Recession Proof Real Estate

What US Real Estate Markets are Recession Proof?

The Great Recession of 2007-2009

Which states were impacted the most and least?

Why did housing values in some states decrease more than others?

Why did some states recover faster?

Presented by: Joanne Jankowski
Contact: joanne@DataByDesign.ai

About the Great Recession of 2007-2009

What Happened?

1) The Great Recession was the longest economic downturn since World War II.

2) The official start of the Recession was December 2007 and the end was June 2009. Though June 2009 marks the point when the economy began to recover, unemployment and economic challenges persisted for several years.

..

What Factors Contributed to its Severity?

1) **Economic Contraction** - Decreased Gross Domestic Product (GDP). Some states saw a greater loss in GDP depending on its Primary Industry (Energy or Real Estate)

2) **Increased Unemployment** - Job loss increased mortgage delinquency, increasing foreclosures and further impacting Home Values

..

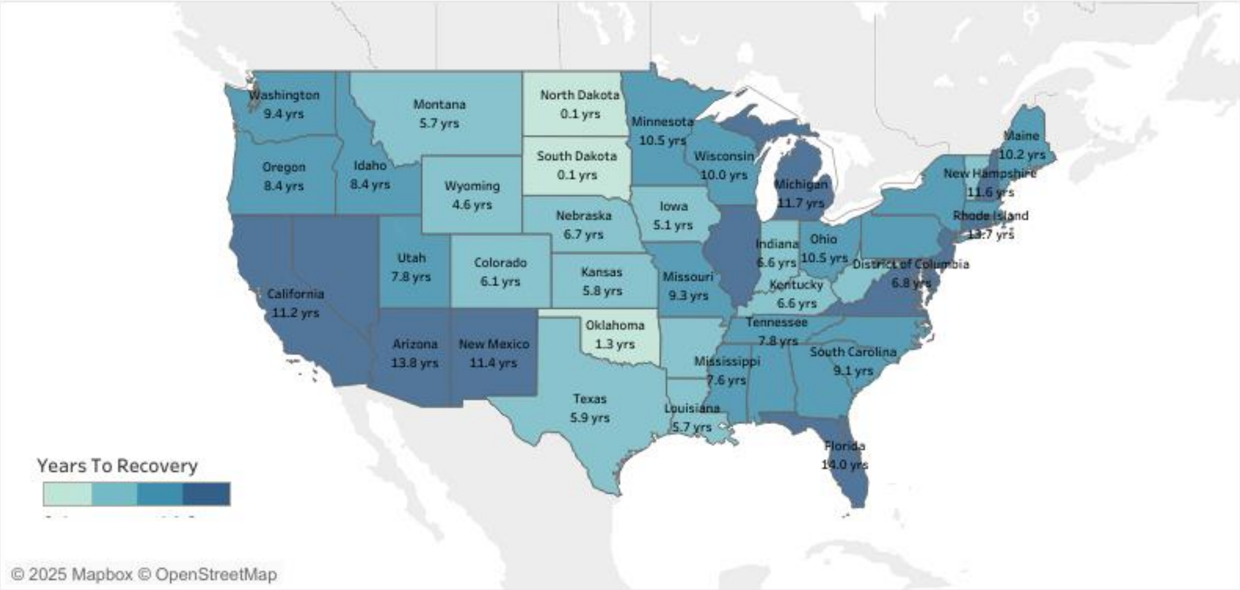
Timeline of the Great Recession

Recession Proof Real Estate

Two Metrics were used to Measure Impact of the 2007-2009 Great Recession:

Years to Recovery

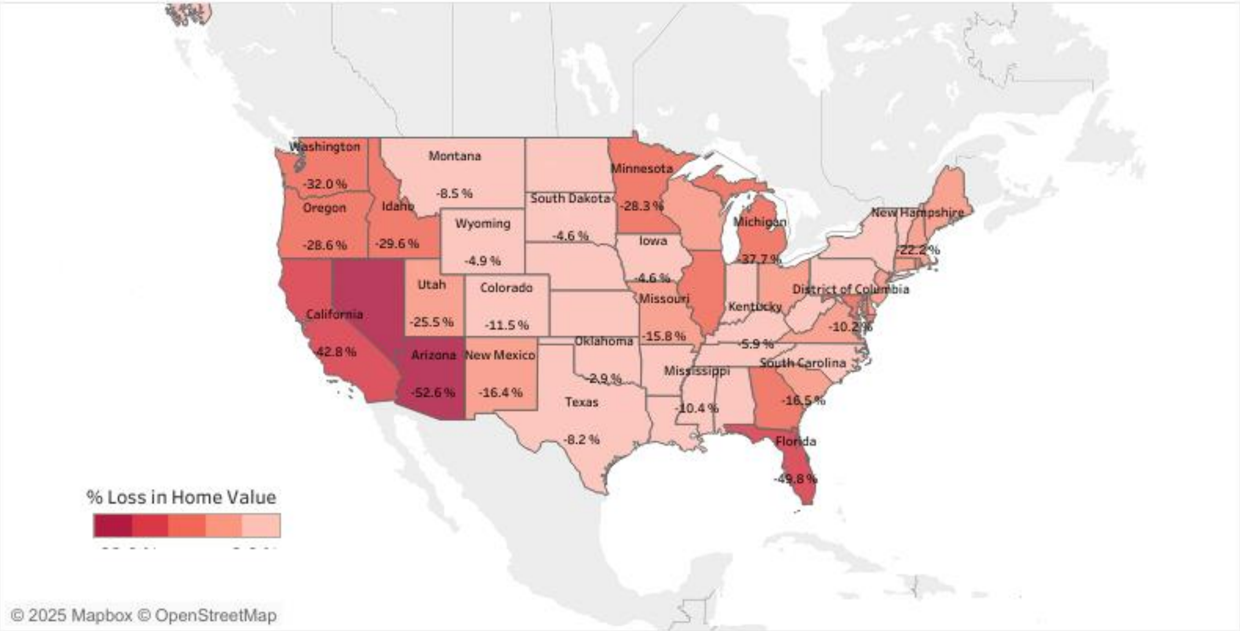
This metric measures the time it took for a home to regain its pre-recession value after the downturn. It is calculated as the duration between the start of a home's decline in value during the recession and the point when it returned to its pre-recession value (early 2007).
The shortest recovery time was 0.1 year (North Dakota), while the longest recovery spanned 14.7 years (Nevada).



Percent Loss in Home Value

This metric represents the maximum percentage decline in a home's value during the recession. The metric reflects the extent of value lost before the home recovered to its pre-recession level. Loss in Home Value ranged from -62% Loss in Nevada to -2.9% in Oklaohma. It is calculated as:

(Home's Lowest Value During the Recession - Home's Pre-Recession Value) ÷ Home's Pre-Recession Value x 100



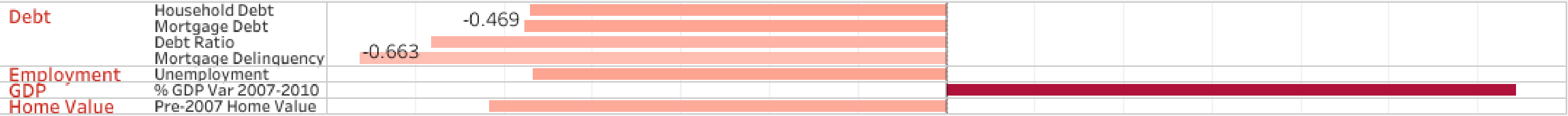
Recession Proof Real Estate

Key Factors in a State's Recovery from the Recession: GDP, Household Debt and Unemployment

Using regression analysis and correlation studies of our two recession impact metrics against various economic indicators, three primary factors emerge as key influencers of the recession's effects. **GDP** is the most significant factor, showing a correlation of **0.643** with home value loss and **-0.602** with recovery time. **Debt** is the second most impactful indicator, with mortgage delinquency correlating at **-0.663** with home value loss and **0.636** with recovery time.

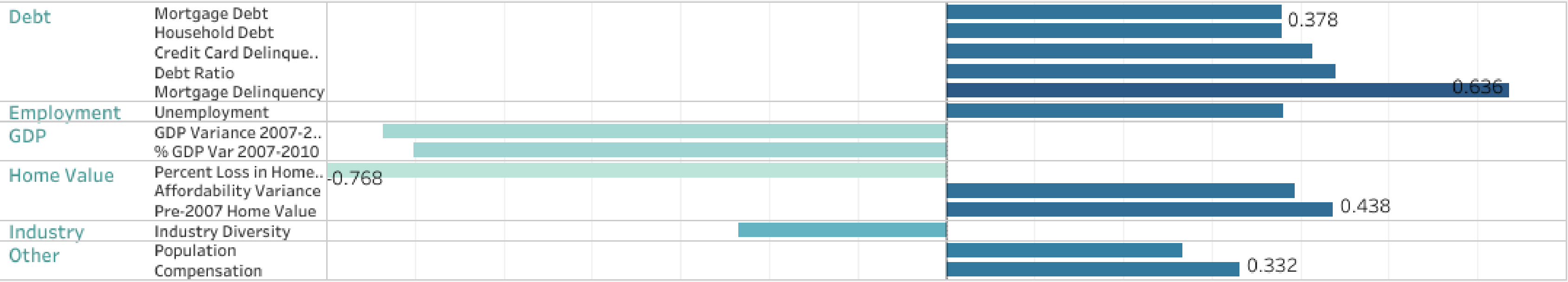
Economic Factors with High Correlation to Loss in Home Value

Correlation values |>= 0.300| are considered significant. Here we see again that Debt, Employment, GDP and Pre-Recession Home Value have a significant impact to the Loss in Home Value during the Recession.



Economic Factors with High Correlation to Recovery Time

Correlation values |>= 0.300| are considered significant. Here we see that Debt, Employment and Pre-Recession Home Value have a positive correlation to recovery time: the more debt or higher unemployment rate, the longer the recovery time. Conversely, GDP and the % Loss in Home Value have a significant negative correlation: Decrease in GDP increased the time to Recovery.



