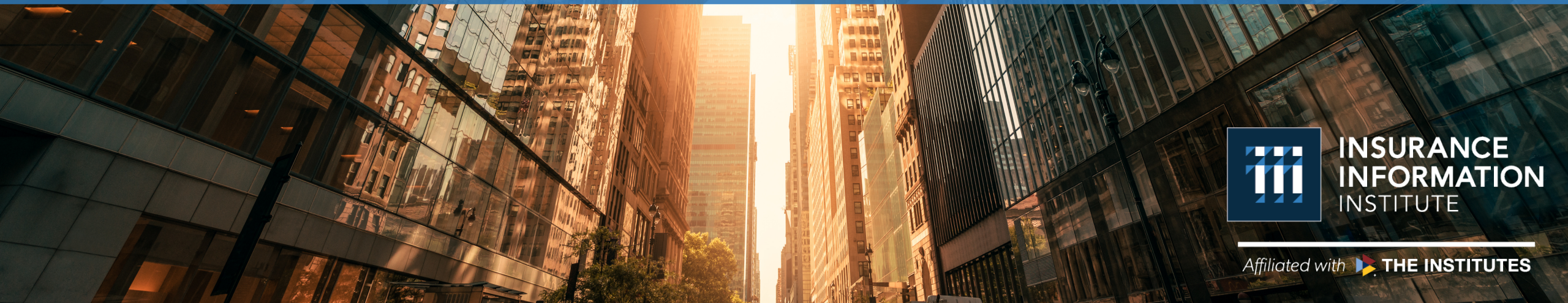
Economic Fundamentals and P&C Insurance Performance

Prepared for CLRS, St-Louis, Missouri | September 20, 2022

Michel Leonard, PhD, CBE, Chief Economist and Data Scientist, Triple-I



INSURANCE INFORMATION INSTITUTE

Affiliated with THE INSTITUTES

Learning Objectives

This presentation aims to contribute to the the audience's understanding of the following concepts:

1. The relationship between inflation and insurance replacement costs at the national, regional, and state levels
2. The relationship between GDP growth, insurance industry growth, and underlying growth at the national, regional, and state levels
3. The relationship between rising interest rates and the insurance industry's performance

Key GDP, CPI and PPI Component Changes (YoY%)

Housing Unit Starts:
Unit increases down from 18.49% to 2.97%

Auto & Parts Retail Sales:
Cost increases down from 23.12% to 6.77%

Used Vehicle Prices:
Cost increases down from 37.28% to 7.10%

Lumber Prices:
Cost increases down from 35.09% to 11.09%

Source: BLS & BEA

Key Points

Insurance Industry (Change YoY%):

