Plugging into the Future : An Exploration of Electricity Consumption Patterns

1. INTRODUCTION

1.1 OVERVIEW

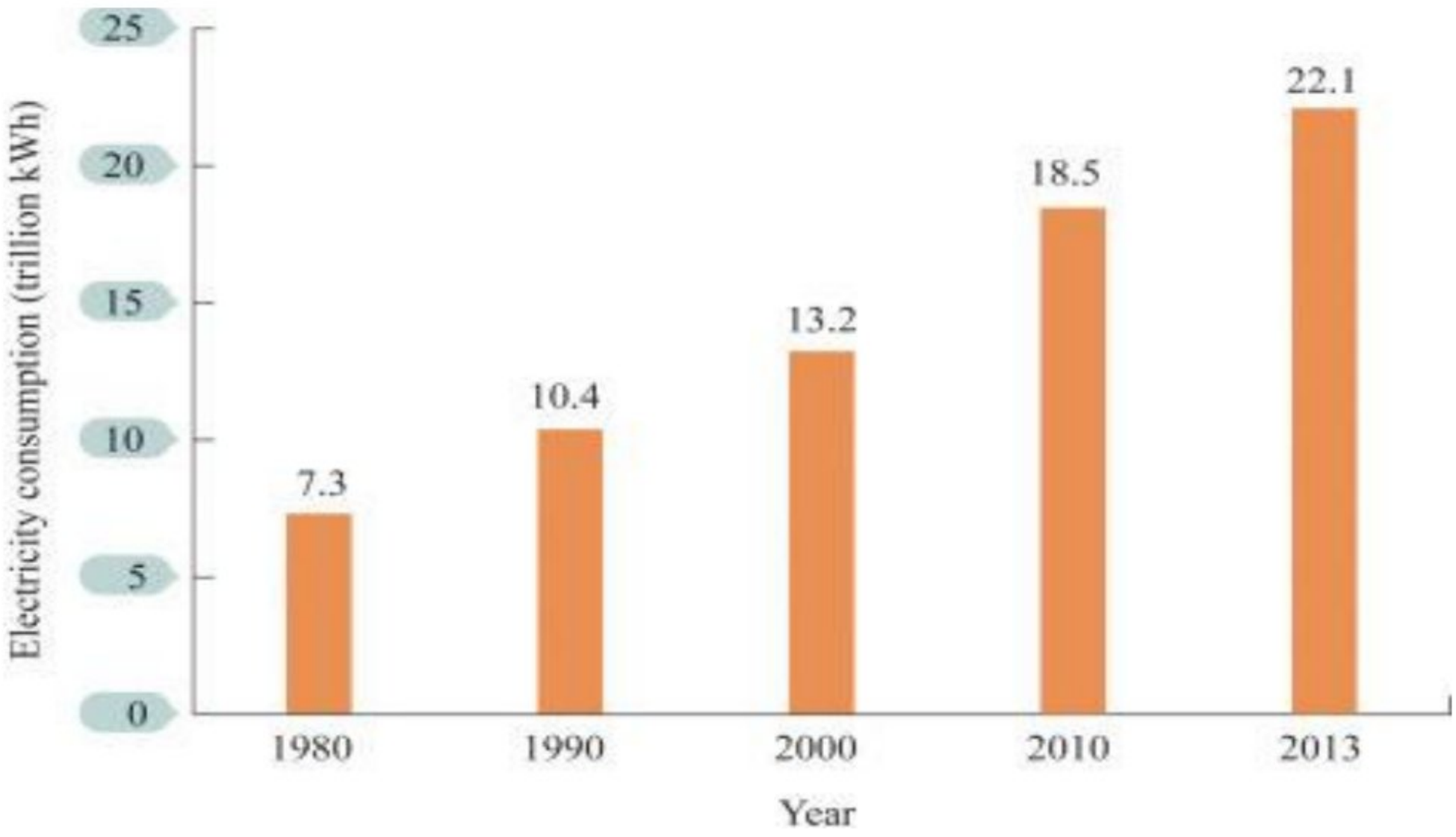
India is the world's third-largest producer and third-largest consumer of electricity. The national electric grid in India has an installed capacity of 370.106 GW as of 31 March2020. Renewable power plants . which also include large hydroelectric plants, constitute35.86p of India's total installed capacity. During the fiscal year (FY) 2019–20, the total electricity generation in the country was 1,598 TWh, of which 1,383.5 TWh generated by utilities. The gross electricity consumption per capita in FY2019 was 1,208 kWh. In 2015-16, electric energy consumption in agriculture was recorded as being the highest (17.89%) worldwide. The per capita electricity consumption is low compared to most other countries despite India having a low electricity tariff. In light of the recent COVID-19 situation, when everyone has been under lockdown for the months of March to June the impacts of the lockdown on economic activities have been faced by every sector in a positive or a negative way.

The dataset is exhaustive in its demonstration of energy consumption state wise.

Analysing Electricity Consumption in India from Jan 2019 till 5th December 2020. This dataset contains a record of Electricity consumption in each states of India, here we are going to analyse state wise , region wise and overall Electricity consumption in India.

1.2 PURPOSE

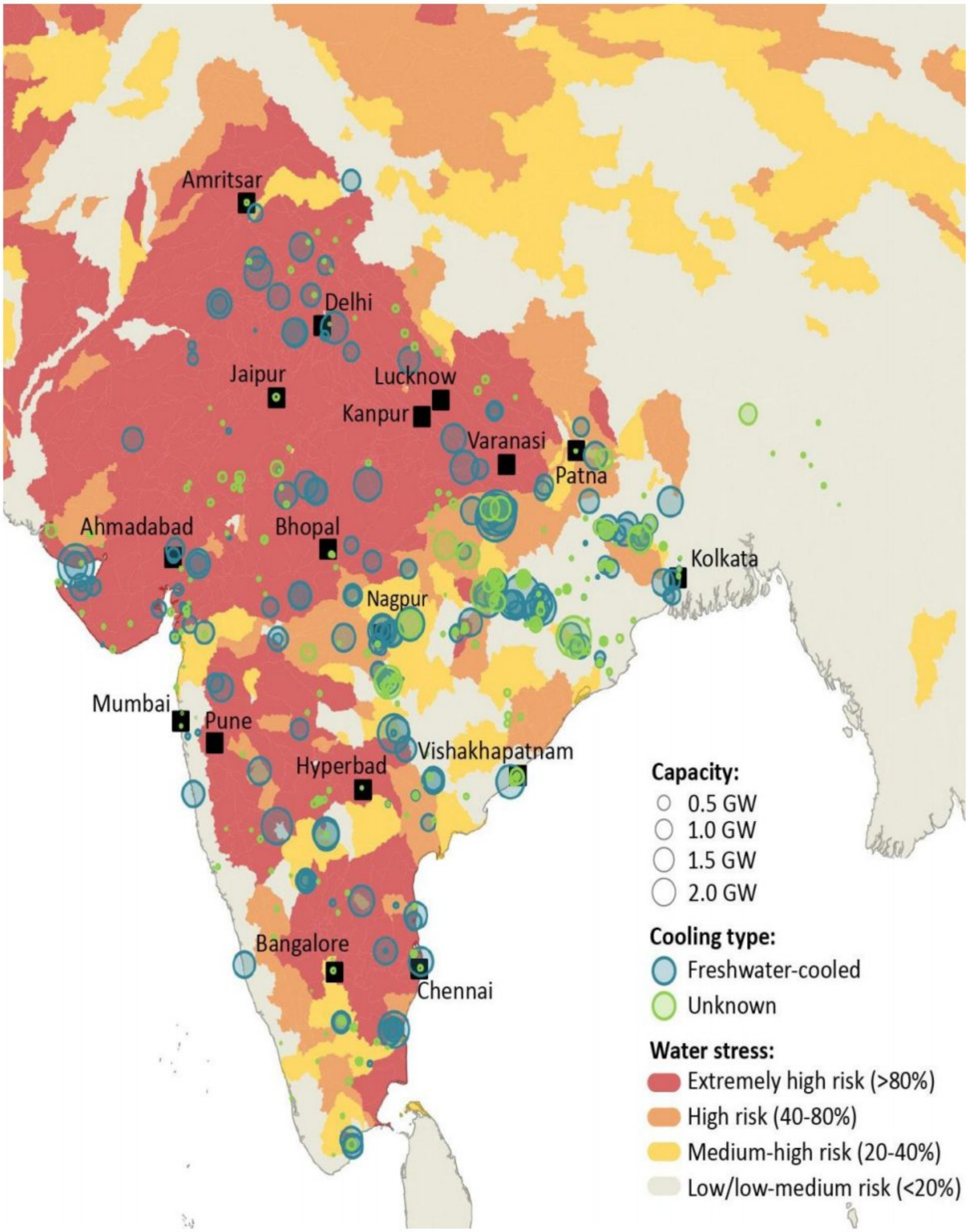
Electricity consumption has continued to go up rapidly at a rate faster than energy consumption. Between 1980 and 2013, the world's annual electricity consumption rose from 7300 TWh to 22,100 TWh. Since the twenty first century, global electricity consumption has seen even faster growth, as evidenced by an average annual increase of 3.4%, 1.2 percentage points higher than average annual growth of energy consumption. Fig. 1.28 shows global electricity consumption during 1980–2013.



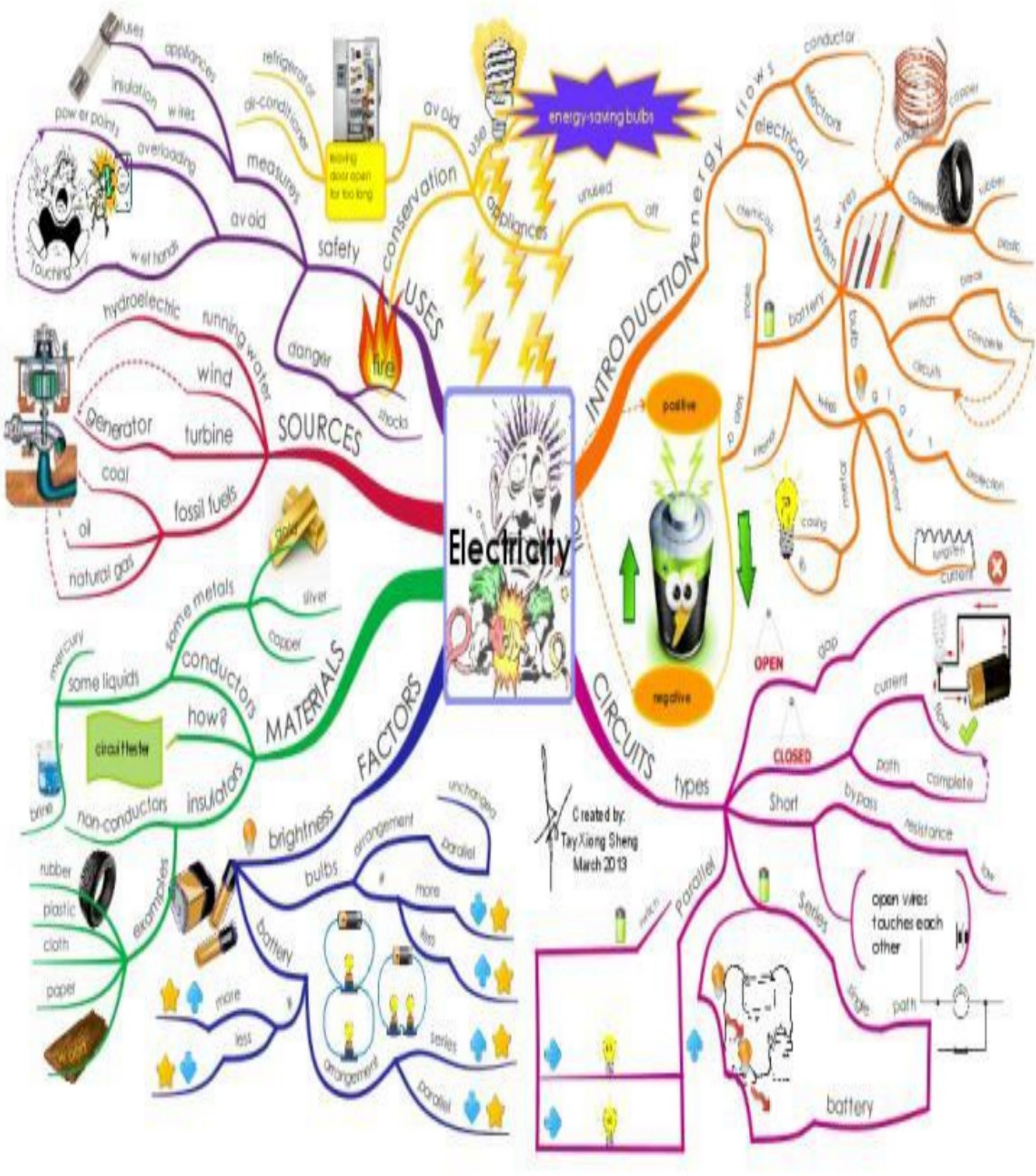
Annual electricity consumption per capita serves as an important measure of a country's electric power development. Generally speaking, electricity consumption grows faster when the industrialization process develops quickly and goes down rapidly when industrialization is completed or near completion.