Linear Regression Results for Loss in Home Value

Economic Variables with a P-Value < .001 are considered significant. From this analysis we can see that GDP, Debt and Unemployment are Primary Factors in Loss in Home Value during the Recession. R-Squared identifies the % that the variable has on Loss in Home Value

	P-Value	R-Squared	RMSE
Variance GDP 200..	0.0000	0.4440	10.29
Mortgage Delinqu..	0.0000	0.4390	[illegible]
Percent Variance G..	0.0000	0.4140	10.55
Debt Ratio	0.0000	[illegible]	[illegible]
Pre-Recession Value	0.0001	0.2660	[illegible]
Mortgage Debt	0.0004	0.2270	12.14
Total Debt	0.0005	[illegible]	[illegible]
Unemployment Ra..	[illegible]	[illegible]	[illegible]
Population	[illegible]	0.1020	13.08
Compensation	[illegible]	[illegible]	13.40
Industry Diversity	0.6980	0.0030	13.78

Linear Regression Results for Recovery Time

Economic Variables with a P-Value < .001 are considered significant. From this analysis we can see that GDP, Debt and Pre-Recession Home Value are Primary Factors in the duration of the recovery period. R-Squared identifies the % that the variable has on Recovery Time

	P-Value	R-Squared	RMSE
Variance GDP 2007-2010	0.0000	0.4050	2.92
Mortgage Delinquency	0.0000	0.4050	2.92
Percent Variance GDP	0.0000	0.3620	3.03
Debt Ratio	0.0012	0.1940	3.40
Pre-Recession Value	0.0013	0.1910	3.41
Unemployment Rate	0.0058	0.1450	3.50
Total Debt	0.0060	0.1440	3.50
Mortgage Debt	0.0062	0.1430	3.51
Compensation	0.0173	0.1100	3.57
Population	[illegible]	[illegible]	3.65
Industry Diversity Index	0.0976	0.0550	3.68

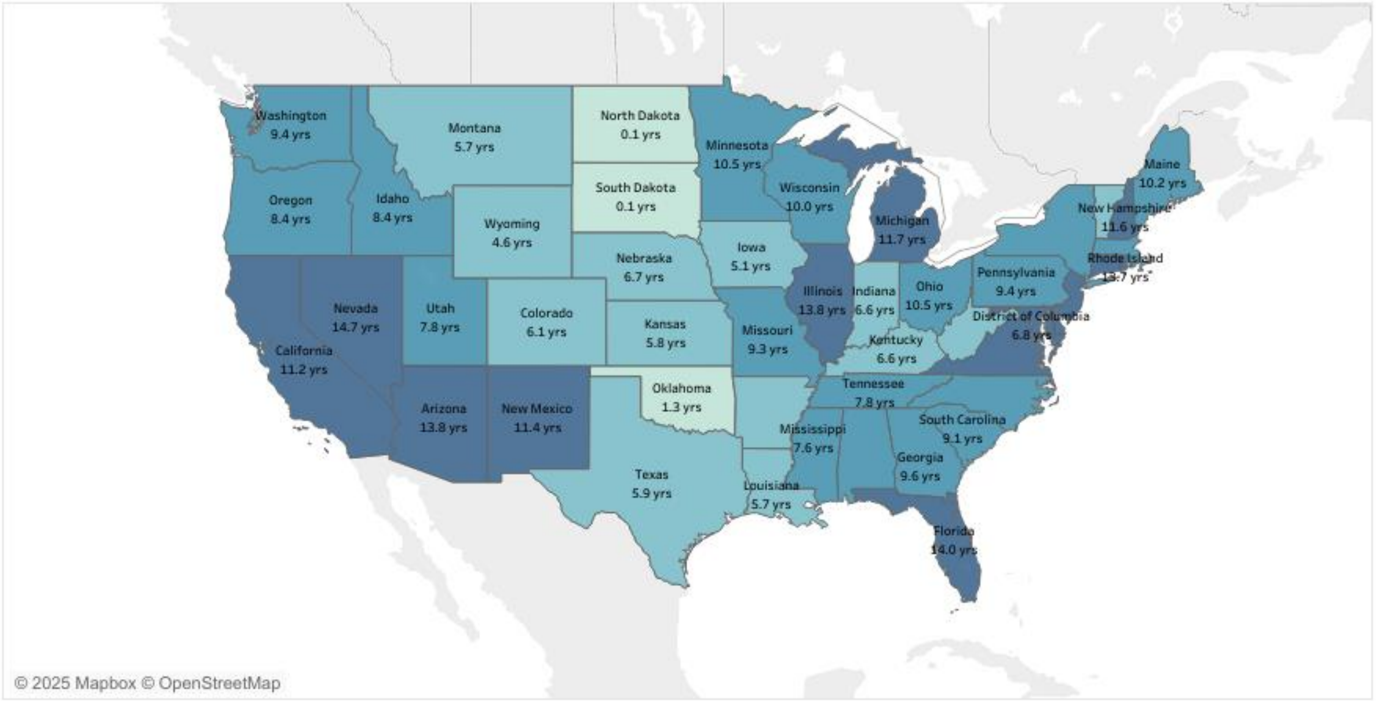
Recession Proof Real Estate

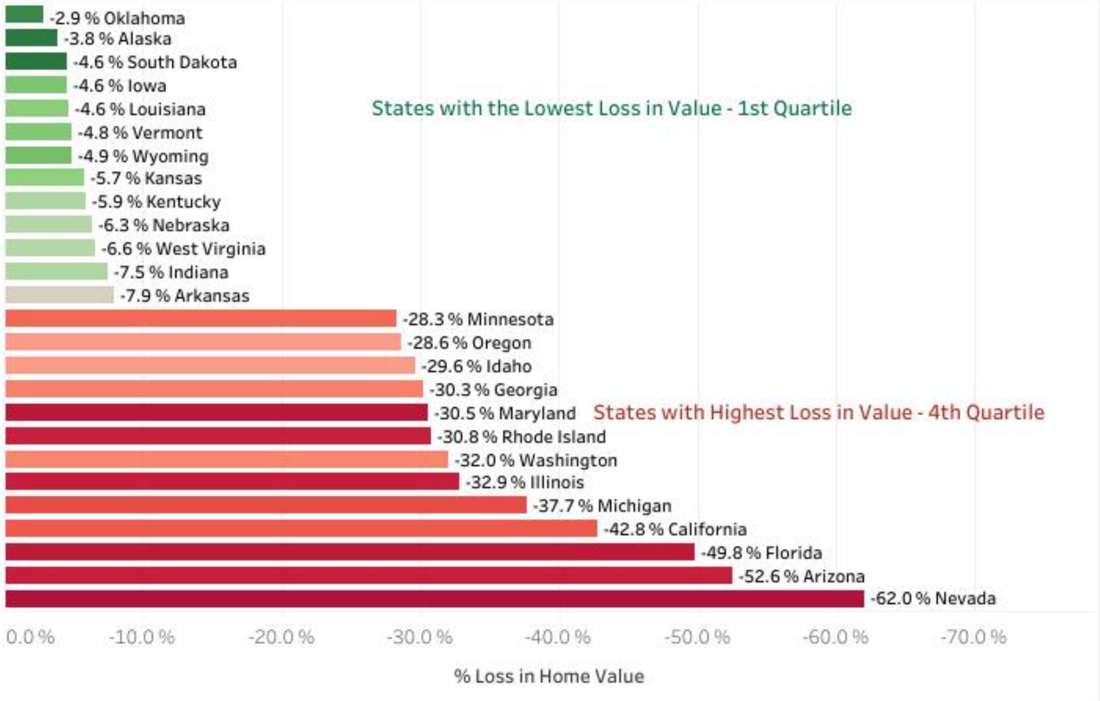
Introduction	About the Great Recession	Overview	Primary Economic Factors	Geographic Impact	Primary Industry Impact on Recession	Economic Factors	GDP	Debt Overview	Debt Detail	Unemployment

Regional Impact - States with Energy as a Primary Industry saw less impact from the Recession than States in other Industries

Midwest States saw an average time to recovery of 4.5 years, while states in coastal areas (primarily dependant on Real Estate Markets) saw an average recovery time of 10 years - over twice as long to recover.

Geographic Impact of Recession -The regional impact of the recession was largely influenced by the primary industries in each area. States where the energy sector dominates, particularly in the Midwest, experienced the least economic disruption. Similarly, s..





Recession Proof Real Estate

Energy-Producing states recovered faster with stable Home Values, while Real Estate & IT-driven states faced the greatest impact from the Recession

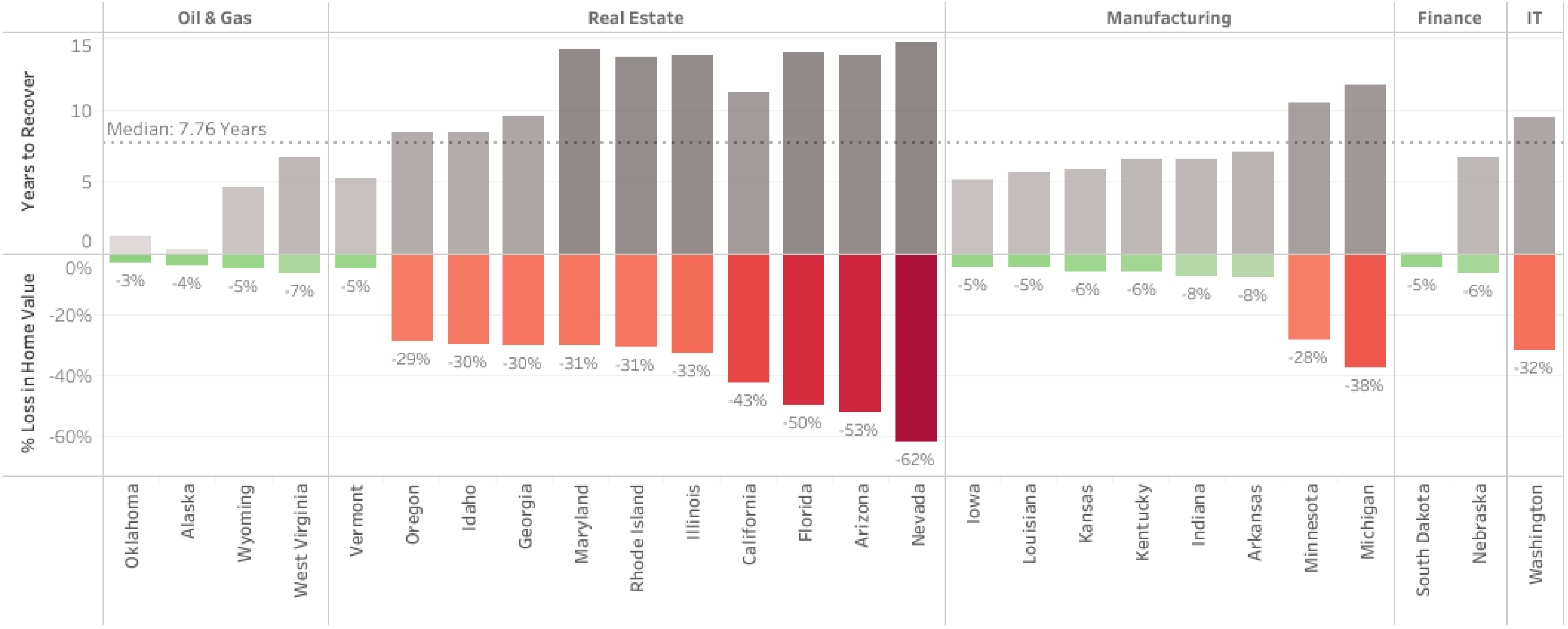
Oil & Gas states had fastest recovery and lowest value loss due to a resiliant global energy market. This is also a high-wage industry and during 2007-2008, fracking created an energy boom in the industry.

