

EV Power - Lab 4 Project Report

Overview

This data contains information about various states, and the various ways that power is generated in those states. The following group of questions encapsulates most of the important aspects of the data, and allows for important conclusions to be drawn.

Does the most used renewable or non-renewable power source effect the avg cost of power by state?

Does the portion of power produced renewably have an impact?

These two questions together give a good impression of if renewables impact the cost of power, or if the cost is influenced by a higher portion of renewable sources, by the most common renewable source, or the most common non-renewable source, or, of course, if none of them have a strong link to the average cost of power.

Data and Methods

Following is the head of the joined dataset.

	state	coal	natural	petroleum	nuclear	total_renewable_energy	biomass
1	AK	18694	395590	261094	0	9597	3153
2	AL	309791	739891	583042	480115	239817	198543
3	AR	216123	360545	328271	141372	89714	72939
4	AZ	160299	484962	606862	329868	99266	35287
5	CA	28244	2172757	2959389	171842	810020	462829
6	CO	252442	509970	497788	0	103955	36334

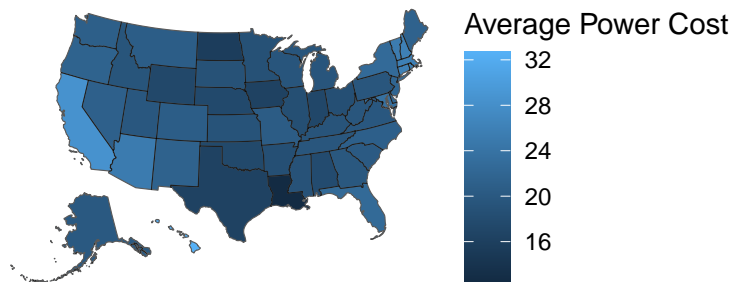
	geothermal	hydropower	solar_energy	wind_energy	year	av_cost
1	186	5763	45	451	2021	20.03
2	141	39309	1823	0	2021	17.85
3	808	13746	2221	0	2021	18.42
4	345	20379	37795	5460	2021	25.07

5	40106	50080	205221	51784	2021	28.44
6	759	5453	9801	51609	2021	20.64

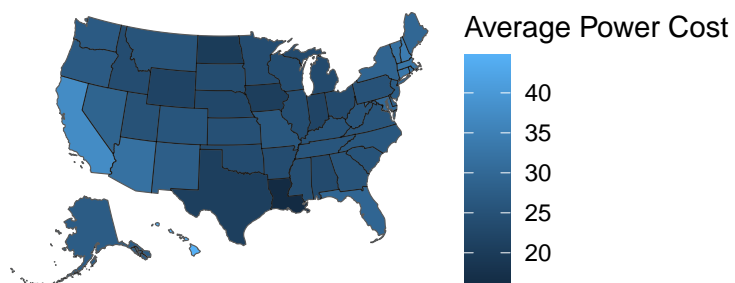
Data and Methods

Following is the maps generated from the combined dataset.

