THE US HOUSING MARKET PROJECT

PROBLEM STATEMENT

Find publicly available data for key factors that influence US home prices nationally. Then, build a data science model that explains how these factors impacted home prices over the last 20 years. Use the S&P Case-Schiller Home Price Index as a proxy for home prices: fred.stlouisfed.org/series/CSUSHPISA

FACTORS AFFECTING THE HOUSING MARKET

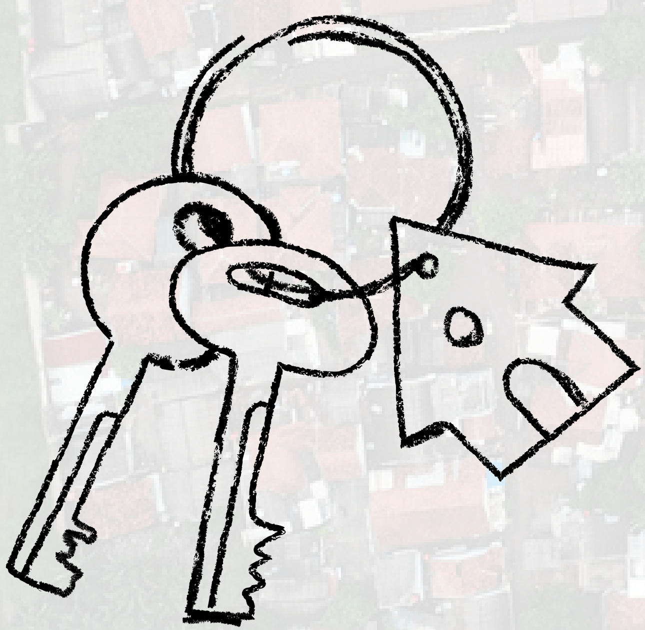
There are multiple factors that have influenced the US housing market over the last 20 years and below are all the factors that have influenced the US housing market.

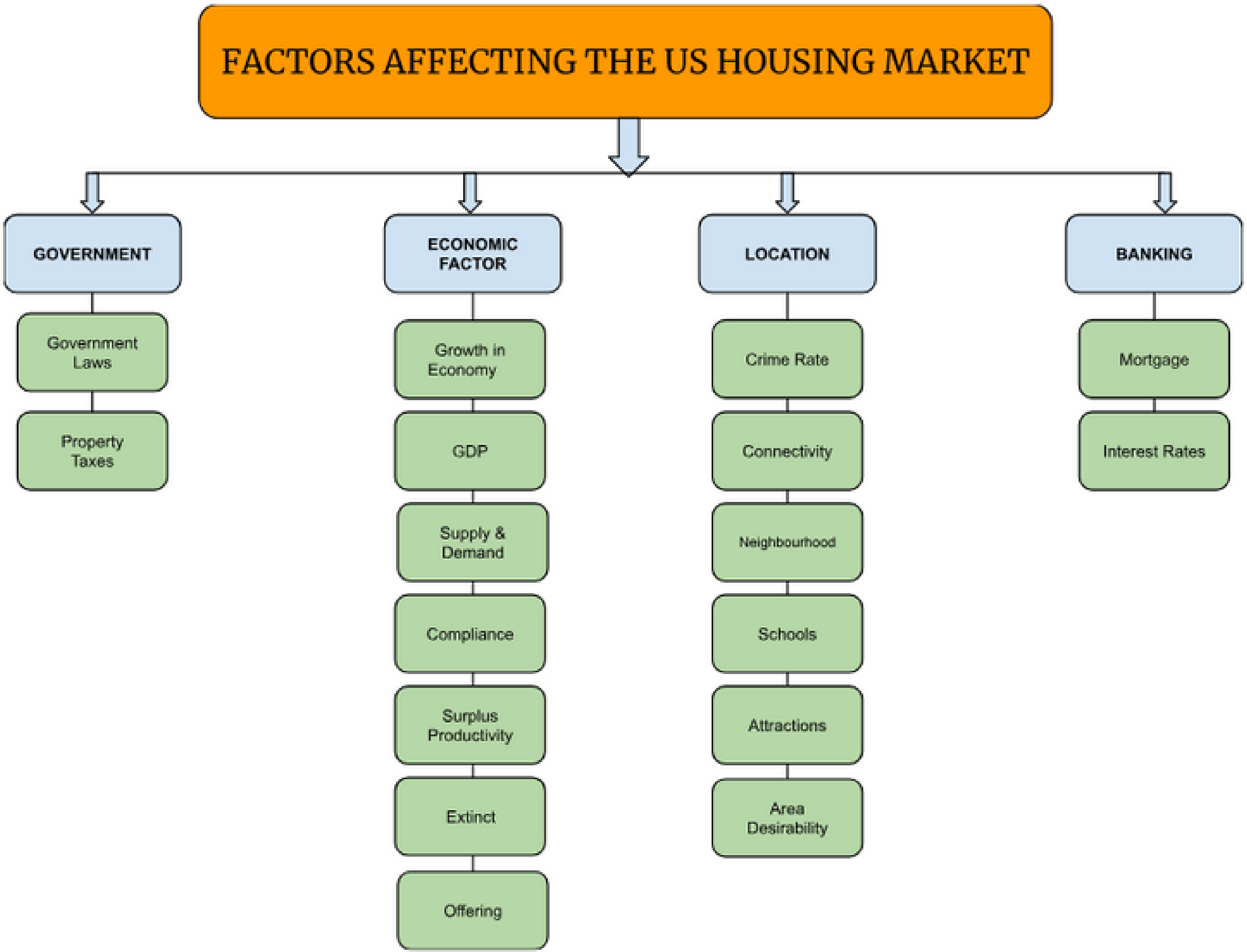
- **Governments Laws**- Government policies can impact home prices in significant ways. One avenue is through mortgage interest tax deductions, currently applicable for loans under $750,000, incentivizing homebuyers and potentially raising prices. Additionally, tariffs on imported construction materials like steel, aluminum, and lumber can increase building costs, thereby influencing housing prices.
- **Desirability Of The Area-** Local housing markets can deviate from national trends. Even when national prices fall, your neighborhood may see an increase due to factors like desirability, such as being in a sought-after school district or trendy area.
- **Location Of The Home-** A house in a remote location might be inexpensive initially, but it may not yield a profit upon resale. On the contrary, a home in a desirable area is likely to appreciate in value or, at the very least, maintain its value effectively.
- **Surplus Productivity**- The difference between cost and sale price represents the profit gained after assembling property, workforce, resources, and teamwork to create and sell a house. Economists term this surplus productivity as money.