Real Estate-focused states saw the greatest negative impact from the Recession since the Recession was caused by a default and crash in the housing market, states that primarily depended on the **Real Estate** Industry were most effected.

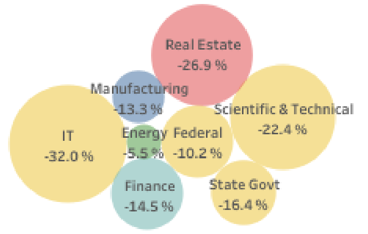
Manufacturing, like Oil & Gas was generally less affected by the Recession with the exception of states like Michigan where Auto Manufacturing was primary and consumers weren't buying new autos.

Finance & IT: States like South Dakota and Nebraska have Finance as a primary industry. This includes banking, credit cards, etc. which are typically more resilient during a Recession than other industries. IT is not as resilient as it depends on a healthy economy - in this case, Washington state, home of Amazon and Microsoft saw a 32% drop in home values.

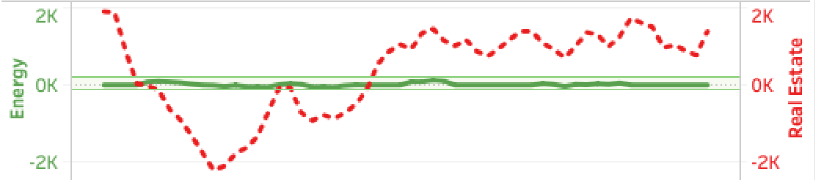
Years to Recovery and % Loss in Home Value shown by State within its Primary Industry



Percent Loss in Value by Industry: The energy sector experienced the smallest decline in home values at just -5.5%, followed by manufacturing at -13.3%. These industries are more resilient as they produce essential goods and services needed for daily life. IT sector (-32%) and real estate sector (-27%) saw the largest declines.



Home Value Stability - Change in Home Value for Real Estate and Energy Sectors: Home values in the energy sector exhibited significantly greater stability compared to those in the real estate sector.



Recession Proof Real Estate

GDP, Debt and Unemployment were the primary economic indicators of recession severity

Gross Domestic Product (GDP)

Increases in the GDP during the Recession resulted in decreased Loss in Home Value and a shorter Recovery Period. States with a loss in GDP during the Recession saw an increase in Home Value Loss and increase in the Years to Recovery.

Mortgage Debt

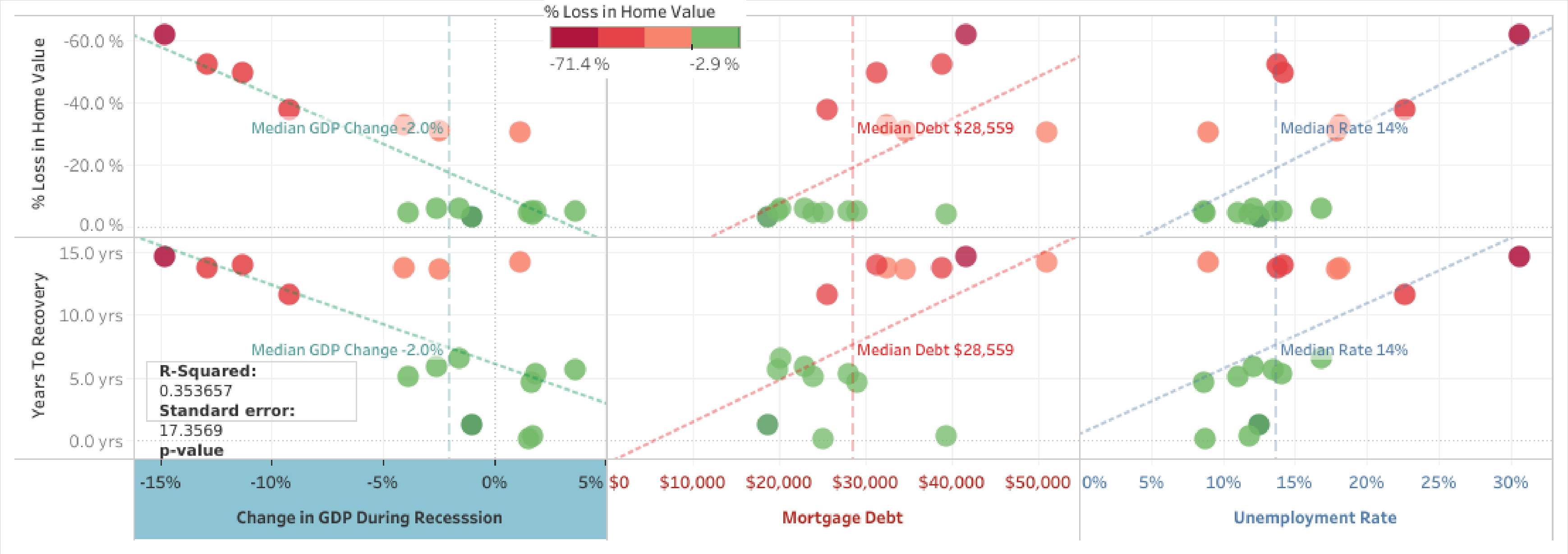
Lower Mortgage Debt during the Recession resulted in decreased Loss in Home Value and a shorter Recovery Period. States with Higher Debt during the Recession saw an increase in Home Value Loss and increase in the Y..

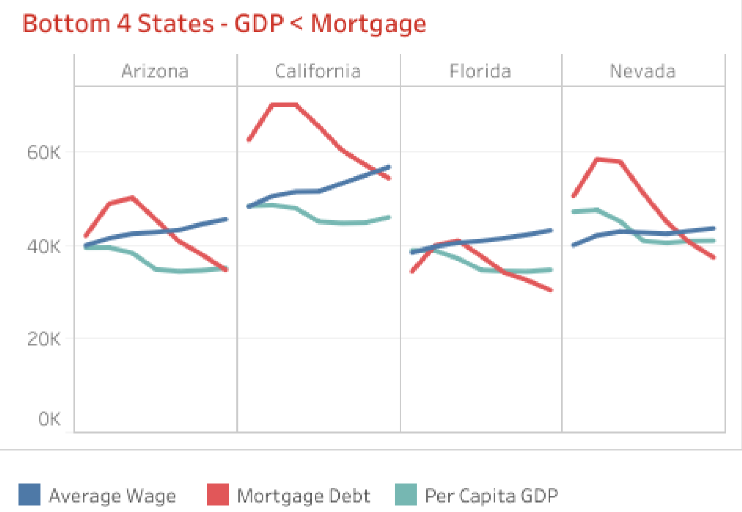
Unemployment Rate

Lower Unemployment Rates during the Recession resulted in decreased Loss in Home Value and a shorter Recovery Period. States with Higher Unemployment during the Recession saw an increase in Home Value Los..

GDP vs. Mortgage Predicted Good/Bad Outcomes

GDP, Debt and Wages were major factors in the Recession's impact on a State. States with a GDP higher than Debt and Wages experienced a better outcome during the Recession than those with Lower GDP.





Top 4 States - GDP > Mortgage

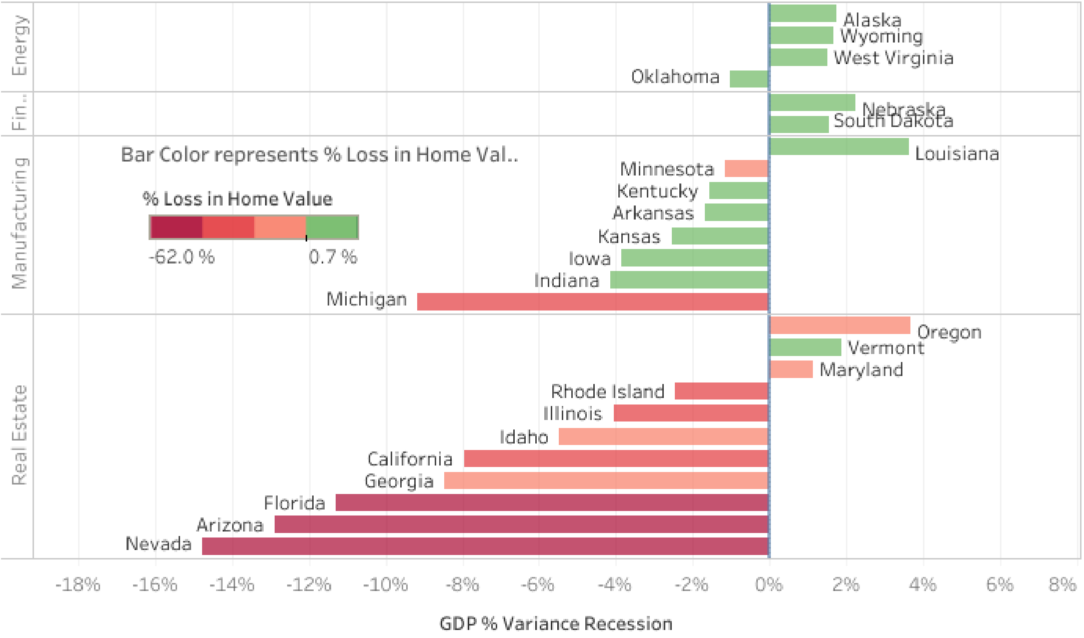
Recession Proof Real Estate

Overview | Primary Economic Factors | Geographic Impact | Primary Industry Impact on Recession | Economic Factors | GDP | Debt Overview | Debt Detail | Unemployment | Other Factors | State Post Recession Recovery

GDP during the Recession was a Key Indicator of the impact of the Recession to a State

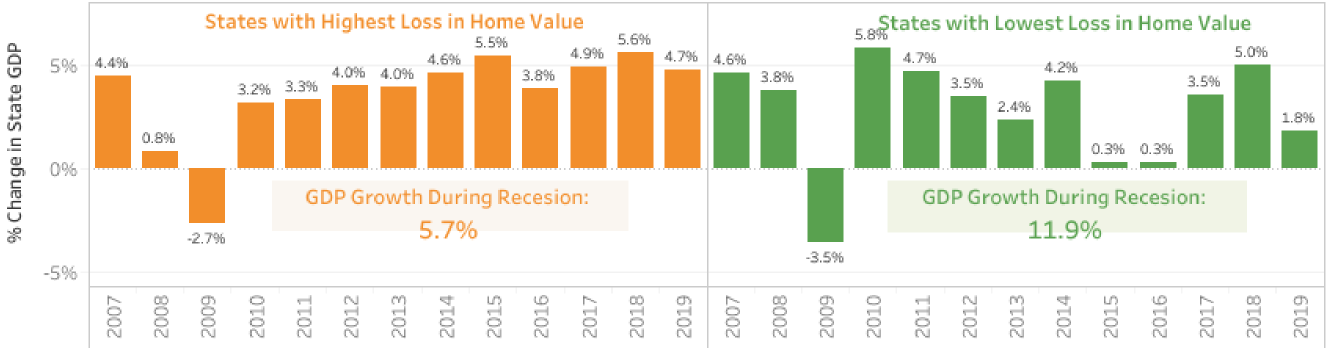
GDP during Recession by State for Highest/Lowest Loss in Home Value

The change in GDP for a state was a significant factor in how severe the Recession was on that state. Energy-primary states saw increased GDP during the Recession as advances in oil extraction technologies (fracking) took off during this time.