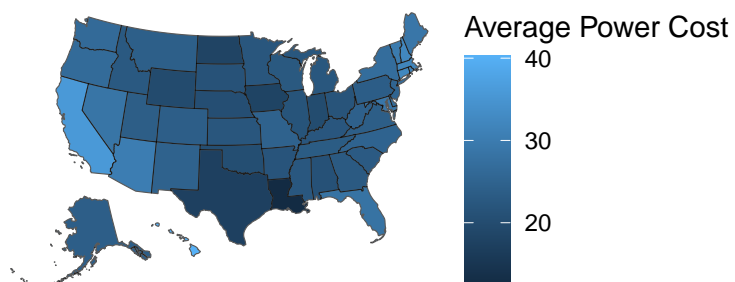
Average Cost of Power by State in 2021



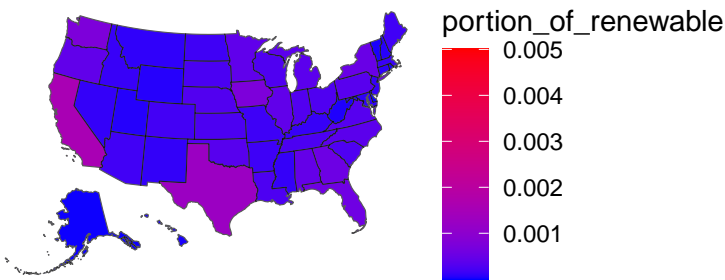
Average Cost of Power by State in 2022



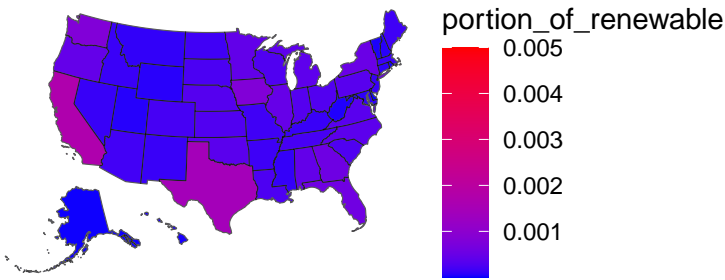
Average Cost of Power by State in 2023



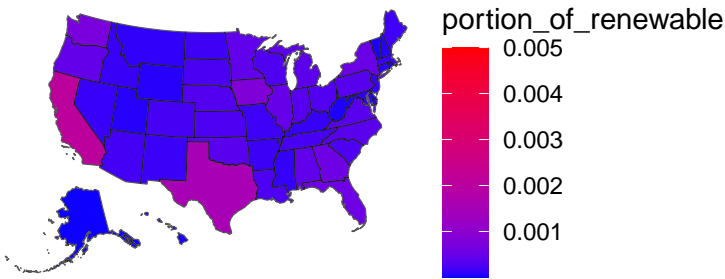
Portion of Renewable by State in 2021



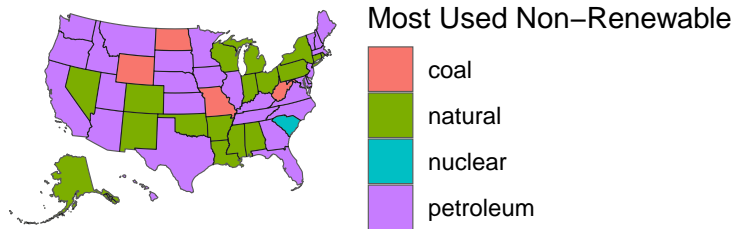
Portion of Renewable by State in 2022



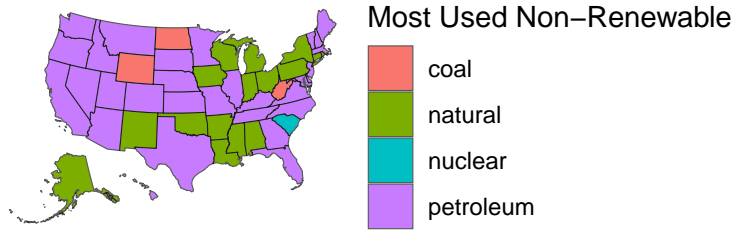
Portion of Renewable by State in 2023



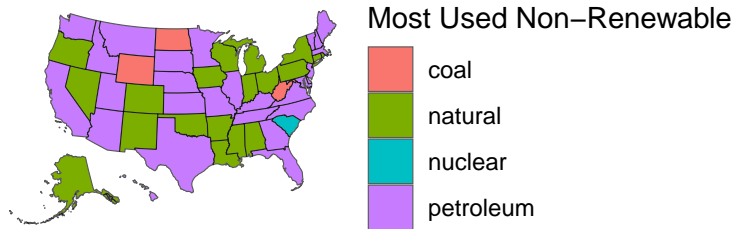
Most Used Non-Renewable by State in 2021



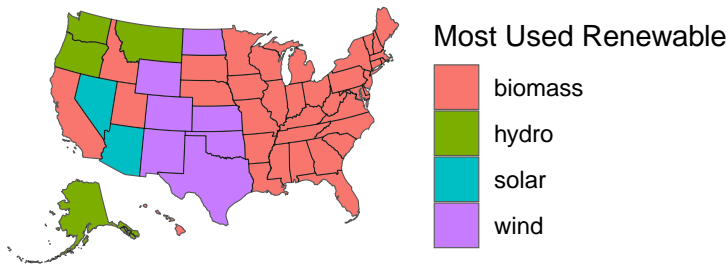
Most Used Non-Renewable by State in 2022



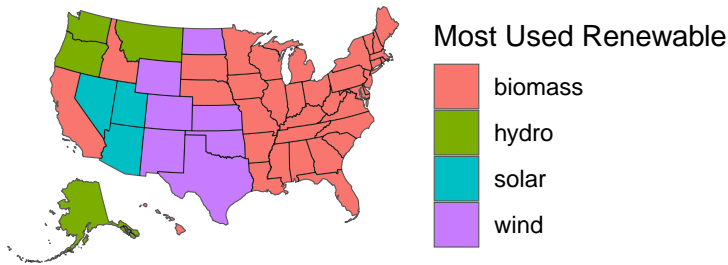
Most Used Non-Renewable by State in 2023



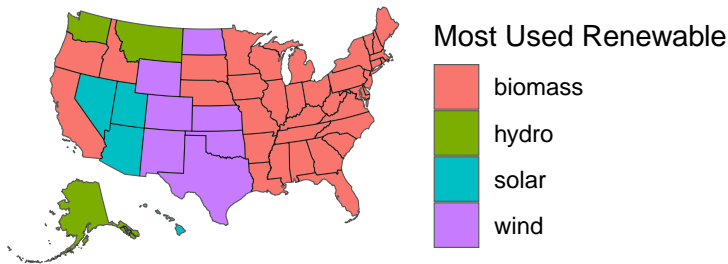
Most Used Renewable by State in 2021



Most Used Renewable by State in 2022



Most Used Renewable by State in 2023



Analysis

Clearly almost all power comes from non-renewable sources, with the most any state reaches being under .4%, and the lowest states being less than .1%. It also clear to see that the portion of power from renewable sources does not seem to have a strong correlation with average power cost. This can be seen by comparing California and Texas. Both have comparatively high portion of renewable energy generation, but are on opposite ends of the spectrum of power cost. Since both Texas and California use petroleum power as thier main source. This indicates that power cost is not a direct function of the most common sources of power, or the portion of power generated through renewable means. From this it can be concluded that the a shift to more renewable power would not increase consumer electric cost. This would allow EVs to be powered with cleaner sources, without increasing the consumer cost of power.