2.PROBLEM DEFINITION & DESIGN THINKING

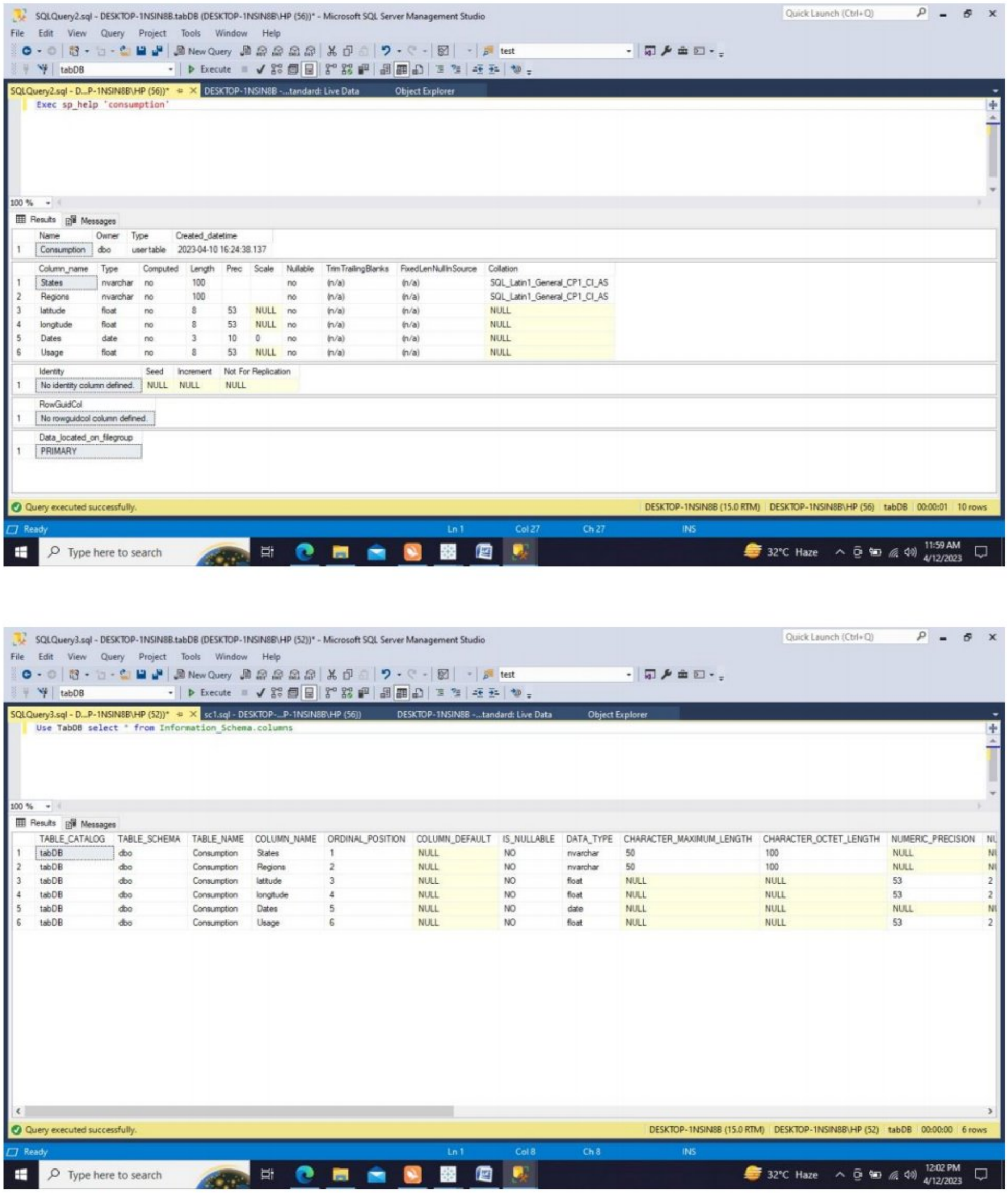
2.1 EMPATHY MAP

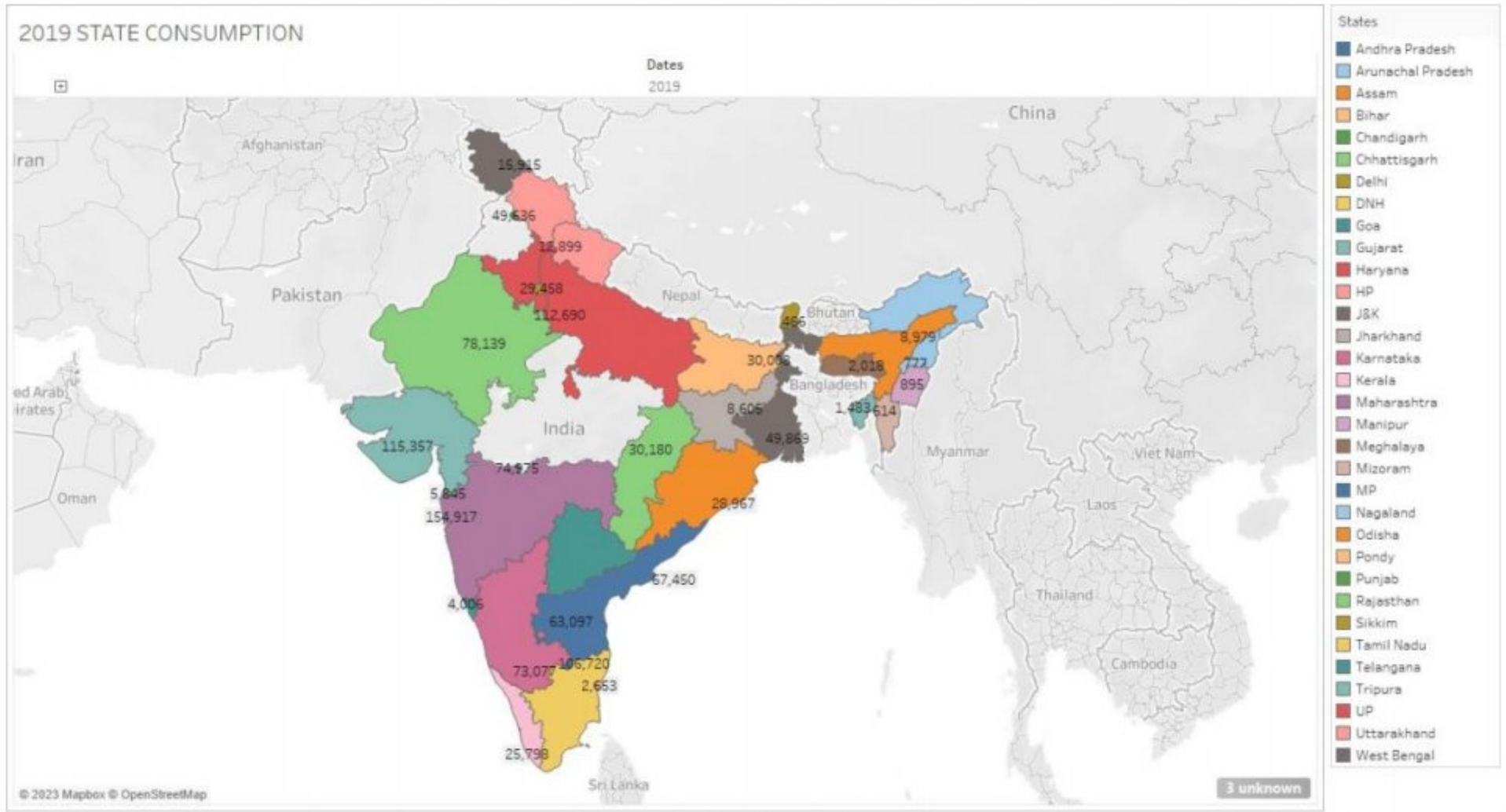


2.2 IDEATION & BRAINSTORMING MAP



3. RESULT





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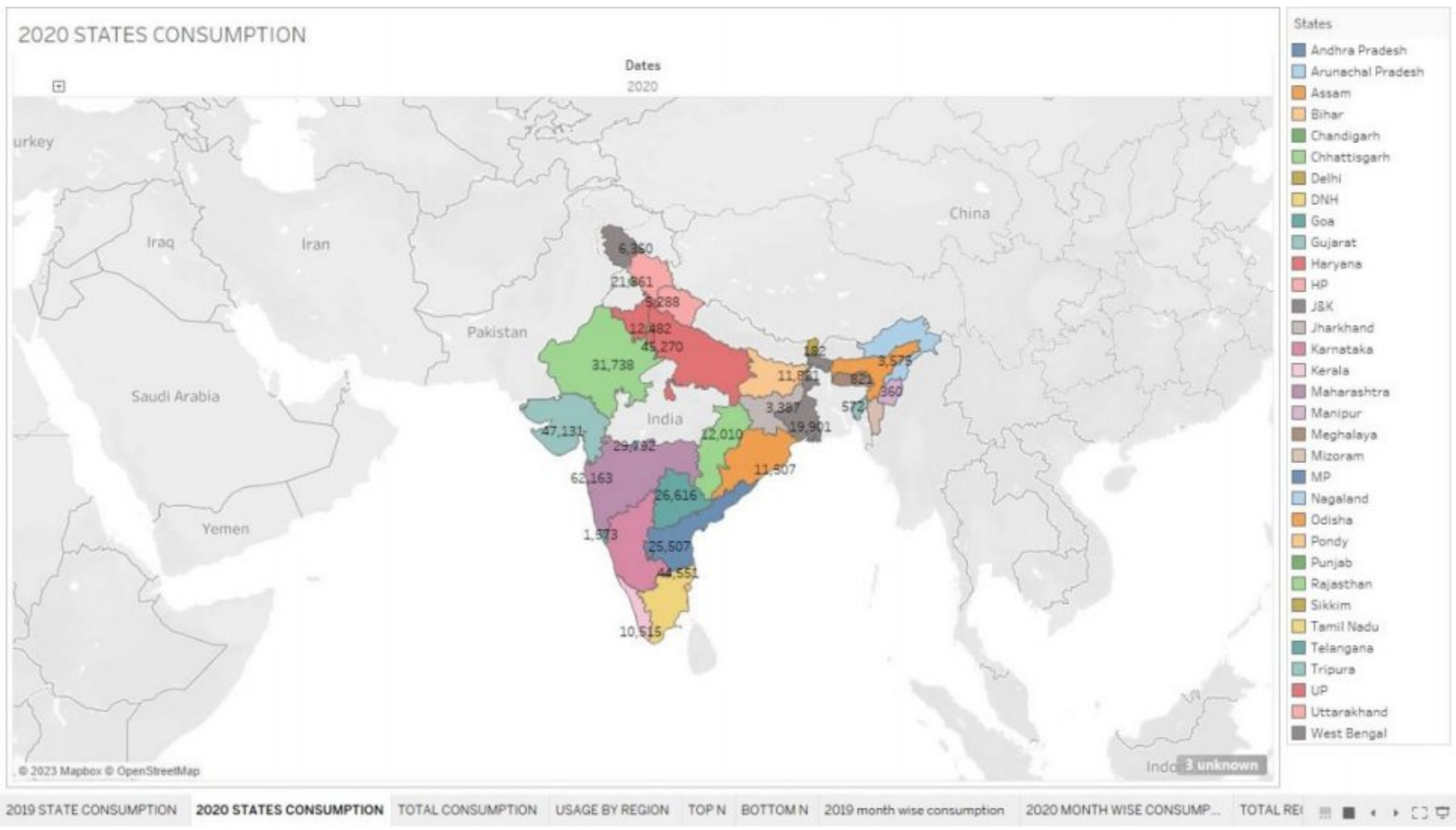