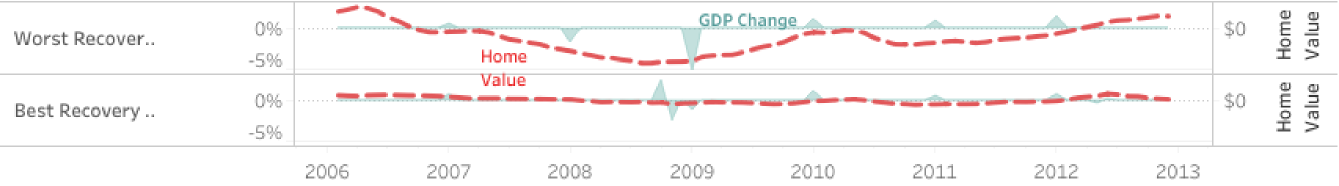
% Increase/Decrease in GDP During Recession - 2007 to 2010

States in the Top Quartile for Loss in Value saw the lowest GDP during the Recession while states in the Bottom Quartile Loss in Value had the highest GDP.



% GDP Change during Recession vs. Loss in Value - Best and Worst Recovery States

As a State's GDP decreased , Home Values in that State decreased.

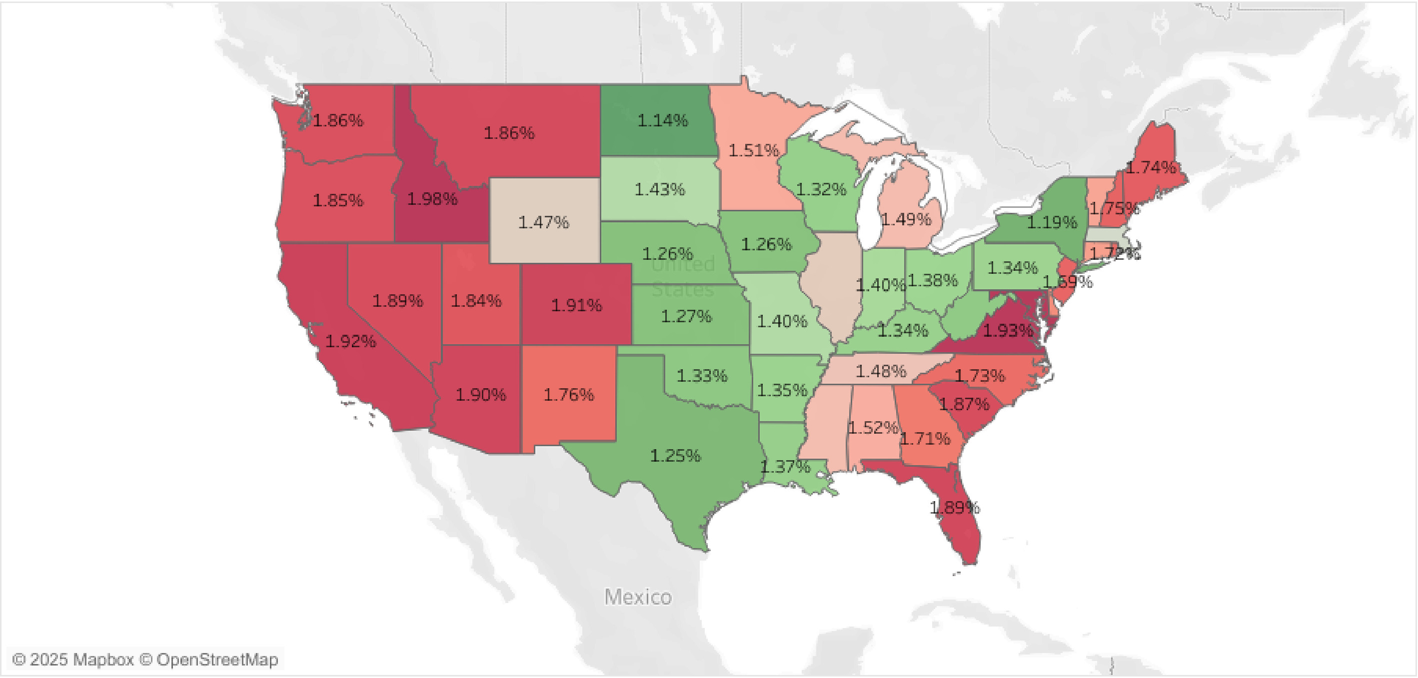


Recession Proof Real Estate

Debt Burden and Mortgage Debt were key indicators of a State's ability to recover from the Recession

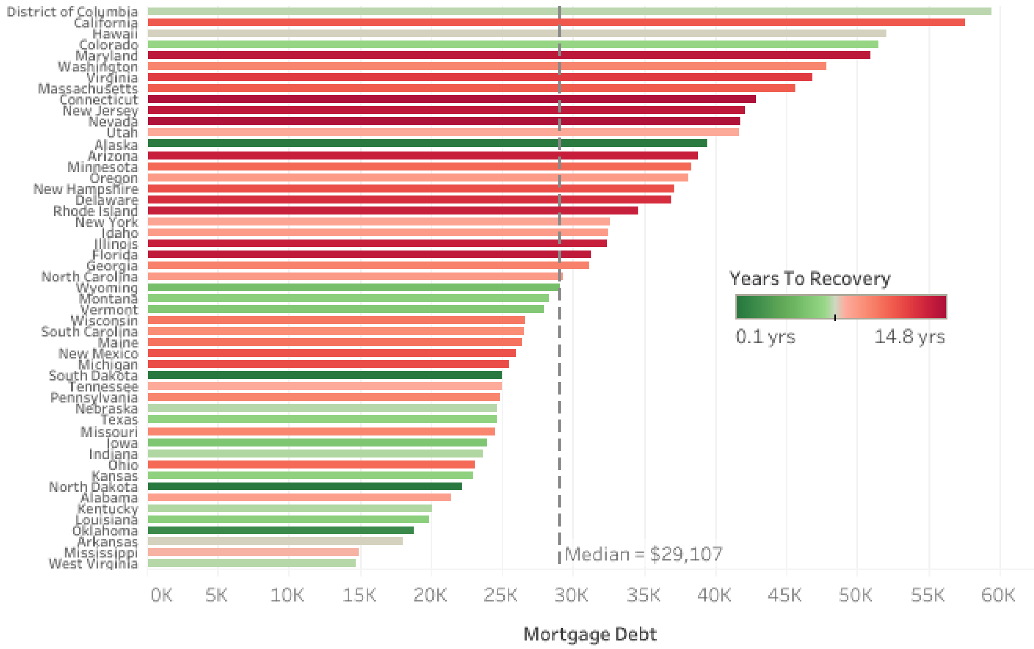
Debt Ratio by State

States in the Midwest had lower Debt Ratios than coastal states and also had a quicker recovery and lower loss in home value. This was due to Midwest states have lower housing prices with smaller loans and lower debt. Coastal states had overinflated home values and less stable economies and a more speculative real estate market.



Debt vs. Years to Recovery

States with Mortgage Debt < the Median Mortgage Debt of $29,107 generally had a quicker time to recovery than states with higher Mortgage Debt.These states experienced fewer foreclosures, more stable housing markets, and less financial strain on households. These factors collectively supported consumer spending, economic activity, and job stability, driving a faster recovery from the recession.

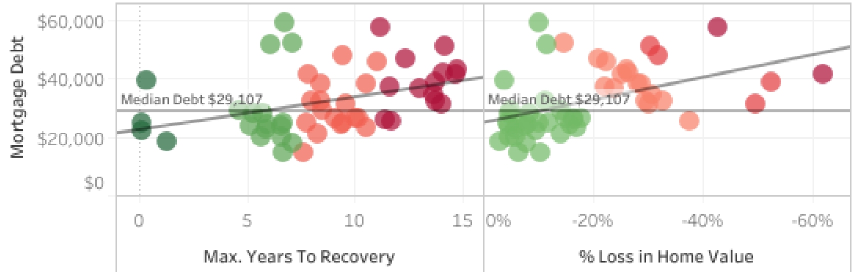


Recession Proof Real Estate

Mortgage Debt and Delinquency were also key factors in determining which states were impacted most by the Recession

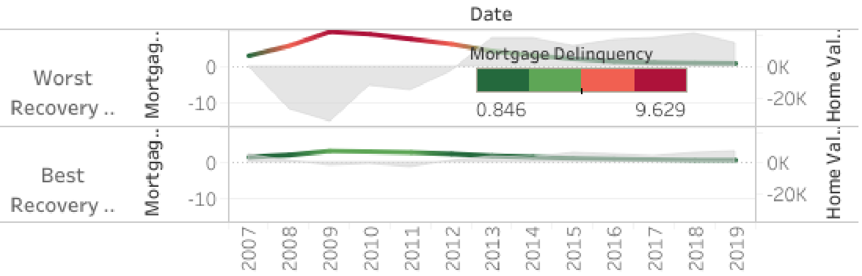
Mortgage Debt and Impact on Recovery

Higher Mortgage Debt increased both Years to Recovery and Loss in Home Value for all States



