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**ECNS 560**

**Topic and Data**

**10/12/2023**

**Topic:** the relationship between corn production and ethanol production

**Questions:**

* How does corn price affect ethanol production? (and vice versa)
* How does the volume of corn production affect ethanol production?
* How does gasoline price affect ethanol production?
* How is ethanol production distributed across the United States?
* Did these relationships change following the onset of the COVID-19 pandemic?
* Does increase in corn prices reduce ethanol production? (Inference/Causal)
* Does increase in corn production lead to increase in ethanol production? (Causal)
* How is ethanol production distributed across the United States? (Descriptive)
* Did these relationships change following the onset of the COVID-19 pandemic? (Descriptive)
* Can corn prices be used as a predictor of ethanol production? (Predictive)

**Why does this matter?**

* Ethanol production is a good source of clean energy. Incorporating it into gasoline allows for cleaner vehicle fuel sources. Corn is also a major commodity in the United States. Increasing ethanol production may change the demand for corn and affect corn price and production.

**Data sets:**

* Ethanol production
  + [URL](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.eia.gov%2Fstate%2Fseds%2Fsep_prod%2Fxls%2Fprod_phy_bf.xlsx&wdOrigin=BROWSELINK)
  + (select xlsx under “all production estimates”) <https://www.eia.gov/state/seds/seds-data-complete.php?sid=US#Production>
  + Variables: Ethanol production in thousands of barrels per year
  + Timespan: 1960-2021
  + Spatial Coverage: Nation-wide by state
* Ethanol Production Capacity
  + [URL](https://www.statista.com/statistics/828532/largest-us-ethanol-producers-by-capacityhttps:/www.statista.com/statistics/828532/largest-us-ethanol-producers-by-capacity/)
  + <https://www.eia.gov/petroleum/ethanolcapacity/archive/2023/index.php> - have to click download xlsx link
  + Variables: Production capacity per year
  + Timespan: 2023
  + Spatial Coverage: Nation-wide by facility
  + We may or may not use this data for the project given that there is only 2023 data.
* Gasoline Prices
  + [URL](https://www.eia.gov/dnav/pet/pet_pri_gnd_a_epm0_pte_dpgal_w.htm)
  + https://www.eia.gov/opendata/browser/petroleum/pri/gnd?frequency=weekly&data=value;&sortColumn=period;&sortDirection=desc;
  + Variables: Gasoline price by year
  + Timespan: 1990-2022
  + Spatial Coverage: Nation-wide by energy region
* Corn Production Volume:
  + [URL](https://quickstats.nass.usda.gov/)
  + Variables: Corn production in bushels by year
  + Timespan: 1866-2023
  + Spatial Coverage: Nation-wide by state
* Corn Prices:
  + [URL](https://quickstats.nass.usda.gov/)
  + Variables: Corn price received in $/bushel by year
  + Timespan: 1867-2023
  + Spatial Coverage: Nation-wide by state

**How do the datasets relate to each other:** Datasets will be merged together by year and state or region.

Submit link of GitHub repo to D2l