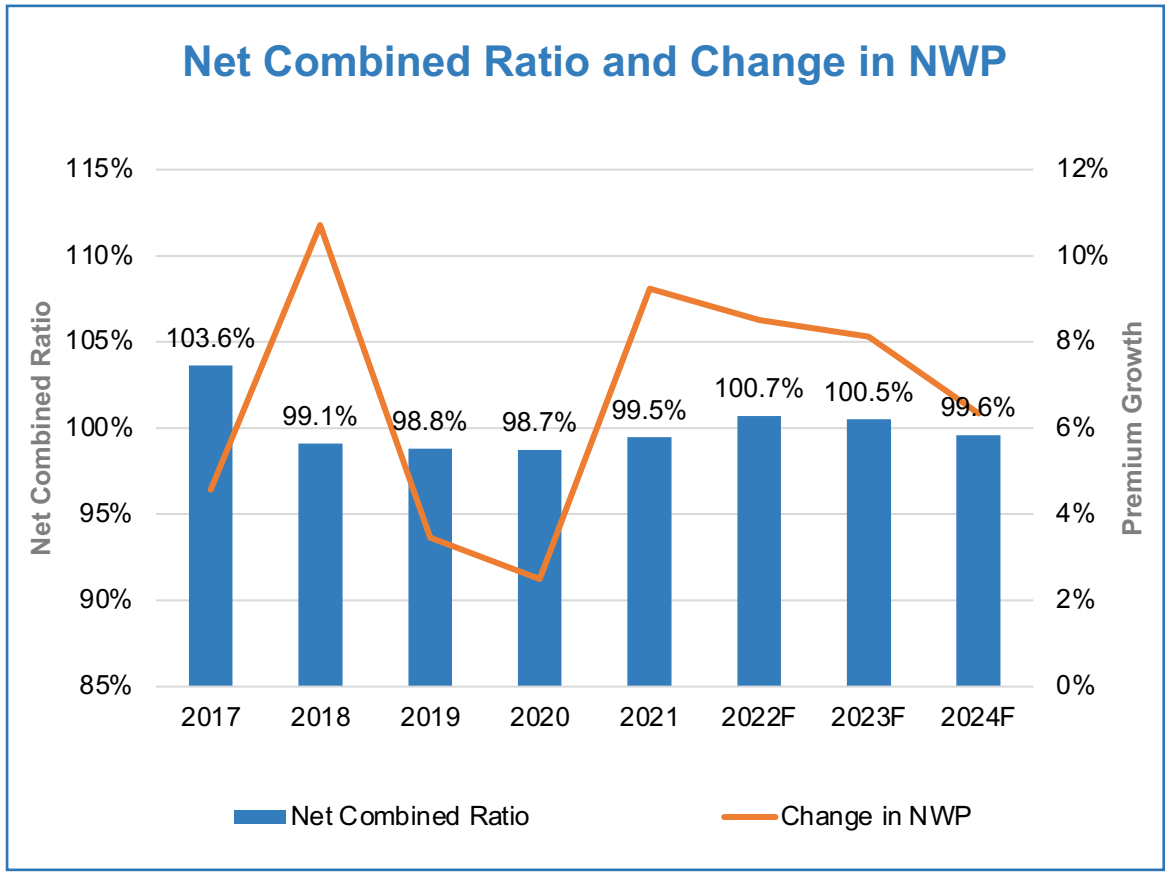
- Sector GDP Growth: Contracting
- Underlying Sectors GDP Growth: Growth increases slowing down
- Replacement Costs: Increases slowing down - above pre-COVID levels
  Materials and used auto leading trend

Wider Economy (Change YoY%):

- U.S. GDP Growth: Not yet recession but 2021 “bump” over
- CPI: Increasingly energy only – rates may have limited impact
- Employment: Strong and above recession level

Insurance Underlying Growth: GDP growth for key sectors associated with specific P&C lines (Change YoY%)
Insurance Replacement Costs: CPI for repair & rebuild goods & services baskets for specific P&C lines (Change YoY%)

P&C Industry Outlook



Sources: NAIC Statutory Financial Data through S&P Global Market Intelligence
Analysis: Insurance Information Institute, Milliman.

2022 Net Combined Ratio forecast to worsen by 1.2 pts from 2021, driven primarily by significant deterioration in Personal Auto

Premium growth of 9.2% in 2021 from economic recovery and hard market, tapering back to 8.5% forecast in 2022

2022 Catastrophe Losses were lower in H1 than in 2020-2021, higher than 2018-2019

Expect loss pressures and hard market to continue due to inflation, supply chain, and geopolitical risk

Key Economic Drivers of Insurance Performance

Insurance Growth: Annualized YTD Q1/Q2 growth turns negative compared to full 2021 level
P&C Replacement Costs: Too early to confirm trend that CPI and P&C costs are converging

Growth & Inflation (Change YoY%)	2021	2022	2022E	2023F	2024F	Longer Range
U.S. and Insurance Sector Growth						
U.S. GDP	5.67%	-0.93%	1.70%	1.70%	1.90%	1.80%
Finance and Insurance Sector GDP	9.36%	-7.14%	-3.39%	-1.51%	0.37%	-0.06%
P&C Underlying Growth	1.07%	0.35%	1.66%	2.31%	2.97%	2.50%
U.S. CPI and P&C Replacement Costs						
U.S. Inflation (CPI)	7.10%	8.50%	5.20%	2.60%	2.20%	2.00%
P&C Replacement Costs	11.75%	9.22%	5.07%	2.99%	0.91%	1.01%