- **GDP**- GDP is the total value of goods and services in a country. In the US, rising GDP is linked to higher house prices, while falling GDP is associated with lower house prices.
- **Mortgage-** During economic boom periods, banks are often eager to offer mortgages, allowing individuals to borrow substantial amounts, such as five times their income. Moreover, banks may provide mortgages with minimal deposits, covering 100% of the property's value
- **Property Taxes-** Property taxes fluctuate based on location and various factors, including local housing prices, town debts, and contributions from local businesses.
- **Advance**- Property values, shaped by potential benefits, generally appreciate over time. Buying a home now can lead to substantial value growth due to factors like physical, political, economic, and social changes.
- **Competition**- Property values, driven by potential benefits, typically appreciate over time. Purchasing a home now can result in significant value growth influenced by factors such as physical, political, economic, and social changes.
- **Crime Rate**- The crime rate significantly influences house prices in the US. Areas with high crime rates tend to have lower housing prices as people are less inclined to live there. Conversely, areas with low crime rates are preferred, leading to higher house prices.
- **Extinct**- Real estate, being fixed in location, is influenced by its surroundings. Factors like the presence of a nearby gas station, school quality, factory closures in the town, mortgage interest rates, and more all play a role in determining the value of homes.

- **Compliance**- Value is created and sustained in similar contexts. Placing an office building across the street from your house in a neighborhood of single-family homes can negatively impact your house's value due to the inconsistency in land use.
- **Supply & Demand-** The housing market operates under the economic laws of supply and demand. When there are more buyers than sellers, the supply of houses decreases, driving up demand and making houses more challenging to purchase and more expensive.
- **Customer Trust-** Confidence plays a crucial role when individuals consider taking out a mortgage, especially in relation to housing market expectations. If people anticipate a decline in house prices, they are likely to delay purchasing due to the perceived risk.
- **Interest Rates**- Interest rates affect monthly mortgage payments. High rates increase costs, lowering demand for home purchases and making renting more attractive. Homeowners with high adjustable mortgage rates are especially impacted.
- **Offerings**- In real estate, competition arises as the supply side meets demand until equilibrium. For instance, a developer might identify a demand for a new office building in a specific location.
- **Home Sales Economy Mirror**- Home sales are linked to economic stability. Economic slowdowns limit cash supplies, making it harder for buyers. Increased housing inventories and stricter credit standards can lead to lower prices due to higher supply and lower demand.