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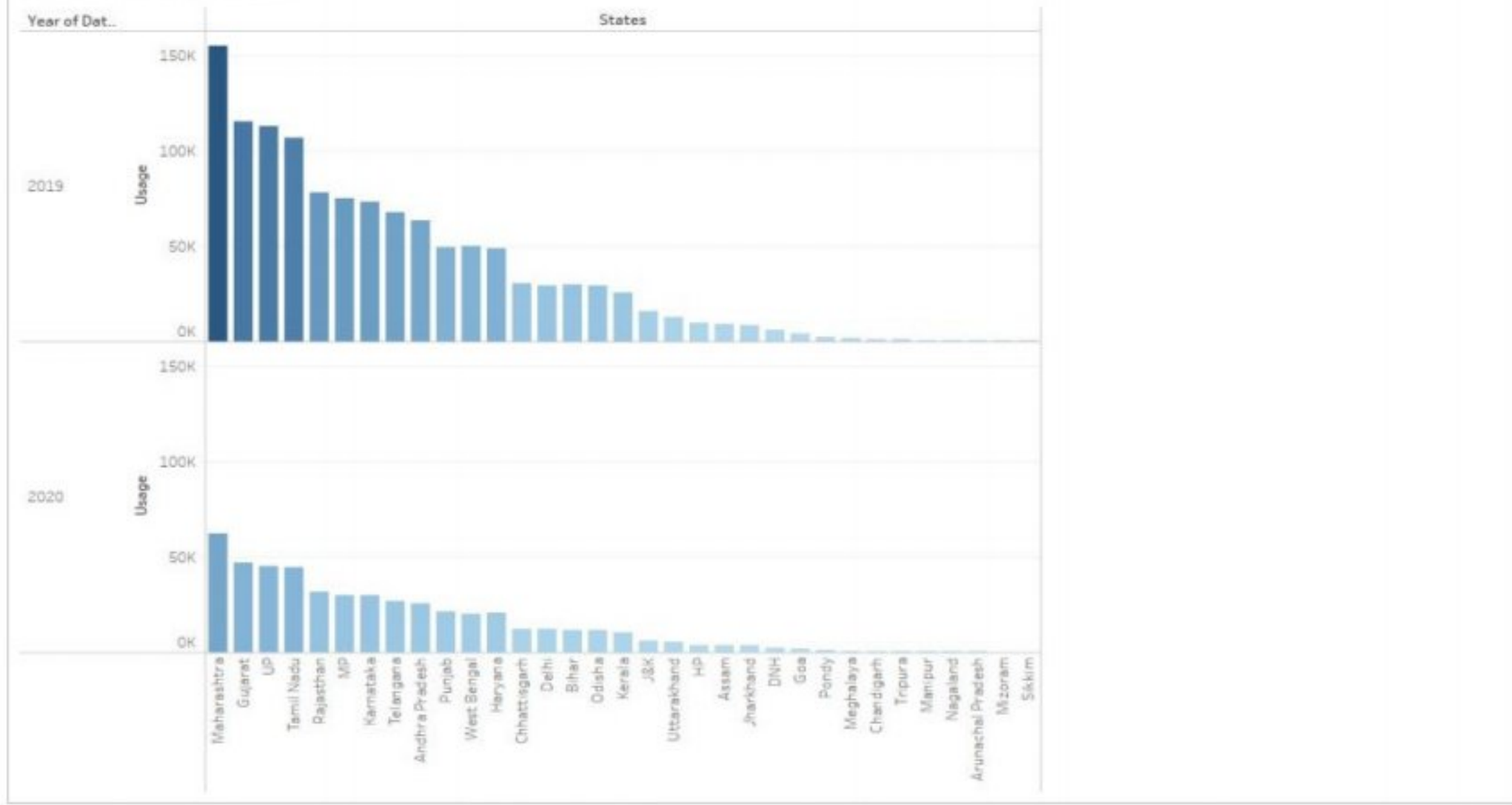

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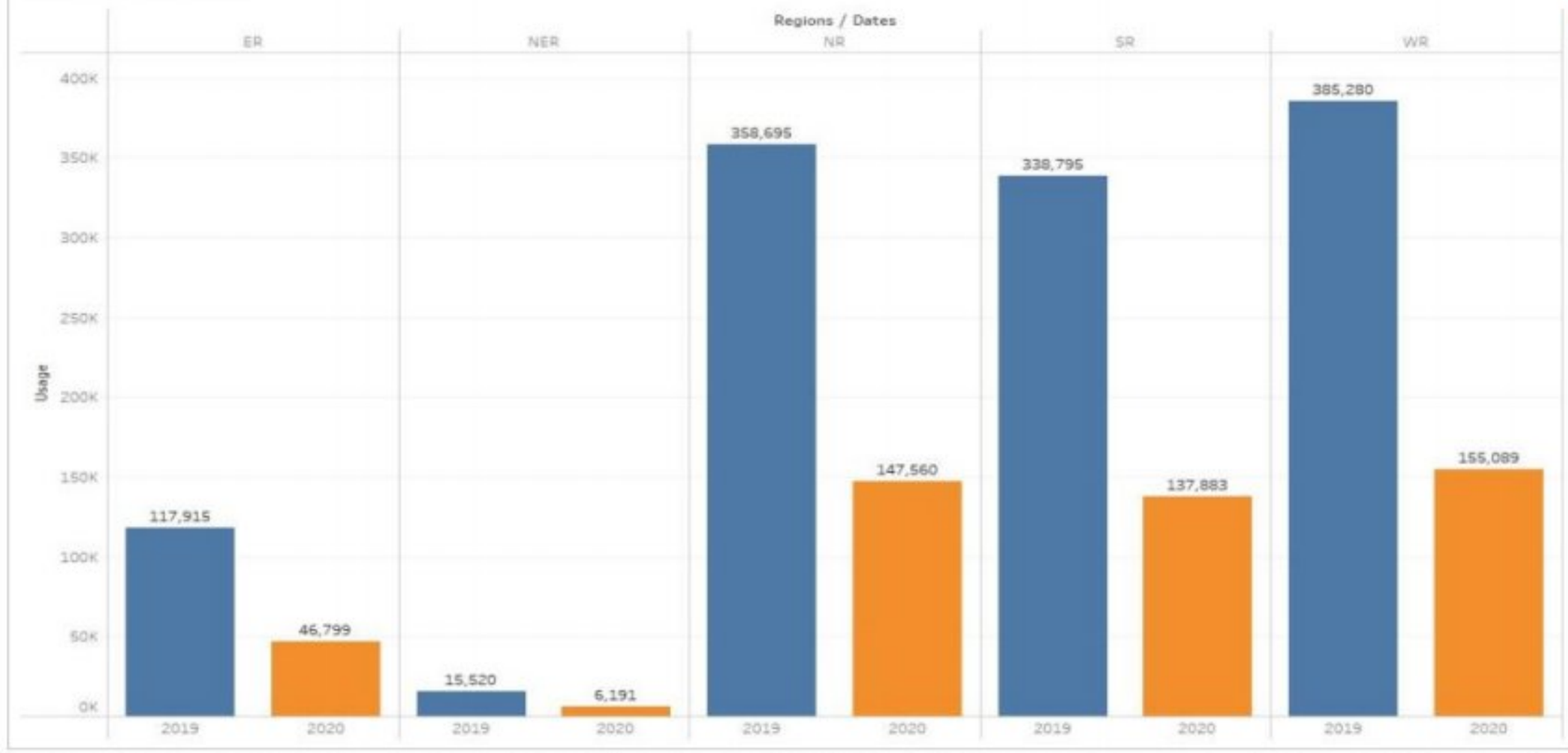

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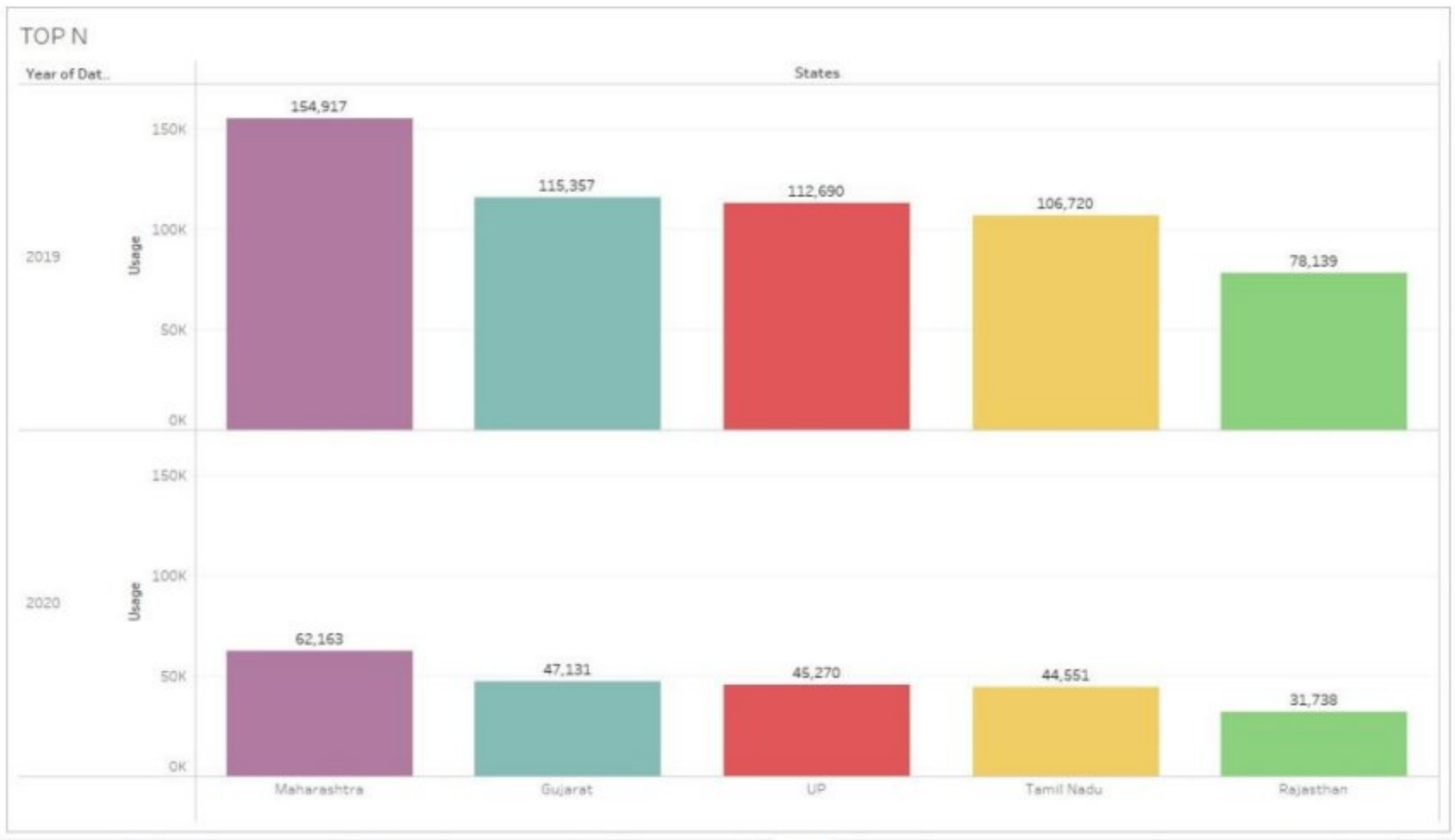