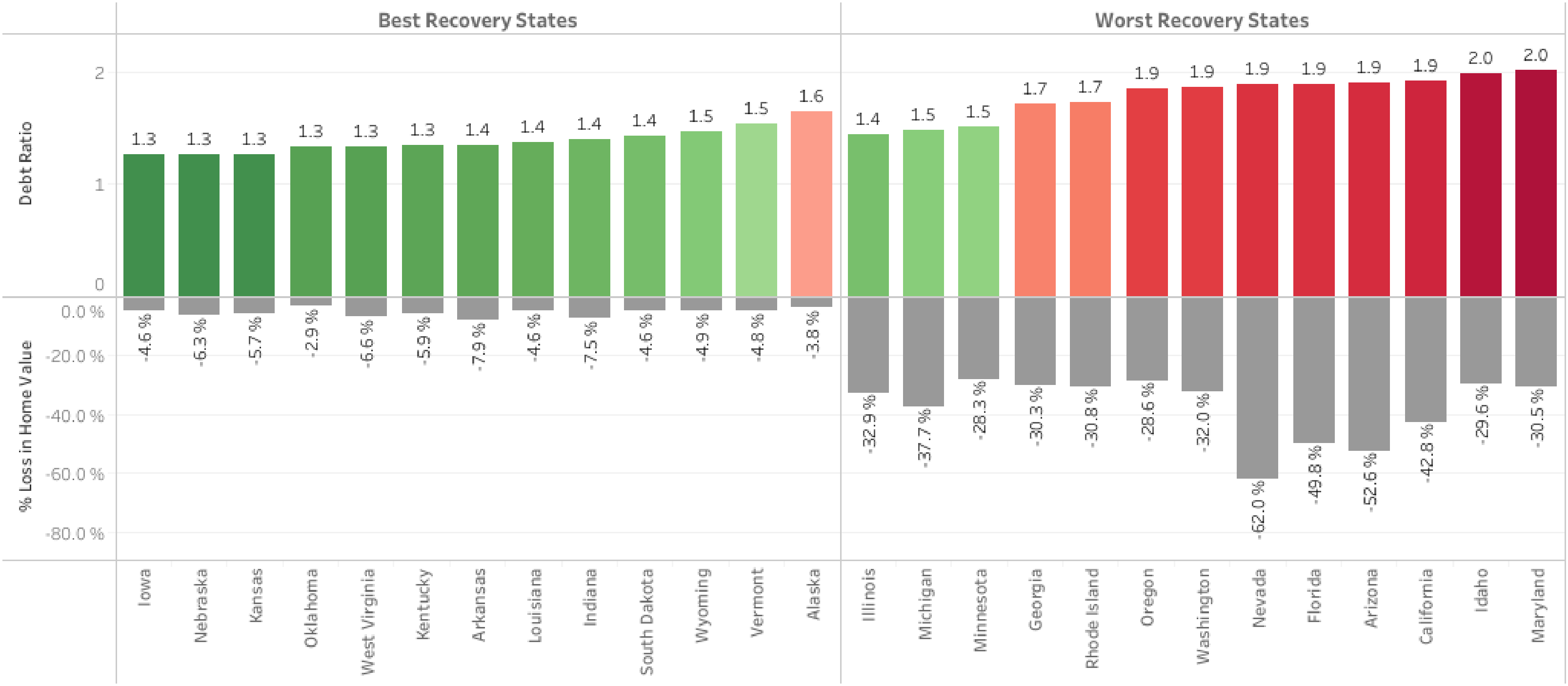
Mortgage Delinquency vs. Loss in Value Top and Bottom Quartiles

States that had the worst impact from the Recession also had the highest Mortgage Delinquency Rates



Debt Ratio vs. Loss in Value for Top and Bottom Quartiles of Recovery

Generally, higher Household Debt meant higher Loss in Home Value and longer recovery time. Since the Recession was driven by a debt crisis in the housing industry, this would make sense.

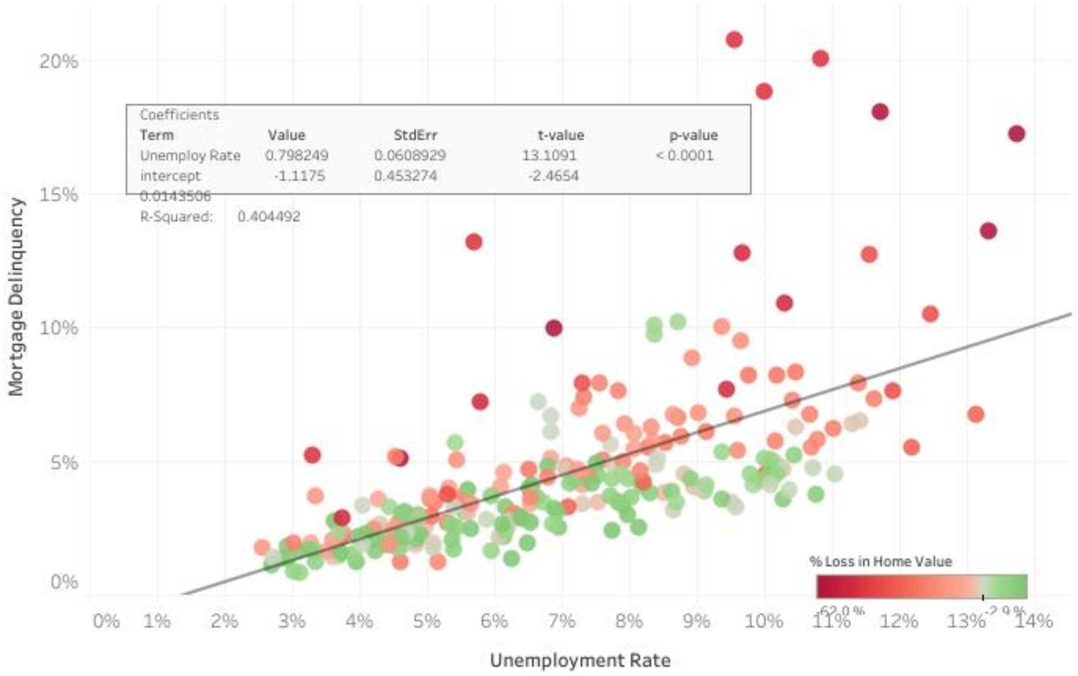


Recession Proof Real Estate

Unemployment and Mortgage Delinquency have a very high correlation of 0.798 - a significant factor to Loss in Home Value

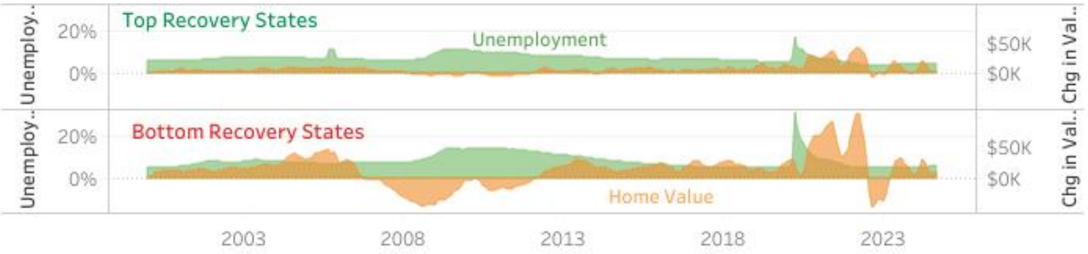
Mortgage Delinquency vs. Unemployment Rate During Recession

Higher Unemployment Rates during the Recession caused an increase in Mortgage Delinquencies and therefore, increased Loss in Home Value

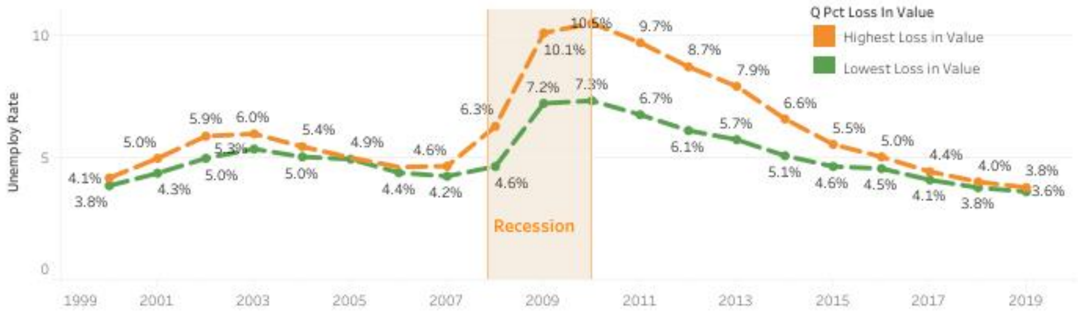


Unemployment vs. Loss in Value - Top and Bottom Recovery Quartiles

As Unemployment (green) increased during the Recession, Home Values (orange) decreased. A State's Primary Industry was a direct factor in the unemployment rate.



Unemployment Rate - Top and Bottom Recovery Quartiles

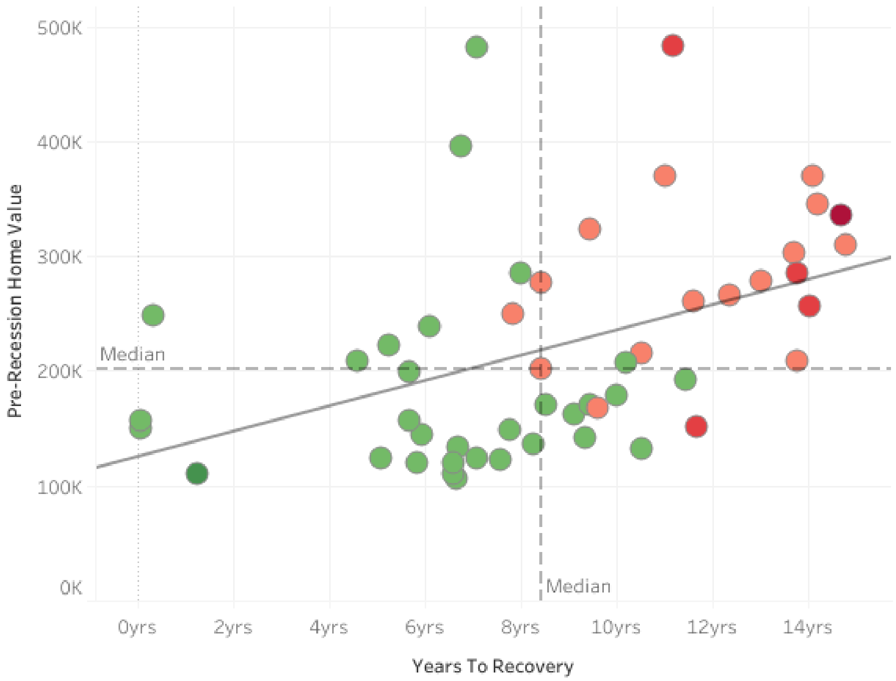


Recession Proof Real Estate

Pre-Recession Home Values, Loss in Value and Size of Home were also factors affecting recovery.