- **Economical Growth**- In real estate, competition arises as supply meets demand until equilibrium. For instance, a developer might recognize demand for a new office building in a specific location. Home sales closely mirror economic stability, with economic slowdowns limiting cash supplies, challenging buyers. This can lead to increased housing inventories and stricter credit standards, resulting in lower prices due to higher supply and lower demand.
- **Unemployment -** In real estate, competition arises as supply meets demand. For example, a developer identifying demand for a new office building reflects this dynamic. Home sales reflect economic stability, and during economic slowdowns, limited cash supplies can lead to increased housing inventories and stricter credit standards, causing lower prices due to higher supply and lower demand.



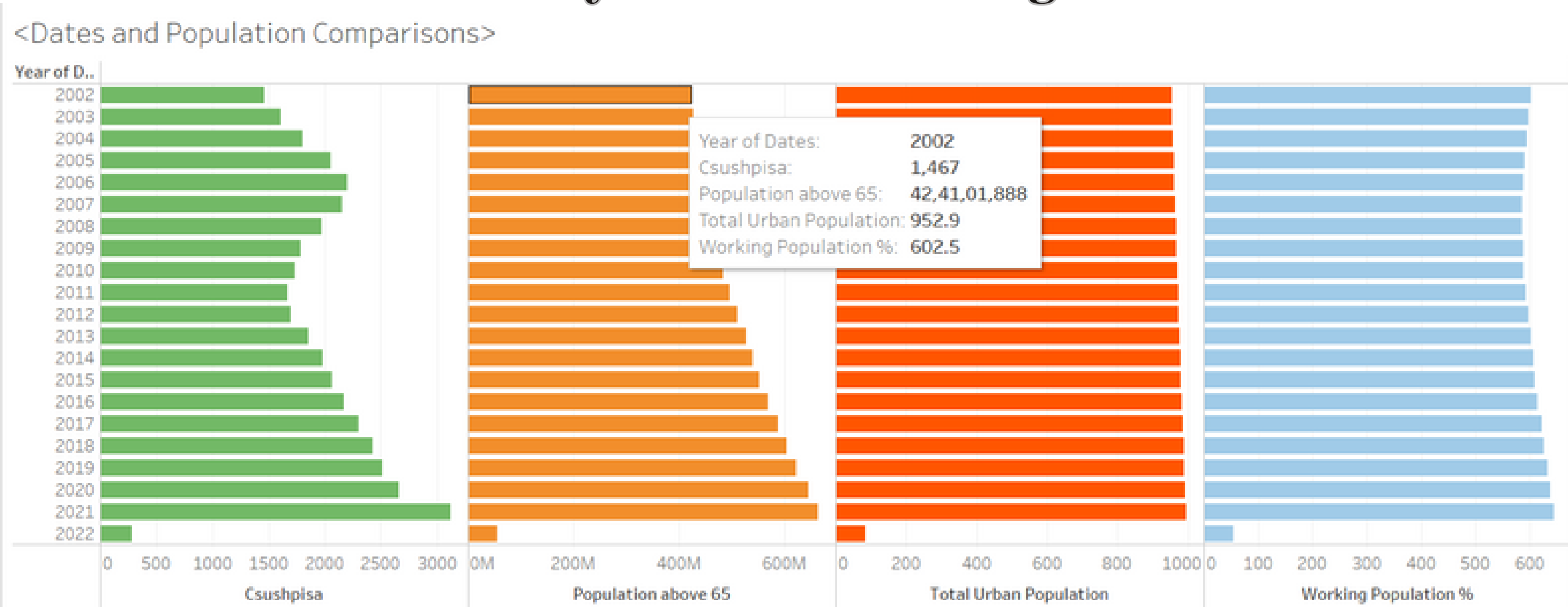

FACTORS AFFECTING THE US HOUSING MARKET
GOVERNMENT
Government Laws
Property Taxes
ECONOMIC FACTOR
Growth in Economy
GDP
Supply & Demand
Compliance
Surplus Productivity
Extinct
Offering
LOCATION
Crime Rate
Connectivity
Neighbourhood
Schools
Attractions
Area Desirability
BANKING
Mortgage
Interest Rates