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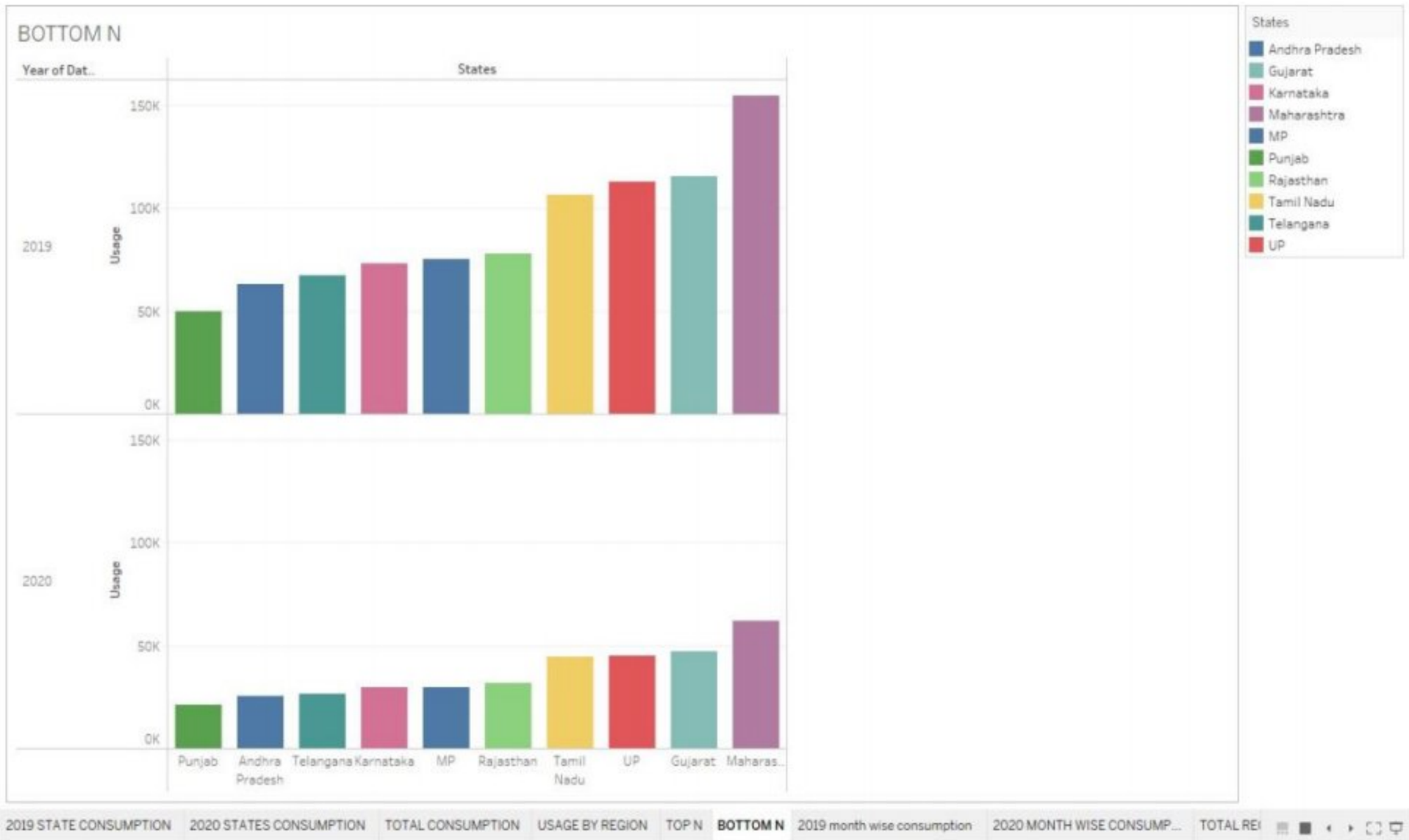
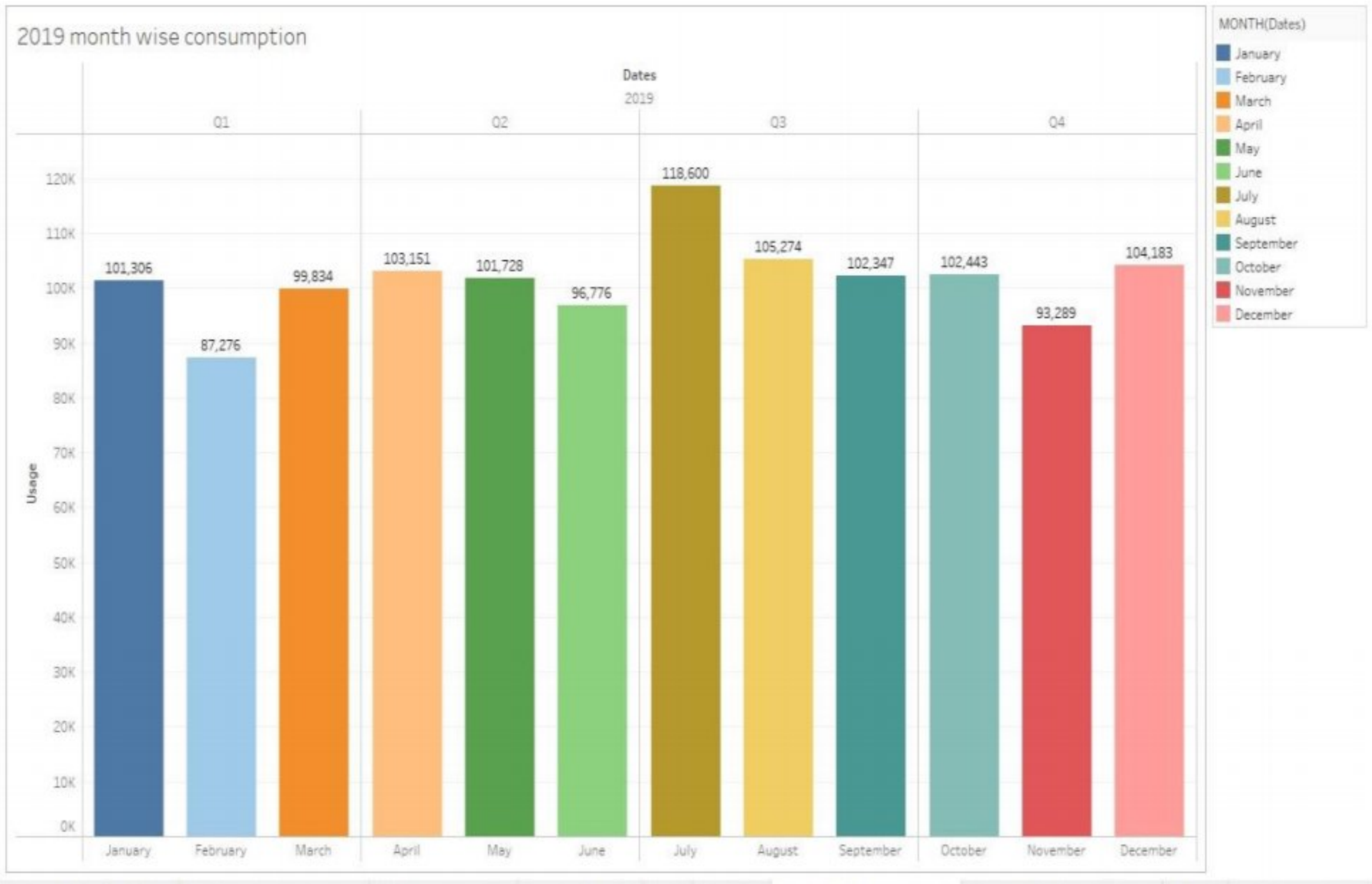