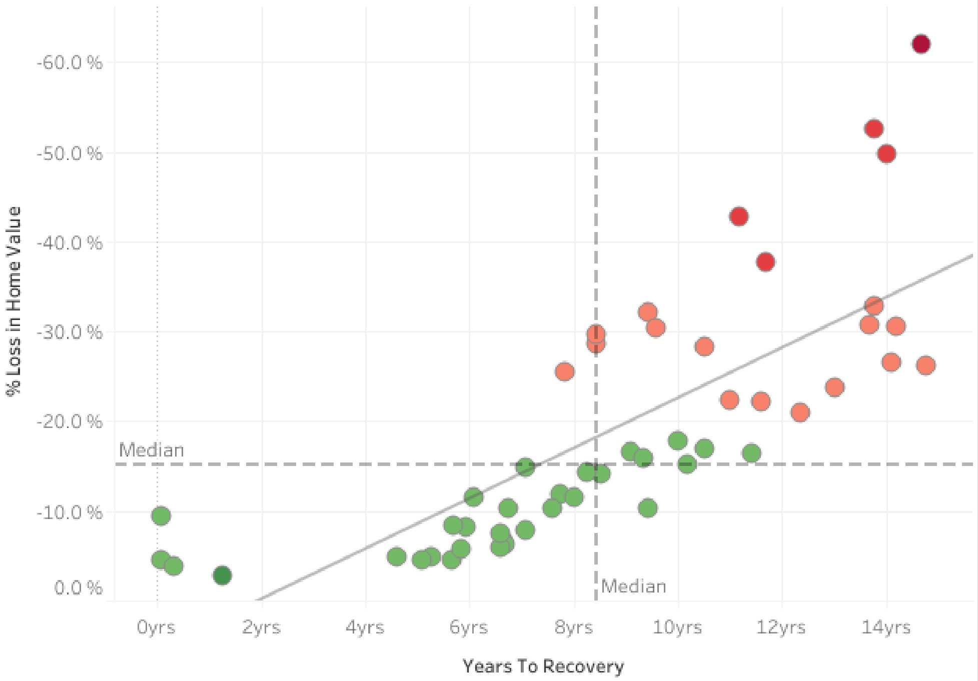
Pre-Recession Home Value vs. Years to Recovery

There is relationship between the value of a home prior to the Recession and the time it took a home to return to its Pre-Recession Value. The higher the home value before the Recession, the longer recovery took.



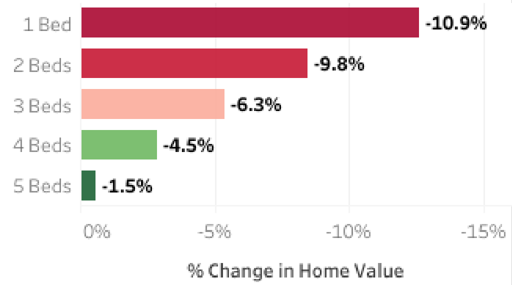
Loss in Value vs. Years to Recovery

The greater the loss in Home Value, the longer it would take for a home to recover its original value. This is probably due to owner's whose homes saw significant drops in value had to wait longer for economic factors to improve in their state.



Change in Home Value by Number of Bedrooms

The more bedrooms in a home, the lower the change in Home Value during the Recession. This is probably due to the fact that smaller homes have a lower value and the population owning those homes was more affected by the predatory lending practices that caused the Recession. They would also be more affected by the unemployment rates.



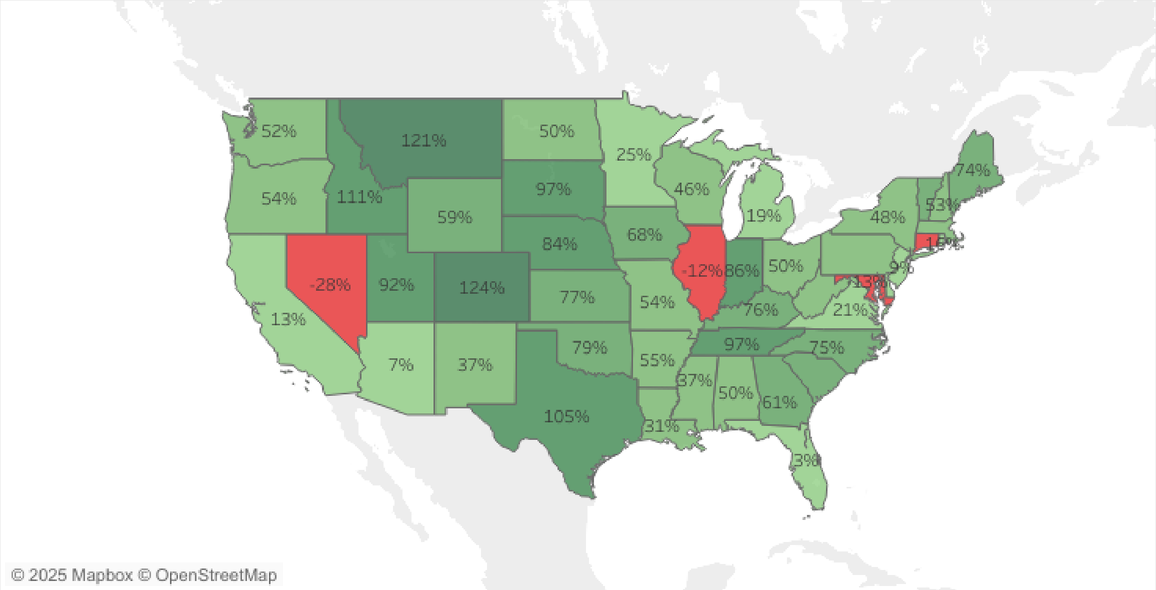
Recession Proof Real Estate

GDP | Debt Overview | Debt Detail | Unemployment | Other Factors | **State Post Recession Recovery** | Top and Bottom States Post-Recession | Industry Post Recession Recovery | Insights | APPENDIX | Correlation for Economic Indicators

What happened as States came out of the Great Recession?

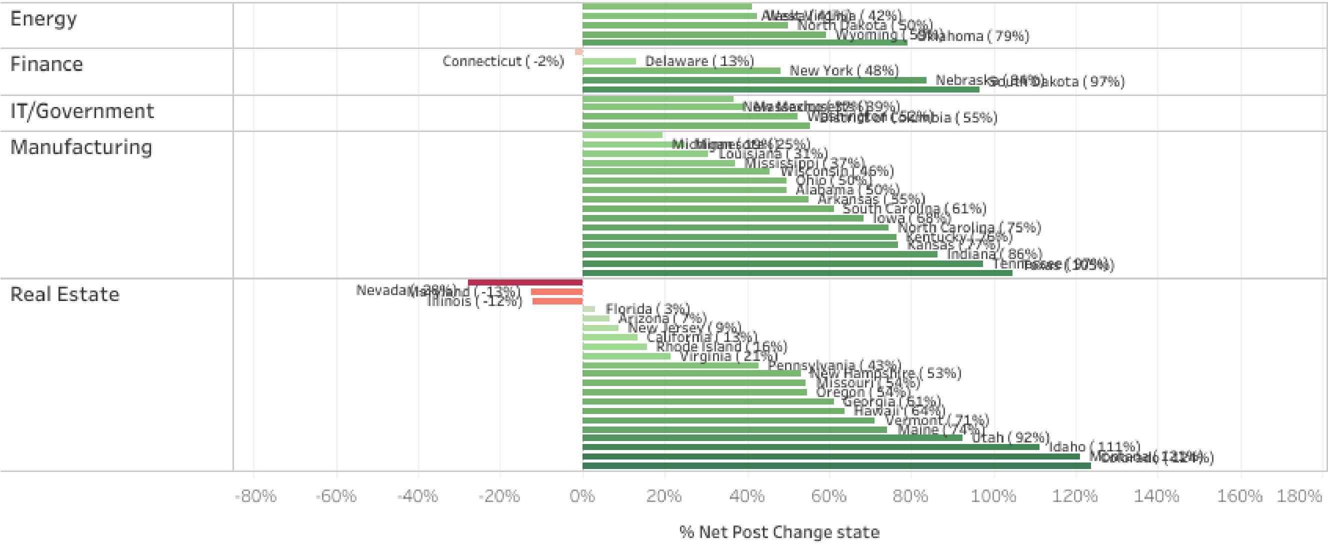
There was a significant state-to-state migration during and after the Recession which affected home values. Economic recovery speed (Texas, Colorado, Oklahoma, Arizona), job growth hubs (Texas) saw higher home value growth thank Rust Belt states (Michigan, Ilinois) and high-cost states like California and New York saw lower home value growth. Covid further impacted recovery as people moved from urban areas to suburbs and rural areas so that NY, San Francisco and Los Angeles experienced significant population losses.

Net Increase in Home Value Post Recession (%)



Industry Net Change in Home Value Post Recession

Nevada, Maryland, Illinois and Connecticut had Home Values that remained below Pre-Recession Values as of December 2023. Nevada had the largest decrease in Home Value during the recession (-67%) and Post-Recession was still at (-28%). This was partly due to the Covid lockdowns because Nevada's secondary major Industry is Hospitality.



Mortgage Delinquency was a strong predictor of Growth in Home Value, Post-Recession

Regression Modeling showed that for every 1% increase in Mortgage Delinquency, the growth in Home Value

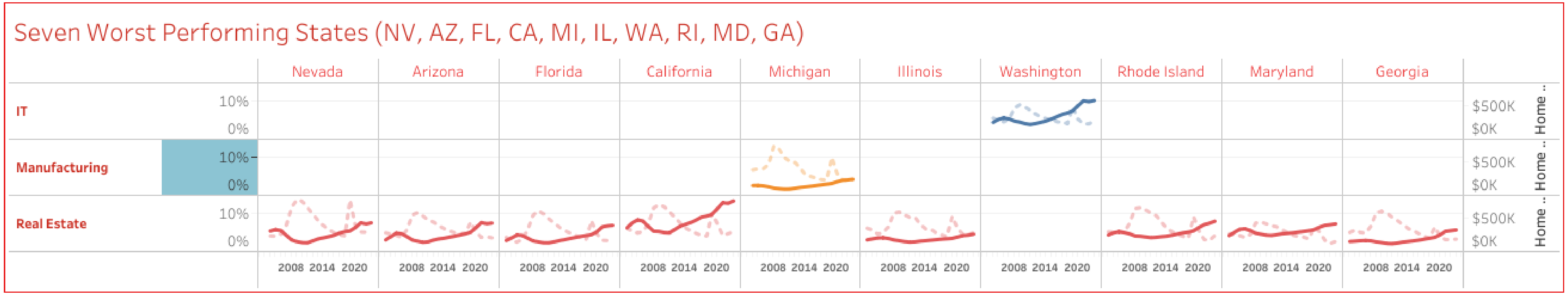
Recession Proof Real Estate

Debt Overview | Debt Detail | Unemployment | Other Factors | State Post Recession Recovery | Top and Bottom States Post-Recession | Industry Post Recession Recovery | Insights | APPENDIX | Correlation for Economic Indicators | Correlation for Real Estate Indicators

Pre and Post-Recession: Top and Bottom State Home Value and Unemployment by Industry

