Consumption and impact of different type of energy in U.S

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Abstract. Renewable energy resource development will result in new jobs for people and less oil we have to buy from foreign countries. According to the federal government, America spent 109 billion to import oil in 2000. By looking into data consumption today from the past 20 years, we can well recognize the direction and trend where human society going. We used several different easy-to-use interactive infographic to show the data information we want to demonstrate. Dramatically helped user get insightful knowledge regarding to energy consuming in the United of States.

Keywords: D3, Data Virtualization, Energy, Renewable energy

1 Introduction

Energy consumption is a huge part of our life. We need energy consumption to support our daily life. At the same time, we also try to make renewable energy to take place big part of it for our future generation and environment. Through using information visualization technique, we are going to take a look into how much energy consumption proportion we use nowadays, and how sustainable energy today and how much it will become in the future main source of energy. we deployed a website with multiple interactive infographic, in order to show how different energy consumption.

2 Plan

We divided into six part of page: Home, Gasoline Sales, Motor Gas Sales, Natural Gas Consumption, Renewable Energy, and about us.

2.1 Previous Work

We find some useful and insightful charts online which is the good way to demonstrate the data like Multi-series line chart interactive, Diagrams, Dragit, Leaflet and Timeline JS

2.2 Navigation

Homepage We integrated video into our homepage, along with graph in timeline to show some background information, how each important historical event influence energy usage and gasoline price. User can click along the timeline to see influence of different event in history, such as 9/11 attack, Arab Spring, etc. like Fig.1

Gasoline sales page With overview of gasoline sales outline of United States, we showed a well informational map to demonstrate US gasoline sales throughout more than 25 years in each state. Hover the clock button helps you have the option of choosing from 20 years ago to recent years. From lighter purple to dark purple on the map, We can see large demographical state like California and Texas used the most primary energy of gasoline. On the other hand, Midwest states conserve the most gasoline due to less demographic activity occurs on daily basis. Street view of the map helps you get a more realistic view of the map.Like Fig.2
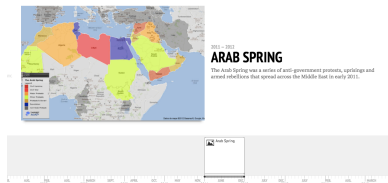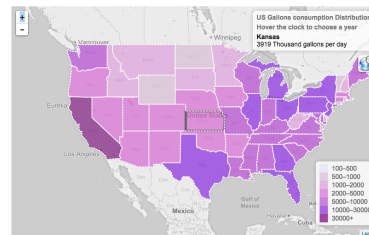

Fig. 1.

Fig. 2.

Motor gasoline sale page we use interactive line graph accompany with timeline, make user to be able to see the comparison of states in specific period of time by choosing the year on the timeline. At the bottom of the graph, theres detail of the data integrated in this graph. So user can look into specific number of data when he wants. Motor gas consumption has always been the largest consumption of energy usage in the states. Therefore, it has the most impact into our life, by looking into detail data and interactive line graph, we will get a better insight of it when we analyze it.Like Fig.3 And we also offer a detail table to show each state in each year
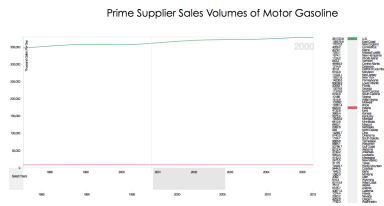
Prime Supplier Sales Volumes of Motor Gasoline

Fig. 3.

Natural gas Natural gas is also has a large impact in our life. Through using choropleth map we show consumption in a functional manner.

Renewable energy Renewable energy is the most important aspect in our project. From comparison interactive line graph, we can recognize that renewable energy usage still taking place a small portion of the total energy consumption. This reality pushing us inventing new technology, such as electrical car, energy generating station, etc. to make sustainable energy more relevant in total energy consumption in the future. Like Fig.4
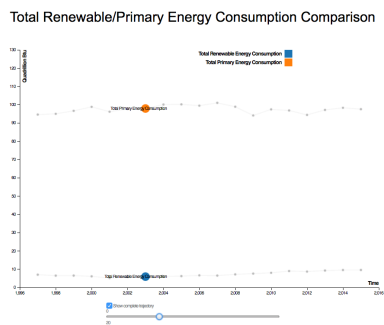

Total Renewable/Primary Energy Consumption Comparison

Fig. 4.

By looking into the second graph of renewable energy page, we can identify by sector that petroleum is the largest primary energy use so far.And we also offer a dashboard for this datasets Like Fig.5 and Fig.6
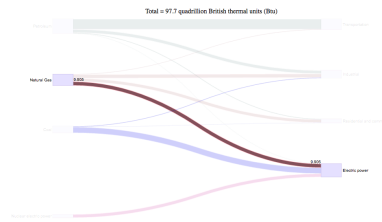
U.S. primary energy consumption by source and sector, 2015

Total = 97.7 quadrillion British thermal units (Btu)

And below is the dashboard detail baesd on that

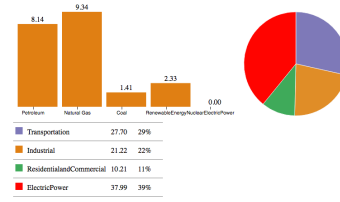|		
Transportation	27.70	29%
Industrial	21.22	22%
ResidentialandCommercial	10.21	11%
ElectricPower	37.99	39%

Fig. 5.

Fig. 6.

About us More information about the Author

3   DataSets

Mainly, we plan to use datasets provided by the U.S. Energy Information Administration (The U.S. Energy Information Administration (EIA) collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.)

Format csv, json dimensions: 50 states, multi-years
    Natural Gas Consumption by End Use
    Total gasoline
    Energy consumption
    Prime Supplier Sales Volumes of Motor Gasoline
    U.S. primary energy consumption by source and sector

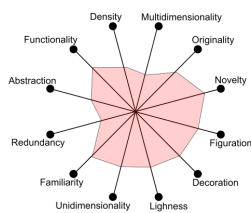## 4   Tools and Technologies

Design The Wheel

Fig. 7.

The choices of color we use a range of color to make it more clear and meaningful

D3.js We use D3.js to show our all visualizations in different methods.

Bootstramp We use Bootstrap to help us design a beautiful and insightful website with navigation bars on the top of the website. On the homepage, we put a short video to show how a common user use our website. And on each page we also highlight the current page by using different color

JQuery We use JQuery to help us build an interactive table rather than the common HTML table. For example in Fig 4.1 we can sort the number by each year and find the specific year and state by searching the keyword on the search toolbox on the top of the table instead of using Ctrl + F to find it.

5 Conclusion

Based on the data virtualization, we can easily find that the common energy like gasoline and natural gas are still increasing nearly all states. And in the Motor Gasoline chart with comparing years according to the big event showing on the homepage, there is still some relationship between them while not so obviously. So, U.S does not really depend on outcome oil and other energy. What's more is that the result of comparison of primary energy and renewable energy consumption over the years. Renewable energy still take small amount of chunk compare with total consumption. But along with technology development in the future, sustainable energy will be much higher than now.

References

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