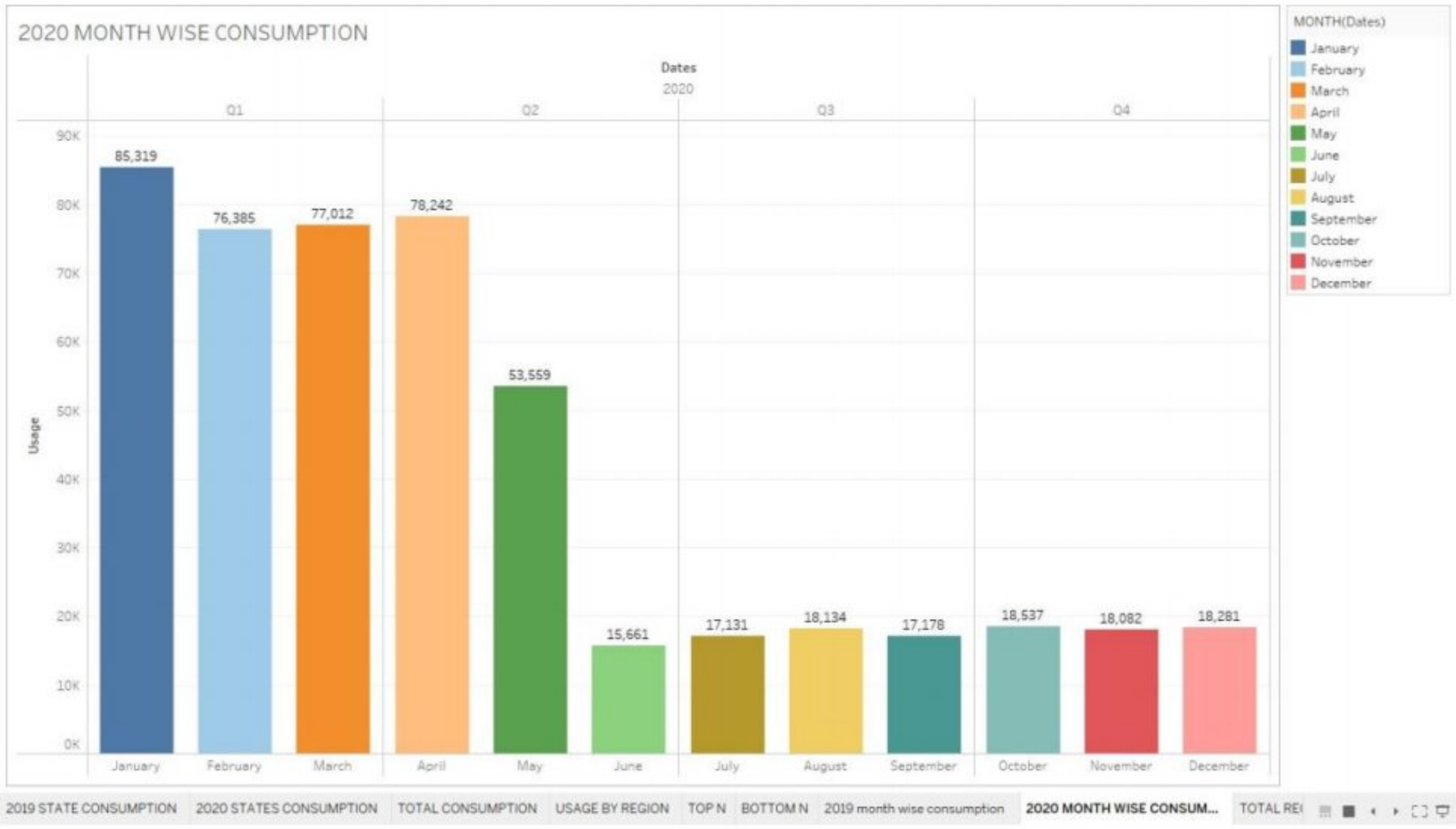
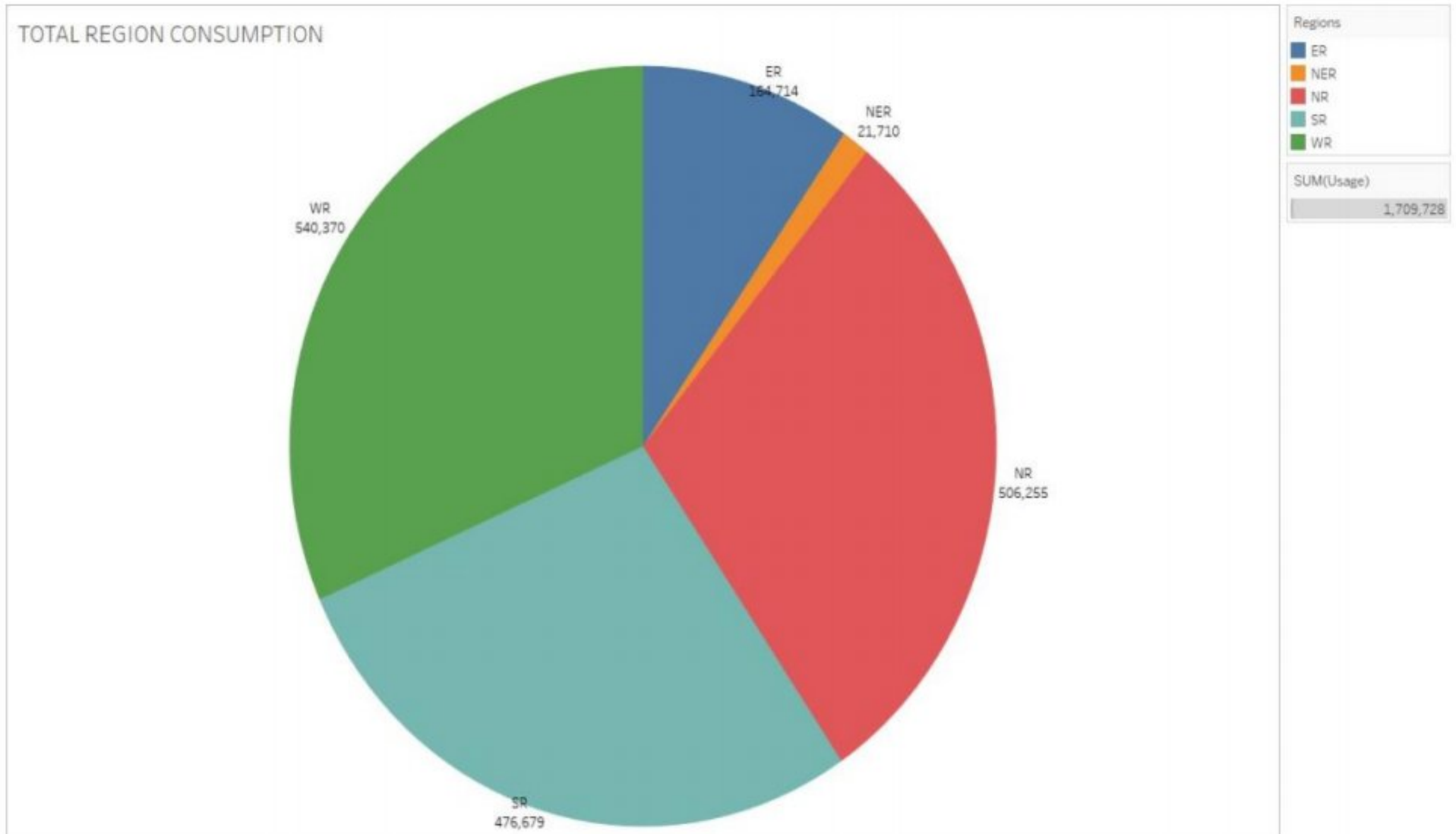
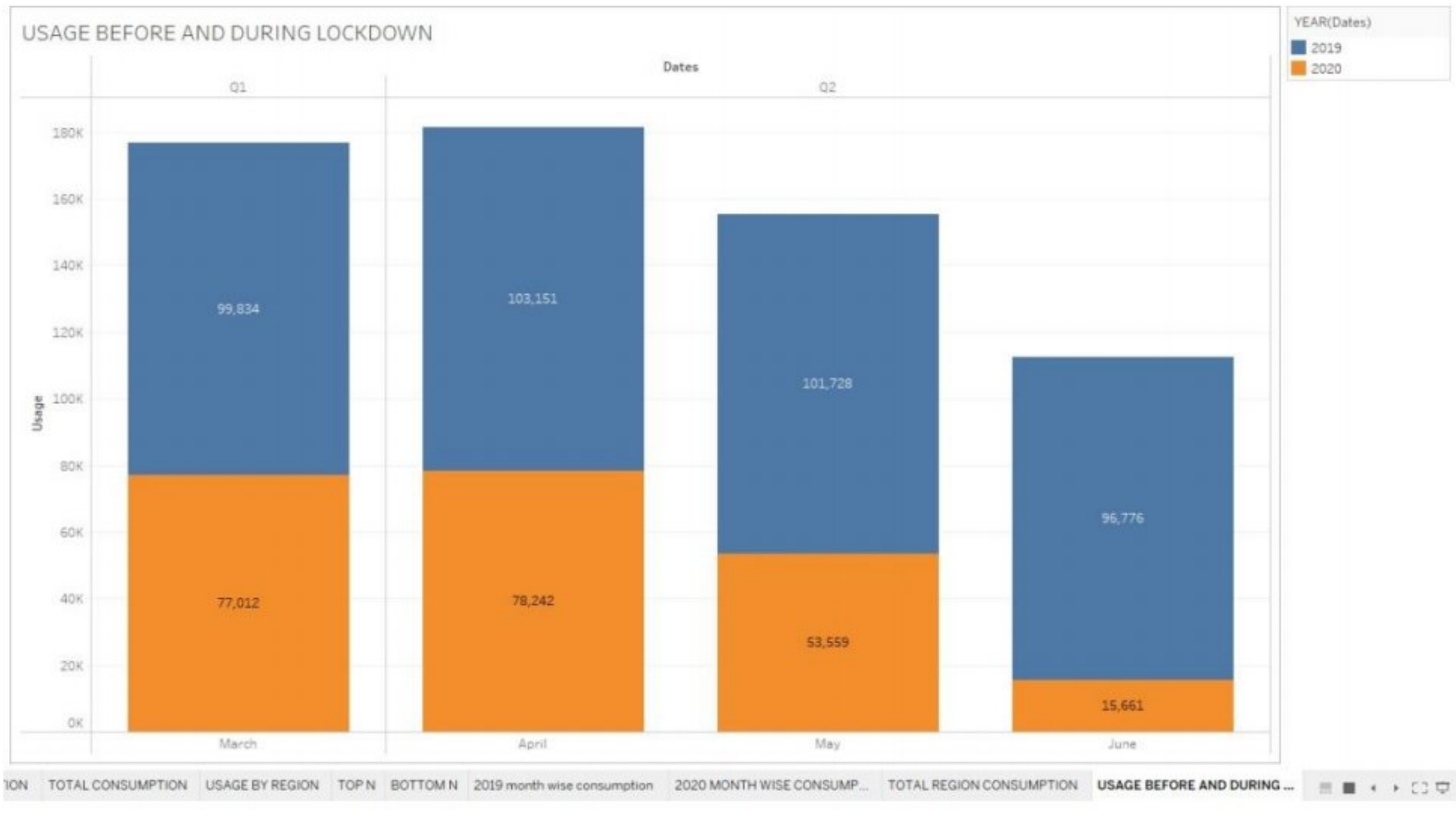
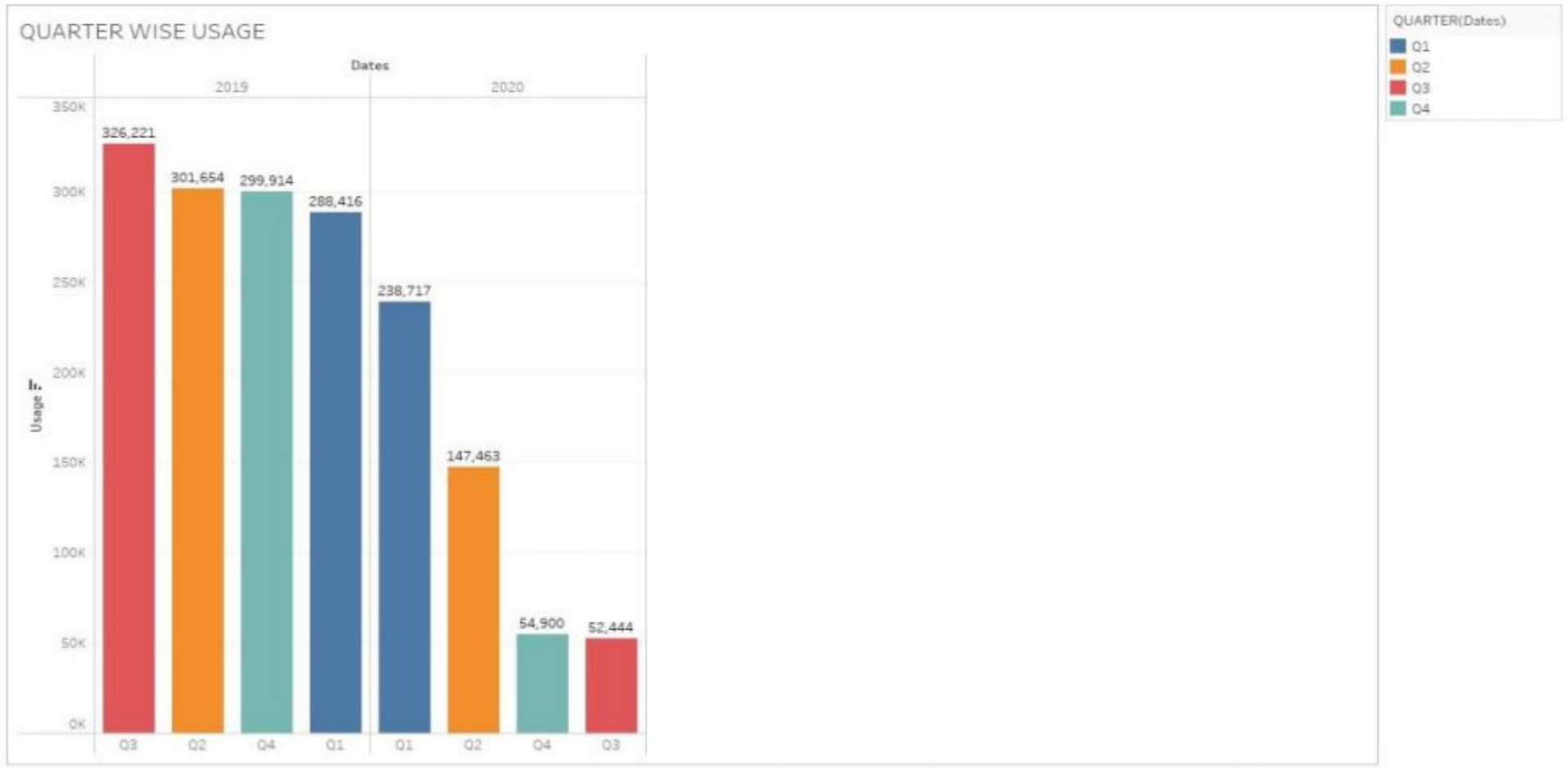