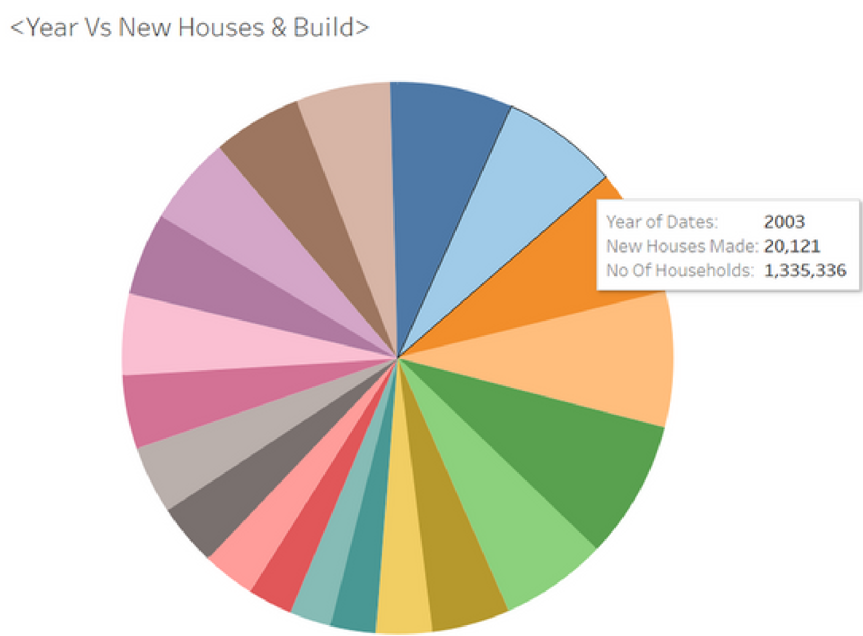
Two notebooks are made in the next step,

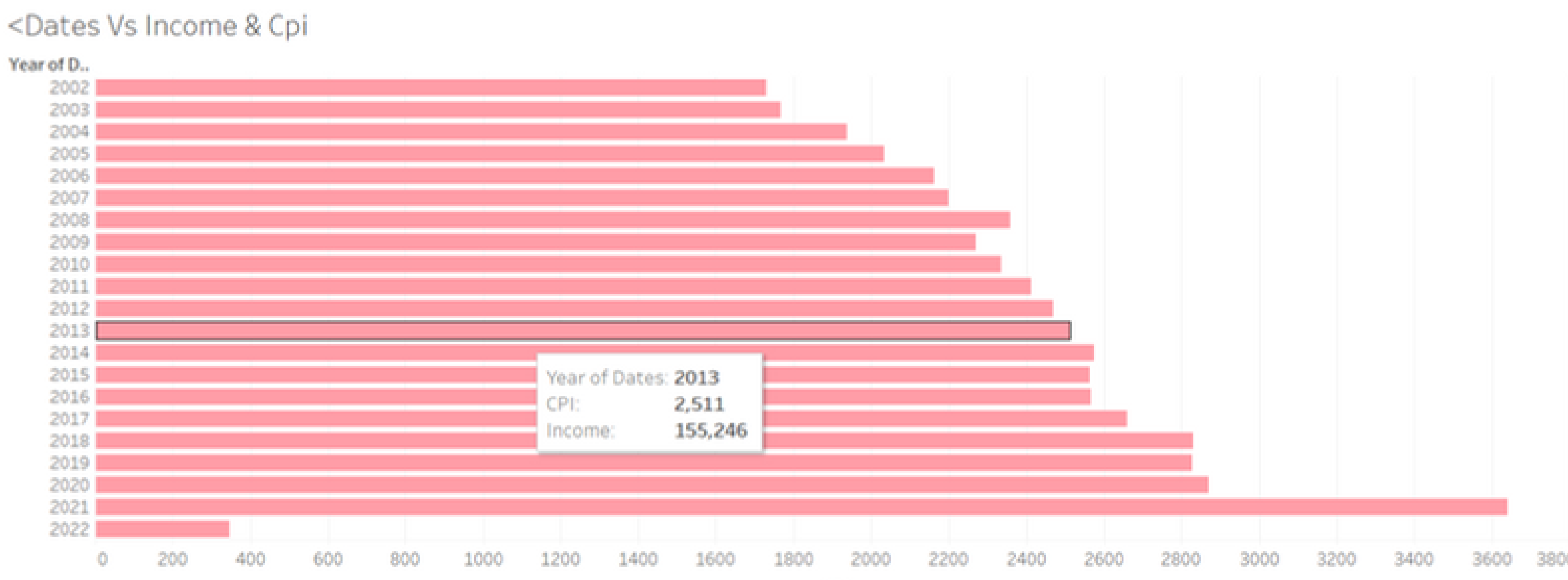
Notebook 1 - In this particular notebook we took in multiple factors and found datasets from some research online. then after collecting these datasets we refined them and concatenated all the datasets together and made one large dataset that would be used in the model building.

