpha = 0.7) +
geom_smooth(
  method = loess,
  colour = '#6baed6',
  se = F) +
geom_text(hjust = 0,
          vjust = -1,
          size = 3,
          colour = '#6baed6') +
labs(title = paste('The cost of driving gasoline and electric cars in the',
                  'United States'),
     subtitle = paste('Motor gasoline price and electricity price in each',
                     'state of US in 2021'),
     caption = 'Data: eia.gov',
     x = 'Motor gasoline price in transportation sector (USD per MMBtu)',
     y = 'Electricity price in all sector (USD per MMBtu)) +
theme_bw() +
theme(
  panel.border = element_blank(),
  panel.grid = element_blank(),
  axis.line = element_line(colour = '#6baed6'),
  axis.text.x = element_text(colour = '#3182bd'),
  axis.text.y = element_text(colour = '#3182bd'),
  axis.ticks = element_line(colour = '#6baed6'))

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