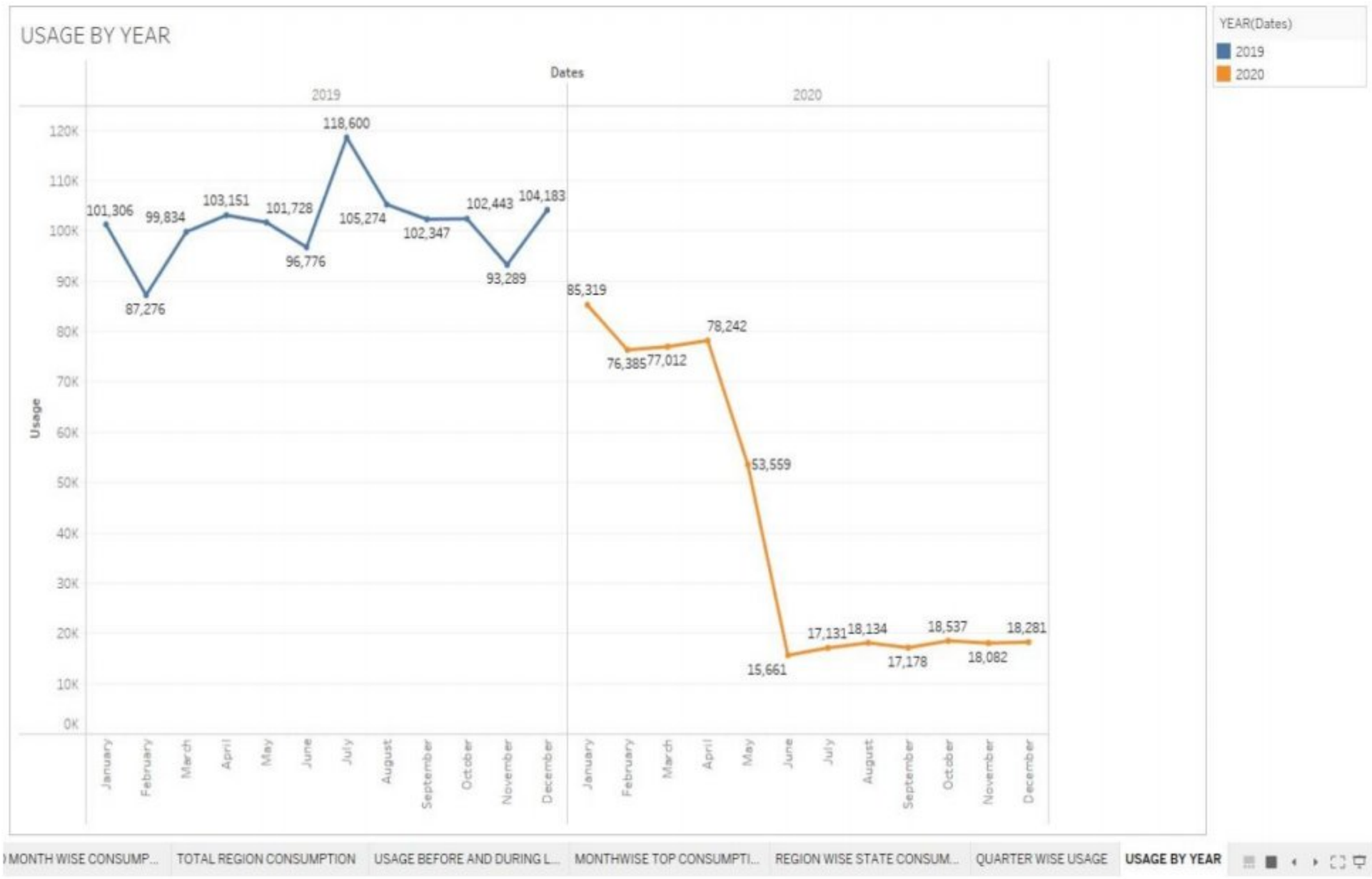






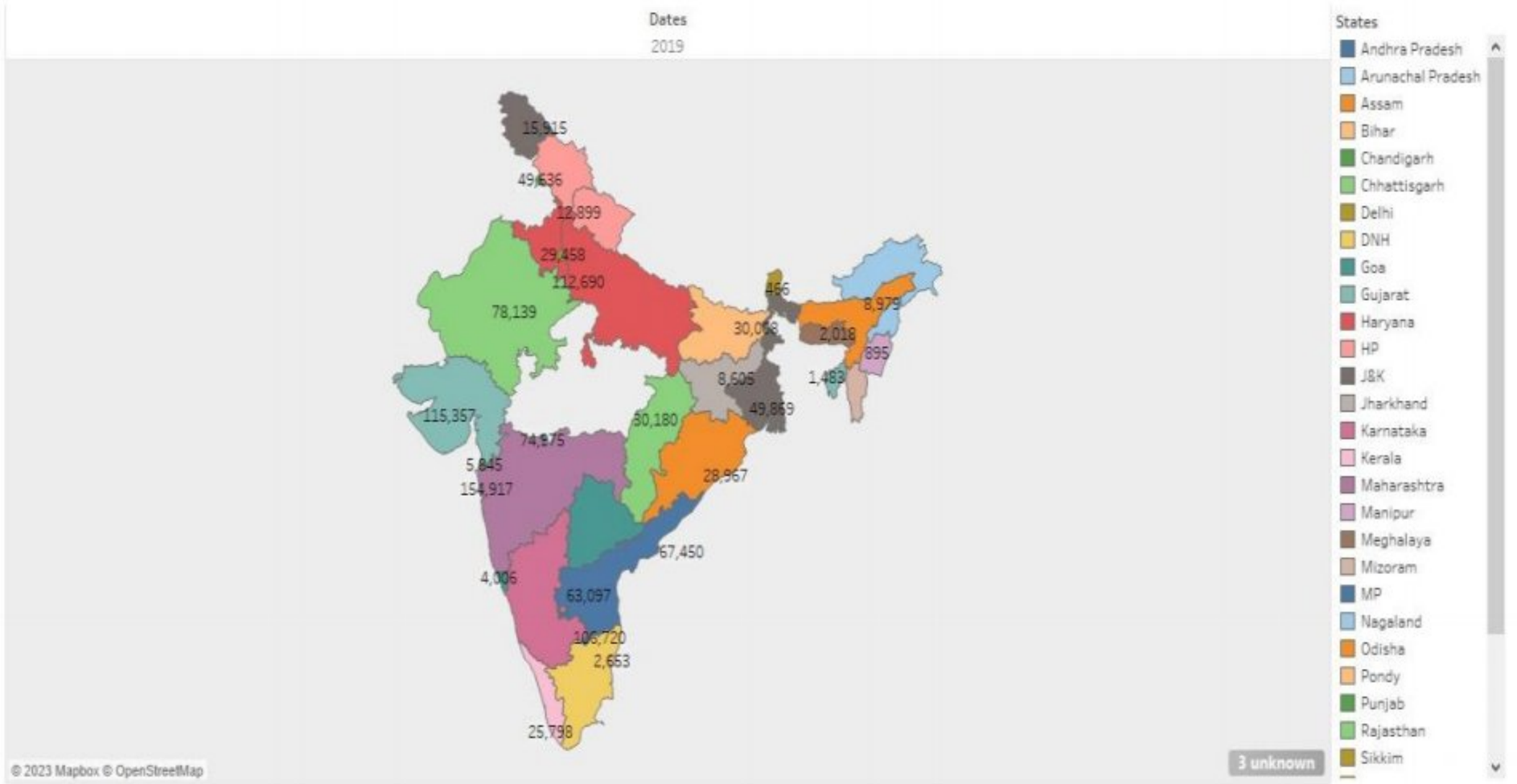






STORY ON ELECTRICITY CONSUMPTION IN INDIS

Electricity Consumption By Indian States 2019 | Electricity Consumption By Indian states 2020 | Bar Plot for Total Electricity consumption by indian | Region wise plot clearly states consumption in 2019 is | Plot defines top consumption by indian states in year 2019 | Bar defines Bottom consumption indian states in year 2019 | In year 2019 Electricity consumption in india | In year 2020 Electricity consumption in india | Electricity consumptic period on n



STATE CONSUM... | QUARTER WISE USAGE | USAGE BY YEAR | METRO CITY STATES | YEAR WISE CONSUMPTION IN ... | Dashboard 1 | Dashboard 2 | Dashboard 3 | STORY ON ELECTRICITY C...