Notebook 2 - Then in this particular notebook we took the newly made dataset then we have to remove some values that are not required and then run a linear regression model on it and then get the desired output. Linear regression is used to predict a desired output depending on another given values.

Visual Analysis of Factors Using Tableau



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Income: 155,246
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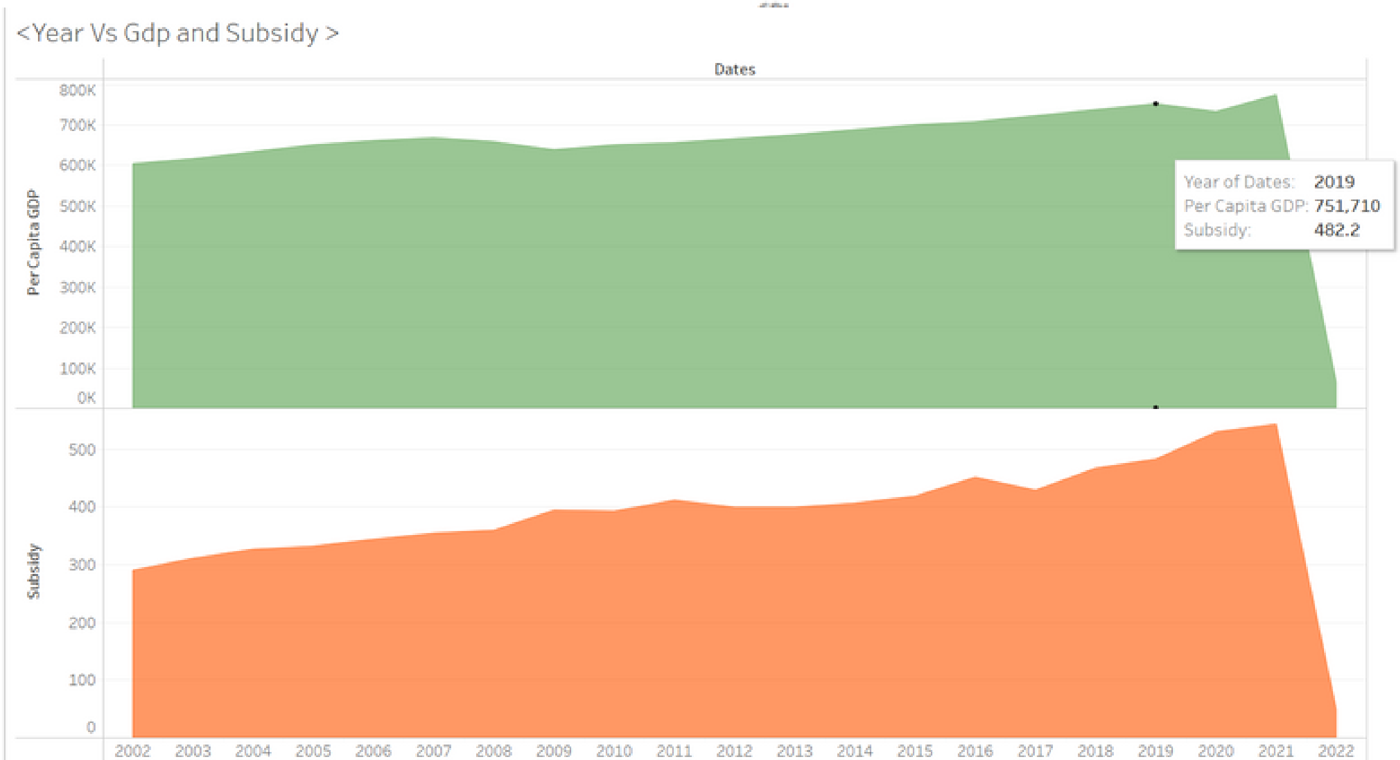
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500K
400K
300K
200K
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Per Capita GDP: 751,710
Subsidy: 482.2
Subsidy
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THANK
YOU