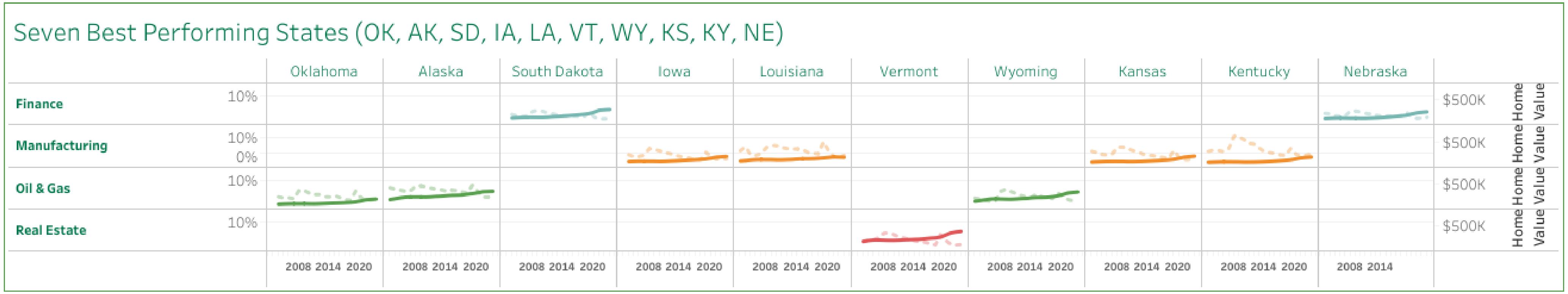
INSIGHT:

States where Real Estate and IT were major industries experienced the greatest losses in home values and high unemployment rates during the Great Recession. However, these industries also exhibited significant volatility in the housing markets. By 2019, most states had recovered their pre-recession home values. The onset of the COVID-19 pandemic brought a cont..



INSIGHT:

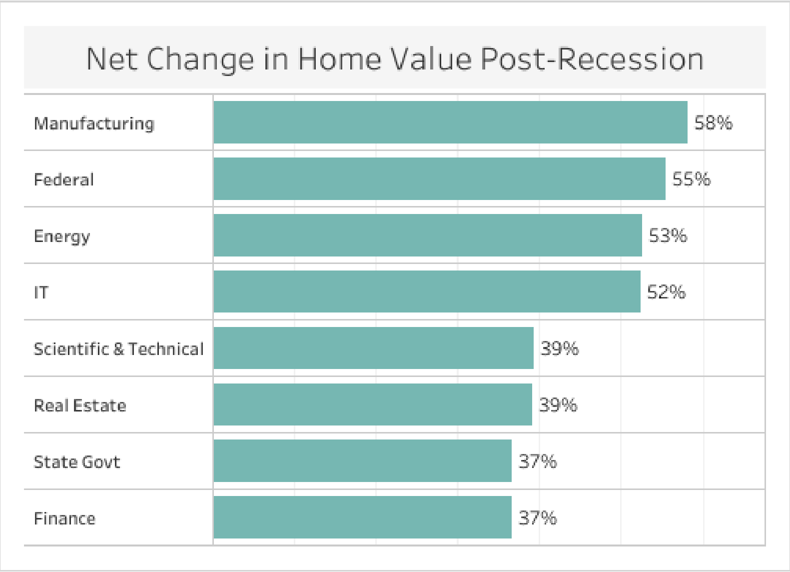
States with the best recovery—experiencing the lowest loss in home values—typically had more stable industries, such as Oil & Gas, Manufacturing (with the exception of Michigan's Auto Manufacturing), and Finance. These stable industries helped maintain steadier GDP levels, which in turn kept unemployment rates relatively lower compared to poorer-p..

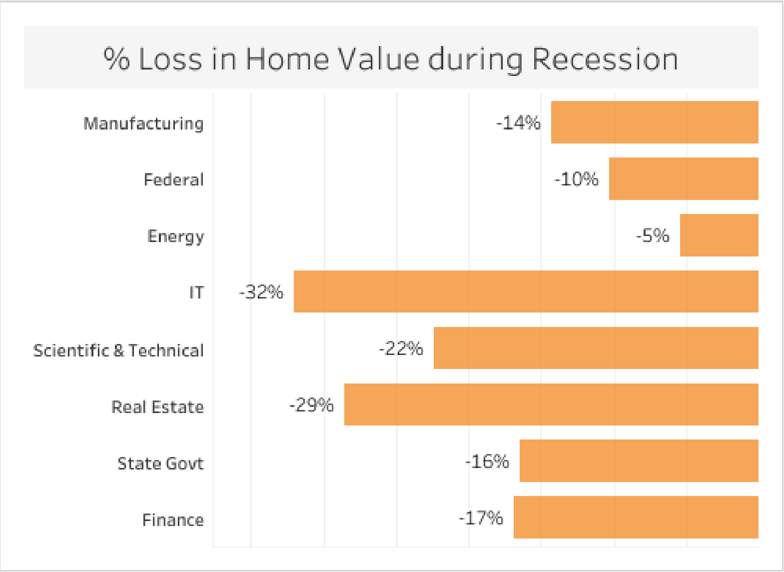


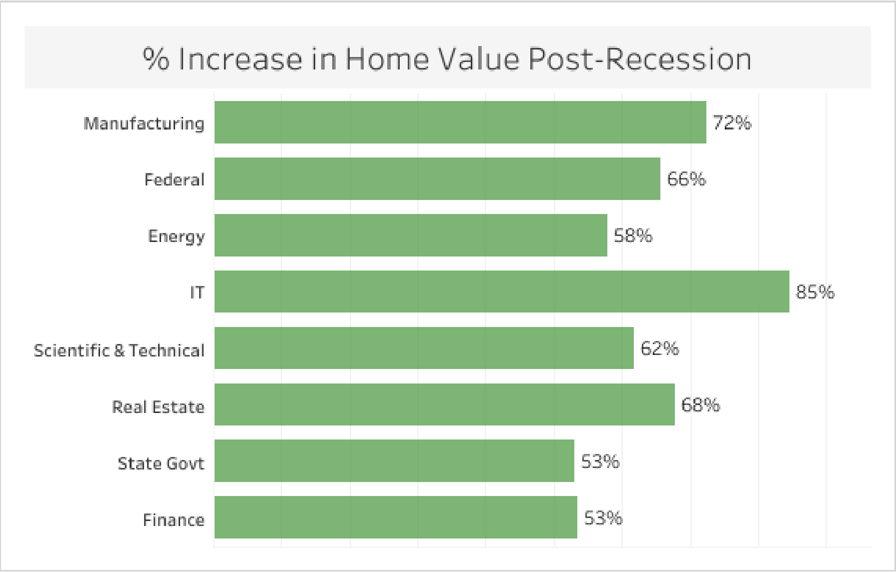
Recession Proof Real Estate

How did Industries Impact outcomes from the Great Recession?

States with Manufacturing as the top Industry had the biggest Post-Recession increase in Home Values at **72%**. **Energy** which had the lowest Loss in Home Value during the Recession was third with a Post-Recession increase of **58%**. Real Estate which had the the second highest loss in home value **(-27%)** saw an increase Post-Recession of **68%.** In general, industries that had lower Loss in Home Value during the recession had a better recovery. Most likely due to more stable economic drivers like Manufacturing and Energy.







Recession Proof Real Estate

Insights and Analysis

Best and Worst Performing States and Industries

BEST STATES

Lowest % Loss in Home Value: Oklahoma (-2.9%) ..

WORST STATES

Highest % Loss in Home Value: Nevada (-62%)..

BEST INDUSTRY

Lowest % Loss in Home Value: Energy (-5.5%) ..

WORST INDUSTRY

Highest % Loss in Home Value: Real Estate/IT (-30%)..

Observations:

A state's resiliency during the Great Recession was influenced by several factors, including **GDP** levels before and during the recession, **unemployment** rates, **household debt**, and **housing affordability**. A notable finding was that states with primary industries in energy and finance demonstrated greater resilience. For example, energy-focused states like Oklahoma, North Dakota, Alaska, and Wyoming maintained more stable economies, resulting in lower unemployment rates and higher GDP levels.

These five key factors are closely interconnected. During the recession, stable oil markets allowed energy-..

Key Economic Factors:

#1 - Mortgage Debt - Correlation to Loss in Value was .656 and Years to Recovery (Delinquency) was .636

#2 - GDP During the Recession 2007-2009 - States with the highest growth in GDP during the Recession had the lowest loss in home value and were the fastest to Recover. GDP to Loss in Value correlation was .643 and to Years to Recovery .602

#3 - Unemployment - Correlation to Loss in Value was .466 and to Years to Recovery it was .381..

APPENDIX

Recession Proof Real Estate

Correlation Coefficients for Economic Factors

Yellow indicates a strong Negative correlation while Blue indicates a strong Positive Correlation

Negative/Positive

		GDP 2007	GDP 2010	GDP Variance 2007-2010	Industry Diversity	Loss in Home Value	Per Capita GDP	Percent GDP Variance 2007-2010	Percent Loss in Home Value	Pop Density	Population	Unemployment Rate	Unemployment Rate Variance	Years to Recovery
Employment	Unemployment	-0.062	-0.122	-0.511	-0.090	-0.468	-0.068	-0.485	-0.466	-0.055	0.208	1.000	0.988	0.381
	Unemployment Rate Varia..	-0.115	-0.172	-0.490	-0.055	-0.458	-0.121	-0.463	-0.460	-0.101	0.158	0.988	1.000	0.384
GDP	% GDP Var 2007-2010	0.077	0.194	0.986	0.169	0.541	0.099	1.000	0.643	0.059	-0.329	-0.485	-0.463	-0.602
	GDP 2007	1.000	0.993	0.041	-0.177	-0.130	0.998	0.077	-0.003	0.907	-0.037	-0.062	-0.115	0.020
	GDP 2010	0.993	1.000	0.159	-0.149	-0.058	0.994	0.194	0.077	0.904	-0.077	-0.122	-0.172	-0.056
	GDP Variance 2007-2010	0.041	0.159	1.000	0.212	0.594	0.063	0.986	0.666	0.059	-0.336	-0.511	-0.490	-0.637
	Per Capita GDP	0.998	0.994	0.063	-0.168	-0.101	1.000	0.099	0.022	0.907	-0.047	-0.068	-0.121	0.004
Home Value	Loss in Home Value	-0.130	-0.058	0.594	0.085	1.000	-0.101	0.541	0.917	-0.044	-0.381	-0.468	-0.458	-0.686
	Percent Loss in Home Value	-0.003	0.077	0.666	0.056	0.917	0.022	0.643	1.000	0.038	-0.320	-0.466	-0.460	-0.768
Industry	Industry Diversity	-0.177	-0.149	0.212	1.000	0.085	-0.168	0.169	0.056	-0.213	-0.031	-0.090	-0.055	-0.235
Other	Pop Density	0.907	0.904	0.059	-0.213	-0.044	0.907	0.059	0.038	1.000	-0.080	-0.055	-0.101	0.032
	Population	-0.037	-0.077	-0.336	-0.031	-0.381	-0.047	-0.329	-0.320	-0.080	1.000	0.208	0.158	0.267
	Years to Recovery	0.020	-0.056	-0.637	-0.235	-0.686	0.004	-0.602	-0.768	0.032	0.267	0.381	0.384	1.000