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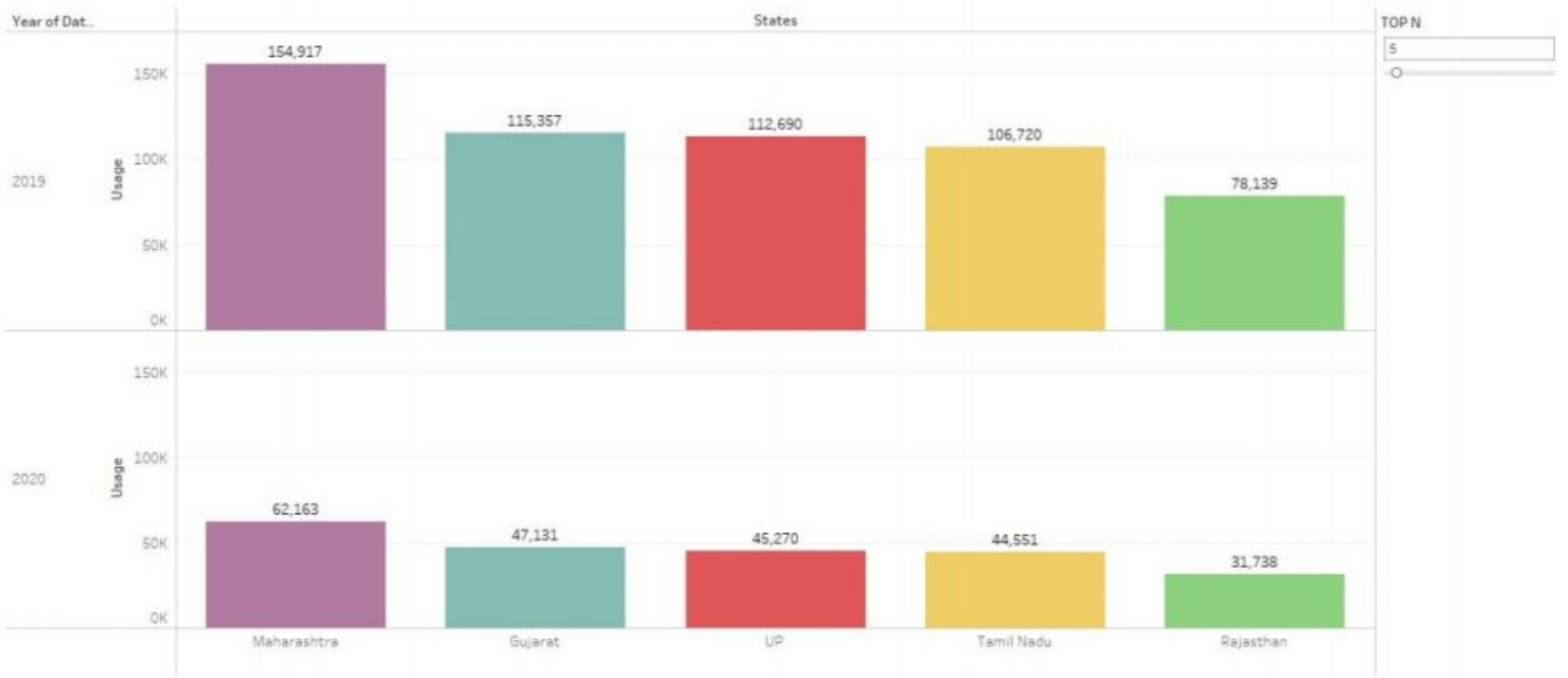
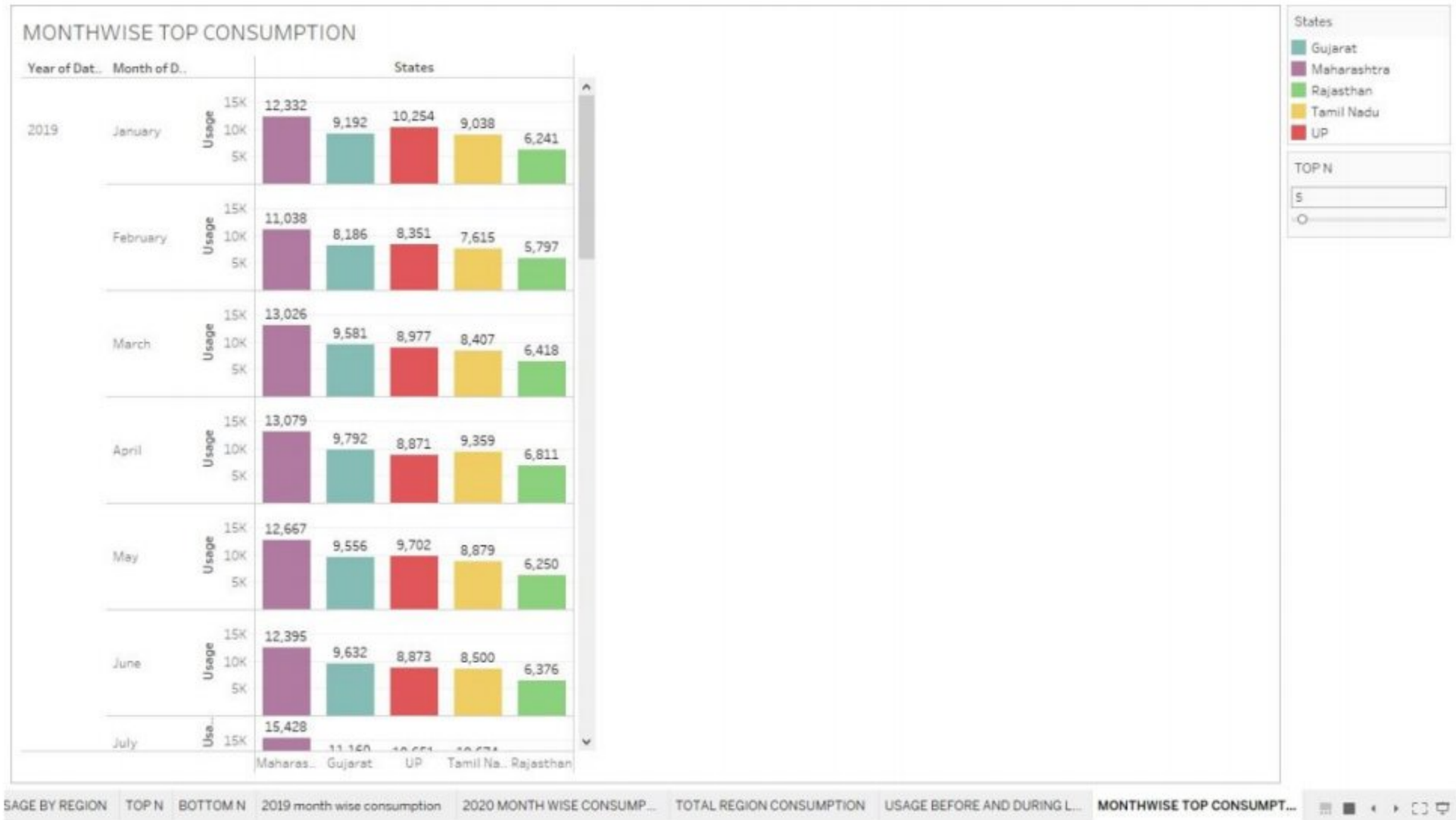
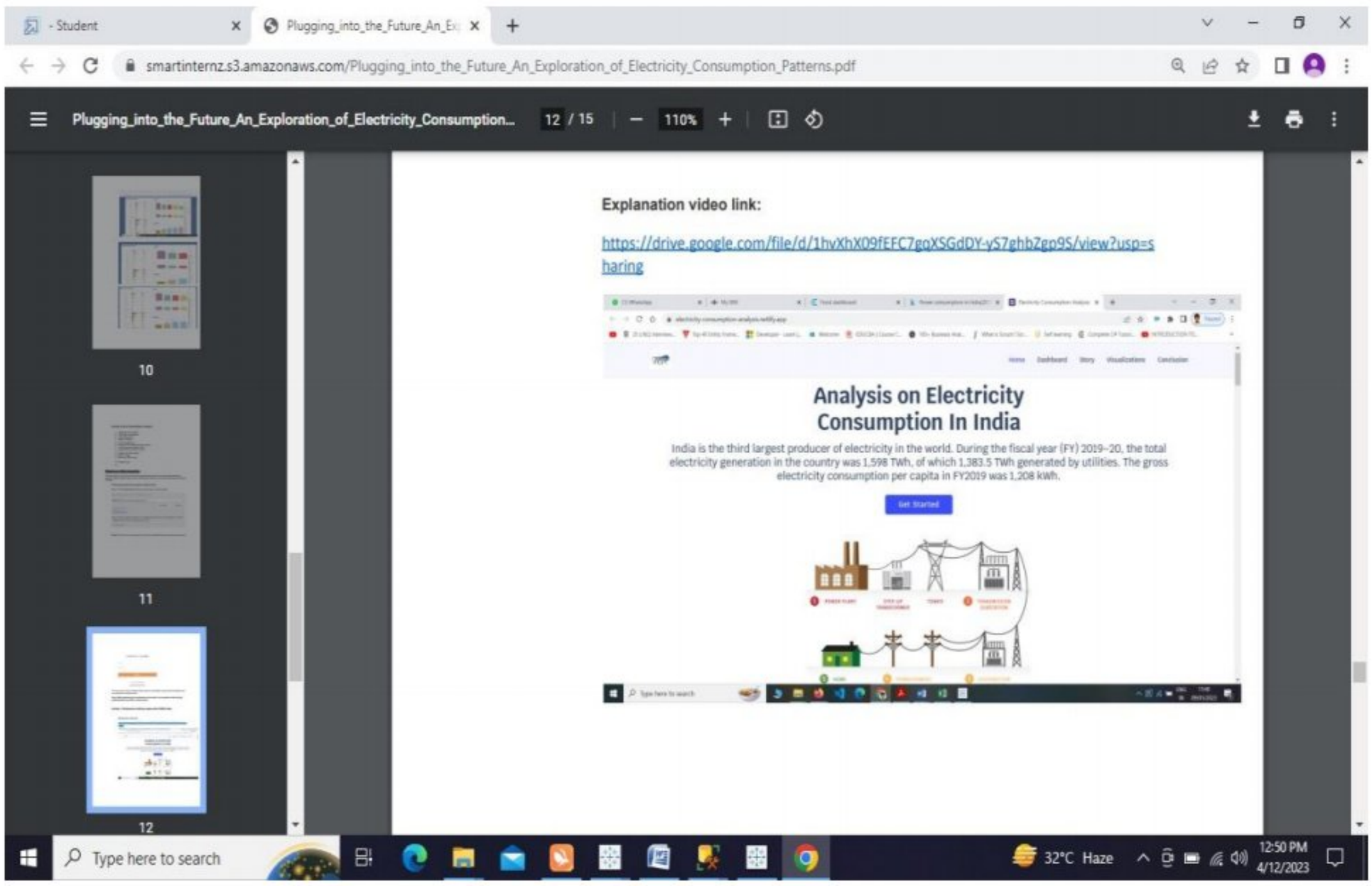
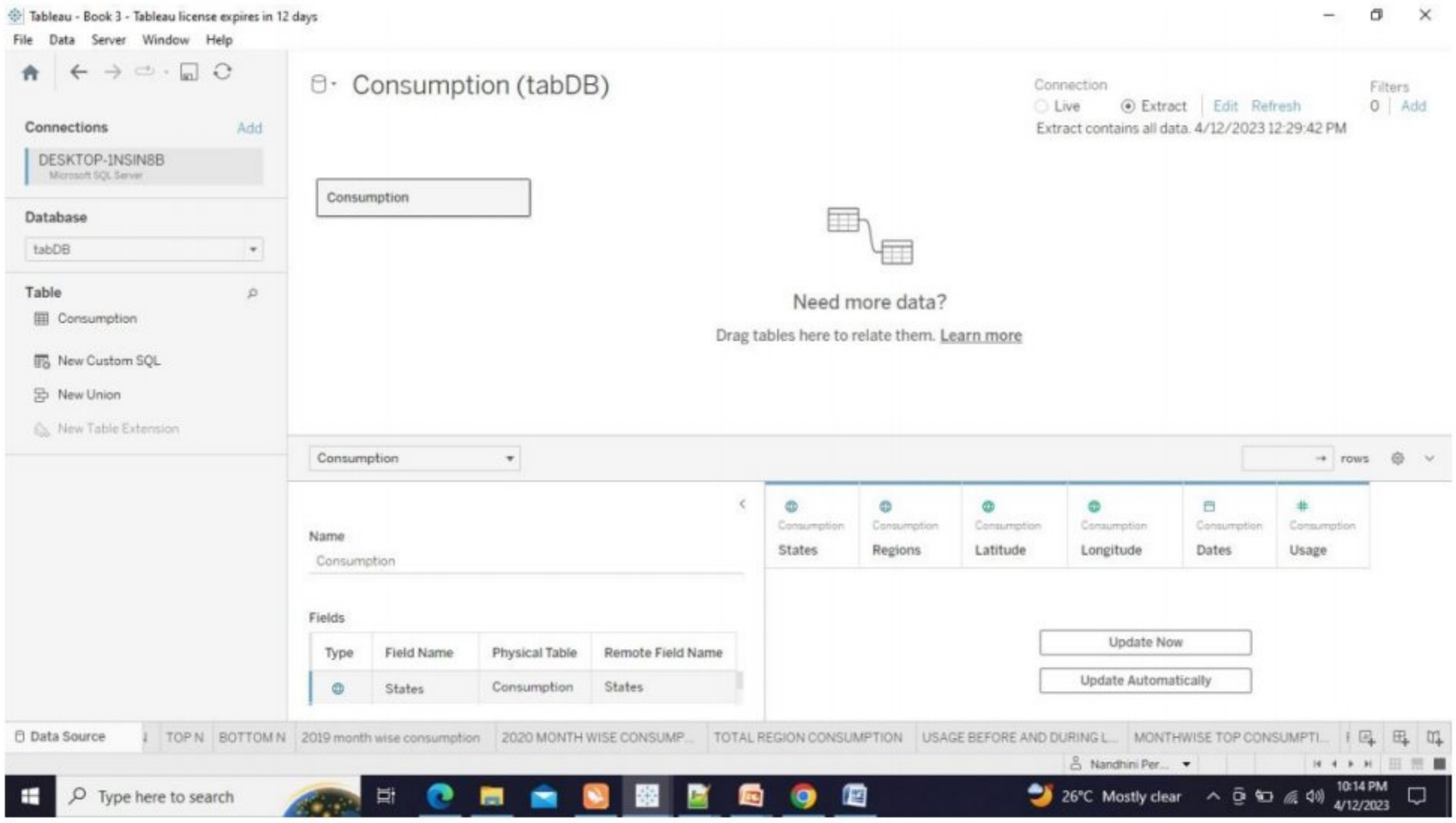


