#### Title: Impact of Recession and Covid-19 on Real Estate and Economic Indicators

**Executive Summary :**The report presents a detailed analysis of two major phenomena that occurred in the last 2 decades which is the Great Recession and the Covid-19 SARS coronavirus pandemic and the way they have impacted a few of the major indicators in the housing market and some economic indicators. This comparative study is informed and analyzed based on real estate parameters like the Zillow Home Value Index, Home Ownership Rates, Home Vacancy rate, rental vacancy rate, House price index, and economic indicators with a combination of some Macroeconomic indicators like Median Household income, Per Capita Income, Unemployment rate, state tax collection, Labor force participation, Persons employed and micro-economic indicators like Employed persons, etc.

Real estate indicators can be viewed from both macroeconomic and microeconomic perspectives as they reflect the overall health of the real estate market (a macroeconomic view) and the decisions of individual households or real estate companies (a microeconomic view). Individual visualizations were constructed to depict each parameter, including color-graded maps, bar graphs, line charts, and area graphs. These visualizations are then coalesced into comprehensive dashboards that articulate the narrative of economic and real estate trends across the selected states.

Data was meticulously collected and processed from multiple sources, ensuring uniformity in units for accurate temporal and spatial comparisons. The datasets encompassed variables measured both before and after the events, facilitating a robust examination of trends and shifts.

Real Estate and Economic Indicators were selected as the dimensions of focus to highlight the differential impacts of the Great Recession and the COVID-19 pandemic. The analysis considered data from three demographically distinct U.S. states to underline the varied effects of these events.

**Basis for selecting States:**

1. Florida: Florida has a blend of population consisting of retirees, substantial immigration and varied demographics which tends to influence the real estate sector and the economy heavily. Its economy provides insights into how different sectors respond to economic shocks. Also, Florida's susceptibility to hurricanes can affect economic stability and real estate values, offering a perspective on how natural disasters compound economic events.

2. North Carolina: North Carolina has seen growth in tech and research sectors, particularly in the Research Triangle Park, which has been a bellwether for emerging market responses to economic events. The presence of many universities can create a stable demand for housing and influence economic resilience. The state has a balanced mix of traditional manufacturing and modern service industries, which react differently to economic stresses.

3. California: Economic Size and Influence: As one of the largest economies in the world, California's economic trends can have significant national and global implications. Home to Silicon Valley, California's economy is heavily influenced by the tech industry, which has unique responses to economic downturns and recoveries. California has some of the most expensive real estate in the country, and its market dynamics are complex, with significant variances between urban and rural areas.

4. Texas: Texas has experienced rapid population growth and urbanization, impacting housing demand and economic development. With a reputation for low regulation and taxes, Texas attracts diverse businesses and can serve as a contrast to states with different regulatory environments.

**Insights:**  
1) Impact of Recession and Covid-19 on Real Estate:

* While the sale of brand-new houses varied considerably, with observable changes in sales both in volume and price ranges during the pre-Covid, COVID-19, and post-Covid eras, the average homeownership rate nationwide is still very steady.
* The Great Recession had a major adverse effect on several aspects of the housing market, as demonstrated by the evident decline in the House Price Index, an increase in rental and home vacancy rates, the decline in the Zillow Home Value Index, and the decline in homeownership rates in the states which were included.
* The impact of the COVID-19 pandemic on real estate markets differed by state, as shown by these visualizations, which also illustrate variations in homeownership rates during the epidemic along with increases in property prices and rental vacancy rates.
* It demonstrates how different regions’ local housing service expenses and homeownership rates have been affected by both the Great Recession and COVID-19, with some obvious patterns being expanding service prices in California and changing homeownership rates, especially in Texas and North Carolina.
* These additionally show how the Great Crisis and COVID-19 altered the dynamics of the housing market, with sales of lower-priced homes declining significantly during the crisis and rising throughout higher price ranges following COVID.

2) Insights for Impact of Recession and Covid-19 on Economic Indicators:

* The visualization illustrates the link between homeownership and unemployment rates across various states, indicating that regions with higher levels of unemployment often have lower homeownership rates.
* The illustration also shows that though state minimum salaries had usually risen over time, jobs fell sharply during the Great Recession and COVID-19, with a noticeable recovery period following COVID.
* It implies that all through the Great Recession and COVID-19, state revenue from taxes and labor force participation rates varied significantly, indicating the economic stress and recovery trends in the chosen states.
* The visual representation also demonstrates how the COVID-19 pandemic and the Great Recession both had a discernible effect on median household and per capita personal income, with both usually falling during the recessions and beginning to recover in the post-recession and post-COVID periods.

**Extra Credits:**  
**1) Leading and Lagging indicators:  
Insight:** The corresponding graphic shows how, during the recession and COVID-19, housing values and market activity deviated from overall trends in economic prices. It does that by comparing the Zillow Home Value Index with the Consumer Price Index and the House Price Index with New Houses Sold.

**2) Differential Impact:  
Insight:** The illustration shows that while gains in the Zillow Home Value Index come before rises in the state minimum wage, indicating predictive leading indicators, unemployment rates rise as state tax receipts decline, illustrating lagging economic health.  
**Data Sources:**

1. Various parameters like HPI, Unemployment rate by state, State tax collection, etc. from: <https://fred.stlouisfed.org/series/caucsfrcondosmsamid>
2. Unemployment by gender: <https://www.kaggle.com/datasets/asaniczka/unemployment-rates-by-demographics-1978-2023>
3. Home Ownership rate by city and state: 1. <https://www.propertyshark.com/info/us-homeownership-rates-by-state-and-city/#homeownership-by-state>  
   2. <https://www.rubyhome.com/blog/homeownership-stats/#home-ownership-by-state>
4. House Value Index from Zillow: <https://www.zillow.com/research/data/>