Recession Proof Real Estate

Correlation Coefficients for Real Estate Factors

Yellow indicates a strong Negative correlation while Blue indicates a strong Positive Correlation

Positive/Negative

-0.768 – 1.000

		Affordability Ratio	Affordability Variance	Affordability Wage	Home Value Mean	Home Value Variance	Loss in Home Value	Percent Home Value Variance	Percent Loss in Home Value	Pre-Recession Home Value	Years to Recovery
Home Value	Affordability Ratio	1.000	0.939	-0.302	0.016	-0.026	-0.217	-0.102	-0.255	0.081	0.352
	Affordability Variance	0.939	1.000	0.008	0.238	0.154	-0.304	0.042	-0.283	0.291	0.395
	Affordability Wage	-0.302	0.008	1.000	0.708	0.598	-0.224	0.493	-0.050	0.663	0.069
	Home Value Mean	0.016	0.238	0.708	1.000	0.949	-0.565	0.755	-0.323	0.955	0.229
	Home Value Variance	-0.026	0.154	0.598	0.949	1.000	-0.610	0.898	-0.401	0.903	0.247
	Loss in Home Value	-0.217	-0.304	-0.224	-0.565	-0.610	1.000	-0.579	0.917	-0.744	-0.686
	Percent Home Value Variance	-0.102	0.042	0.493	0.755	0.898	-0.579	1.000	-0.443	0.739	0.257
	Percent Loss in Home Value	-0.255	-0.283	-0.050	-0.323	-0.401	0.917	-0.443	1.000	-0.516	-0.768
	Pre-2007 Home Value	0.081	0.291	0.663	0.955	0.903	-0.744	0.739	-0.516	1.000	0.438
Other	Years to Recovery	0.352	0.395	0.069	0.229	0.247	-0.686	0.257	-0.768	0.438	1.000

Recession Proof Real Estate

Correlation Coefficients for Household Financial Indicators

Yellow indicates a strong Negative correlation while Blue indicates a strong Positive Correlation

Positive/N..
-0.768 1.000

		Affordability Ratio	Affordability Variance	Affordability Wage	Compensati..	Debt Ratio	Loss in Home Value	Mortgage Debt	Mortgage Delinquency	Percent Loss in Home Value	Total Debt	Years to Recovery
Debt	Debt Ratio	-0.134	-0.147	0.052	-0.070	1.000	-0.598	0.534	0.327	-0.582	0.520	0.441
	Household Debt	0.100	0.341	0.726	0.745	0.520	-0.644	0.997	0.228	-0.469	1.000	0.380
	Mortgage Debt	0.083	0.320	0.713	0.721	0.534	-0.656	1.000	0.214	-0.476	0.997	0.378
	Mortgage Delinquency	0.381	0.379	-0.046	0.241	0.327	-0.640	0.214	1.000	-0.663	0.228	0.636
Home Value	Affordability Ratio	1.000	0.939	-0.302	0.470	-0.134	-0.217	0.083	0.381	-0.255	0.100	0.352
	Affordability Variance	0.939	1.000	0.008	0.726	-0.147	-0.304	0.320	0.379	-0.283	0.341	0.395
	Affordability Wage	-0.302	0.008	1.000	0.693	0.052	-0.224	0.713	-0.046	-0.050	0.726	0.069
	Loss in Home Value	-0.217	-0.304	-0.224	-0.373	-0.598	1.000	-0.656	-0.640	0.917	-0.644	-0.686
	Percent Loss in Home Value	-0.255	-0.283	-0.050	-0.238	-0.582	0.917	-0.476	-0.663	1.000	-0.469	-0.768
Other	Compensation	0.470	0.726	0.693	1.000	-0.070	-0.373	0.721	0.241	-0.238	0.745	0.332
	Years to Recovery	0.352	0.395	0.069	0.332	0.441	-0.686	0.378	0.636	-0.768	0.380	1.000

Recession Proof Real Estate

Correlation of All Factors to Severity of Recession to the Real Estate Market

	Affordability Ratio	Affordability Variance	Affordability Wage	Compensati..	Debt Ratio	GDP 2007	GDP 2010	GDP Variance 2007-2010	Industry Diversity	Loss in Home Value	Mortgage Debt	Mortgage Delinquency	Per Capita GDP	Percent GDP Variance 2007-2010	Percent Loss in Home Value	Pop Density	Population	Pre-Recession Home Value	Unemployme nt Rate	Unemployme nt Rate Varia nce	Years to Recovery
% GDP Var 2007-2010	-0.193	-0.162	0.109	-0.042	-0.419	0.077	0.194	0.986	0.169	0.541	-0.180	-0.594	0.099	1.000	0.643	0.059	-0.329	-0.179	-0.485	-0.463	-0.602
Affordability Ratio	1.000	0.939	-0.302	0.470	-0.134	0.113	0.087	-0.206	-0.256	-0.217	0.083	0.381	0.109	-0.193	-0.255	0.112	0.617	0.081	0.150	0.067	0.352
Affordability Variance	0.939	1.000	0.008	0.726	-0.147	0.397	0.369	-0.193	-0.296	-0.304	0.320	0.379	0.391	-0.162	-0.283	0.367	0.575	0.291	0.130	0.048	0.395
Affordability Wage	-0.302	0.008	1.000	0.693	0.052	0.745	0.744	0.059	-0.042	-0.224	0.713	-0.046	0.748	0.109	-0.050	0.612	-0.138	0.663	0.050	0.067	0.069
Compensation	0.470	0.726	0.693	1.000	-0.070	0.798	0.777	-0.099	-0.242	-0.373	0.721	0.241	0.796	-0.042	-0.238	0.686	0.320	0.665	0.128	0.081	0.332
Debt Ratio	-0.134	-0.147	0.052	-0.070	1.000	-0.193	-0.240	-0.412	0.258	-0.598	0.534	0.327	-0.212	-0.419	-0.582	-0.237	0.030	0.516	0.152	0.181	0.441
GDP 2007	0.113	0.397	0.745	0.798	-0.193	1.000	0.993	0.041	-0.177	-0.130	0.578	0.023	0.998	0.077	-0.003	0.907	-0.037	0.489	-0.062	-0.115	0.020
GDP Variance 2007-2010	-0.206	-0.193	0.059	-0.099	-0.412	0.041	0.159	1.000	0.212	0.594	-0.233	-0.620	0.063	0.986	0.666	0.059	-0.336	-0.242	-0.511	-0.490	-0.637
Industry Diversity	-0.256	-0.296	-0.042	-0.242	0.258	-0.177	-0.149	0.212	1.000	0.085	0.018	-0.193	-0.168	0.169	0.056	-0.213	-0.031	-0.118	-0.090	-0.055	-0.235
Loss in Home Value	-0.217	-0.304	-0.224	-0.373	-0.598	-0.130	-0.058	0.594	0.085	1.000	-0.656	-0.640	-0.101	0.541	0.917	-0.044	-0.381	-0.744	-0.468	-0.458	-0.686
Mortgage Debt	0.083	0.320	0.713	0.721	0.534	0.578	0.544	-0.233	0.018	-0.656	1.000	0.214	0.564	-0.180	-0.476	0.409	0.173	0.906	0.139	0.136	0.378
Mortgage Delinquency	0.381	0.379	-0.046	0.241	0.327	0.023	-0.051	-0.620	-0.193	-0.640	0.214	1.000	0.000	-0.594	-0.663	0.035	0.406	0.391	0.482	0.461	0.636
Per Capita GDP	0.109	0.391	0.748	0.796	-0.212	0.998	0.994	0.063	-0.168	-0.101	0.564	0.000	1.000	0.099	0.022	0.907	-0.047	0.469	-0.068	-0.121	0.004
Percent Loss in Home Value	-0.255	-0.283	-0.050	-0.238	-0.582	-0.003	0.077	0.666	0.056	0.917	-0.476	-0.663	0.022	0.643	1.000	0.038	-0.320	-0.516	-0.466	-0.460	-0.768
Pop Density	0.112	0.367	0.612	0.686	-0.237	0.907	0.904	0.059	-0.213	-0.044	0.409	0.035	0.907	0.059	0.038	1.000	-0.080	0.350	-0.055	-0.101	0.032
Population	0.617	0.575	-0.138	0.320	0.030	-0.037	-0.077	-0.336	-0.031	-0.381	0.173	0.406	-0.047	-0.329	-0.320	-0.080	1.000	0.216	0.208	0.158	0.267
Pre-2007 Home Value	0.081	0.291	0.663	0.665	0.516	0.489	0.454	-0.242	-0.118	-0.744	0.906	0.391	0.469	-0.179	-0.516	0.350	0.216	1.000	0.295	0.295	0.438
Unemployment	0.150	0.130	0.050	0.128	0.152	-0.062	-0.122	-0.511	-0.090	-0.468	0.139	0.482	-0.068	-0.485	-0.466	-0.055	0.208	0.295	1.000	0.988	0.381
Years to Recovery	0.352	0.395	0.069	0.332	0.441	0.020	-0.056	-0.637	-0.235	-0.686	0.378	0.636	0.004	-0.602	-0.768	0.032	0.267	0.438	0.381	0.384	1.000

DATA SOURCES:

Housing Sales Data:

Main Datasets– Historical Home Sale prices from 2005 to 2024 by City/State/Month

Zillow Housing Research Data
https://www.zillow.com/research/data/
Mean and Median Sales Price

U.S. Census Bureau Housing Data
U.S. Census Bureau and U.S. Department of Housing and Urban Development, Average Sales Price of Houses Sold for the United States [ASPUS], retrieved from FRED, Federal Reserve Bank of St. Louis;
https://fred.stlouisfed.org/series/ASPUS, September 25, 2024.
https://fred.stlouisfed.org/series/ASPUS

Related Datasets (to determine causation)

Employment and Unemployment Data:
U.S. Bureau of Labor Statistics
https://data.bls.gov/PDQWeb/la

State GDP per capita
U.S. Bureau of Economic Analysis
https://www.bea.gov/data/gdp/gdp-state
Debt-to-income ratio
State Level Debt to Income Ratio 1999-2024
Board of Governors of the Federal Reserve System
https://www.federalreserve.gov/releases/z1/dataviz/household_debt/state/map/#year:2024

Personal Income ..