SUM... | QUARTER WISE USAGE | USAGE BY YEAR | METRO CITY STATES | YEAR WISE CONSUMPTION IN ... | Dashboard 1 | Dashboard 2 | Dashboard 3 | STORY ON ELECTRICITY C... | Story 2







4.ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

Electric power has many advantages domestically and industrially, as most of the equipment run by electric power. Brightness in the night is only possible by the use of electricity. Almost all the factories and industries are running due to electric power. The advantage of electric power is its reliable and uninterrupted supply runs the equipment efficiently and continuously. The transportation of electricity is easy once the transmission lines are functional. They work for years and need no or very less maintenance. The invention of electric power is one of the best inventions which have changed human life drastically. It allows people to do more leisure activities.

DISADVANTAGES:

In the conventional system to generate electric power, coal is burnt to generate heat which boils the water to produce steam. The steam produced is used to run the turbines which in turn generate the electricity. This is a very old method to generate electricity which produces too much air pollution as a by-product. Due to the burning of coal, carbon monoxide, carbon dioxide, different oxides of sulphur and nitrogen are pumped into the atmosphere which pollutes it badly. As carbon dioxide is the greenhouse gas and its excessive presence in the atmosphere raises the earth's temperature.

Distribution of electric power is in two types of current, AC and DC. Alternating current is 3 to 4 times more dangerous as compared to direct current. It causes more muscle contraction as it reduces skin resistance by stimulating sweating

5. APPLICATIONS

USES OF ELECTRICITY

- Electricity's importance in our daily lives is obvious. Electricity is used in many aspects of our daily lives, including:
- Working efficiently in our own apartment.
- Working in our office.
- At work, we use electricity to connect to data sources like fibre and LAN.
- The amount of electricity used to supply water to our house, for example.
- A wide variety of things can be done with electricity, electrical energy, and applications in various fields.

1. USES OF ELECTRICITY IN ENTERTAINMENT

Modern forms of entertainment, such as listening to music on MP3 players, watching TV, and watching movies on DVDs or VCDs or VCRs, all depend on electricity.

2. USES OF ELECTRICITY IN HEALTHCARE

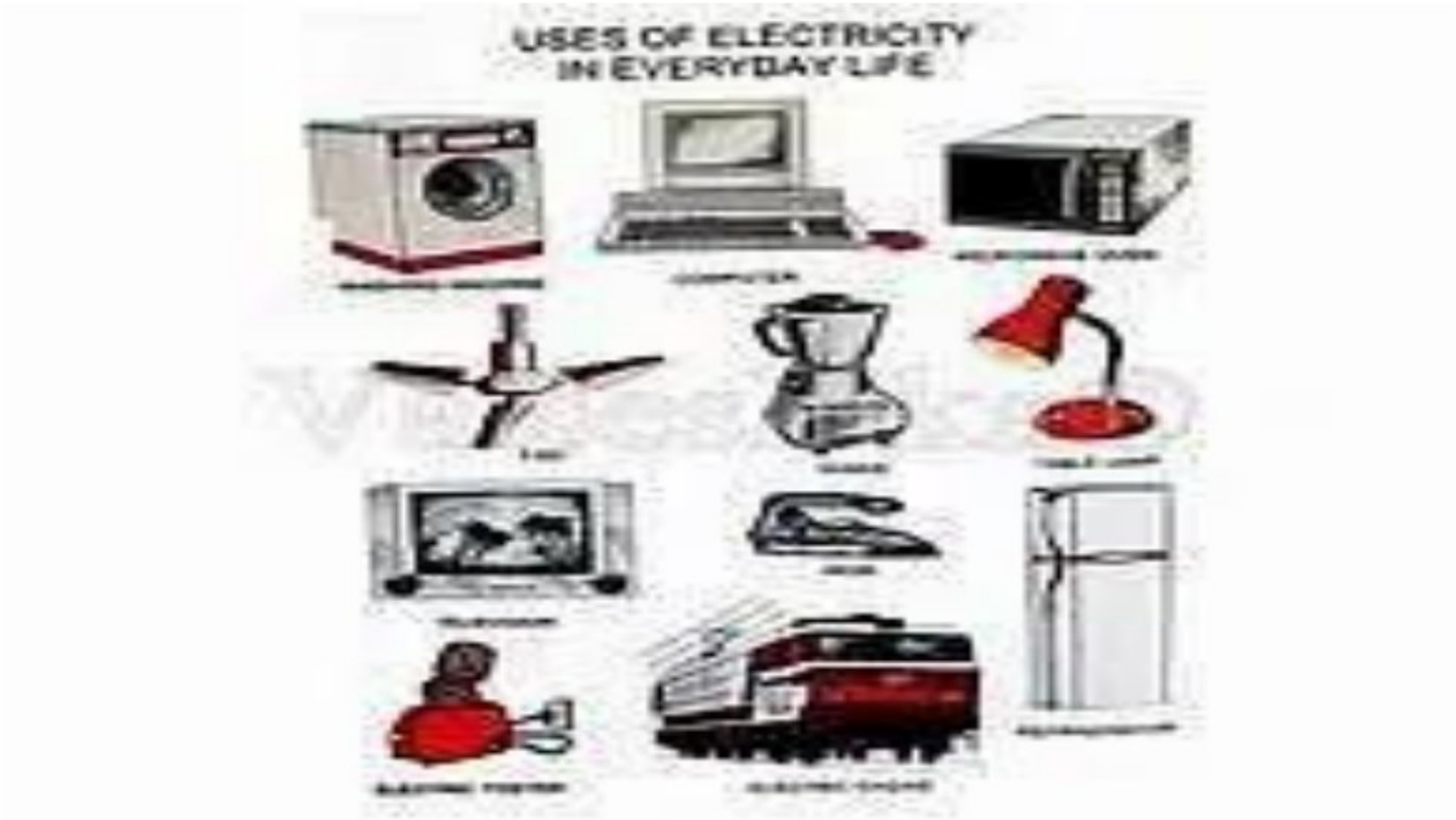
Every day, we see electricity being used to power various modern devices. Electricity is required to begin these surgical procedures. Doctors, for example, require a powerful light during an operation on a patient, and the light will not work without electricity, and the operation may be fatal.

3. USES OF ELECTRICITY AS FUEL

Electrical energy falls under the category of renewable energy and can be generated with the help of nearly all of the natural resources at our disposal. Things that used to run on fossil fuels, like cars and bikes, are now powered by electricity (like solar panels), making them more convenient in the future.

4. USES OF ELECTRICITY IN SPACE

Electricity powers the satellites and probes launched into space by the United States and other countries. A generator or battery power is used to generate the electricity. Electricity was essential to the Apollo program's goal of landing men on the moon.



- **RESIDENTIAL USES**

From the most basic to the most complex, electricity is used by a wide range of household appliances and objects. Small household appliances like a coffee maker, dishwasher, and microwave are included, as are larger electrical appliances like air conditioners, refrigerators, electric heaters, and washers and dryers. To summarise, electricity powers your entire home's lighting system.

- **TRANSPORTATION USES**

According to the most recent information, the global transportation system is entirely reliant on the use of electrical energy, whether travelling from one location to another or even communicating across the globe is only possible thanks to electricity.Electric vehicles, which consume a large amount of electricity, are widely used by the general public (electric scooters, e-rickshaw).The batteries in automobiles are recharged using electricity. Metros serve as an alternative to railway systems that are dependent on fuel.

- **INDUSTRIAL USES**

Today's industrial sector is a major user of electricity.It would have been impossible to run factories, industrial units, manufacturing processes, and a wide range of other activities without electricity.Sudden power outages have been found to cause significant financial losses for the businesses that depend on these plants and industrial units. Industrial electricity consumption has recently risen rapidly, and this trend is expected to continue in the coming years.Many industries are working to build their own power plants so they don't have to rely on outside sources of electricity.

6.CONCLUSION

In this section, we covered different ways to create calculated fields in Tableau as well as different types of calculated fields: basic, table calculations, and level of detail calculations. Our data sources will not have all the possible fields we want to use in our analysis. Calculated fields allow us to derive values based on logic and expressions; they ultimately add more flexibility and drive more insights into our Tableau dashboards. As we conclude our brief study on data visualization, it is clear that the field is rich in potential applications in diverse disciplines, at the same time we need to be aware of its practical and ethical complexities. In the previous chapters, we have presented some important theoretical and practical principles to keep in mind when designing a data visualization. We have also discussed and critiqued several examples of data visualizations, learning common pitfalls and helpful tricks along the way. As we have seen, developing an effective and ethical data visualization is a complex process. In this chapter we will touch upon the future of data visualization and additional resources for data visualizers.

7.FUTURE SCOPE

In the **Stated Policies Scenario**, global electricity demand grows at 2.1% per year to 2040, twice the rate of primary energy demand. This raises electricity's share in total final energy consumption from 19% in 2018 to 24% in 2040. Electricity demand growth is set to be particularly strong in developing economies. Government policies, market conditions and available technologies collectively set a course for electricity supply to shift towards low-carbon sources, with their share increasing from 36% today to 52% in 2040 in the Stated Policies Scenario.

In the **Sustainable Development Scenario** electricity plays an even larger role, reaching 31% of final energy consumption. In the Sustainable Development Scenario, electricity is one of the few energy sources that sees growing consumption in 2040 – mainly due to electric vehicles – alongside the direct use of renewables, and hydrogen. The share of electricity in final consumption, less than half that of oil today, overtakes oil by 2040. Accelerated efforts on renewables, nuclear power and carbon capture technologies rapidly decarbonise electricity supply, compensating for the sharp decline of coal-fired power generation and reducing power sector CO_2 emissions by three-quarters by 2040.

8.APPENDIX