Takeaway 1

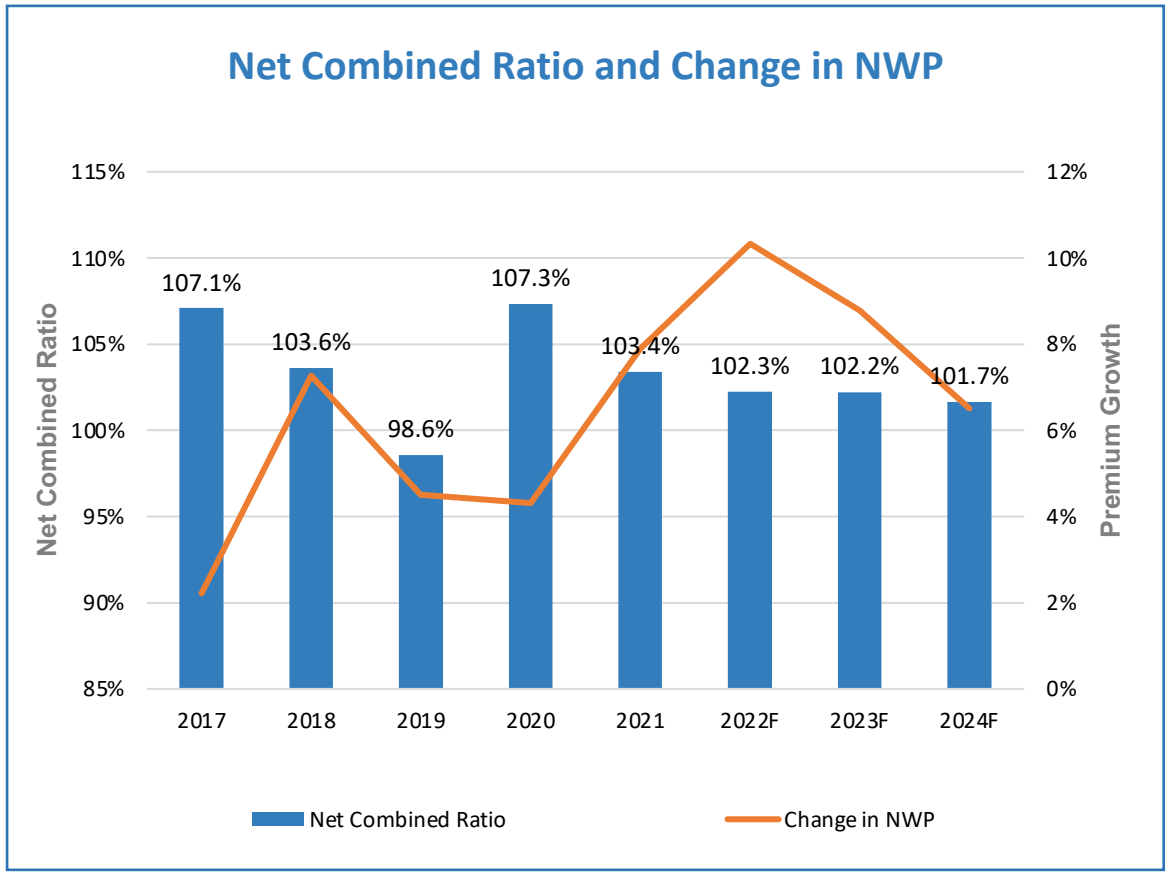
Takeaway 2

Source (as of 08/05/2022): BLS & BEA through FRED (Black), Federal Reserve (Gray), Triple-I (White & Blue).

U.S. GDP Growth: Q1/Q2 contraction - is a recession coming?
U.S. CPI Changes: Continues YoY% increases but Fed expects improvements by Q4

Homeowners

Homeowners Underwriting Forecast



Net Combined Ratio forecast to improve each year from 2022-2024 but remain an underwriting loss throughout this horizon

Net Written Premium forecast to grow 10.3% in 2022 due to rate and exposure increases

Loss pressures and expected cats indicate greater rate increases are needed to restore Homeowners to an underwriting profit

Homeowners Growth & Replacement Costs

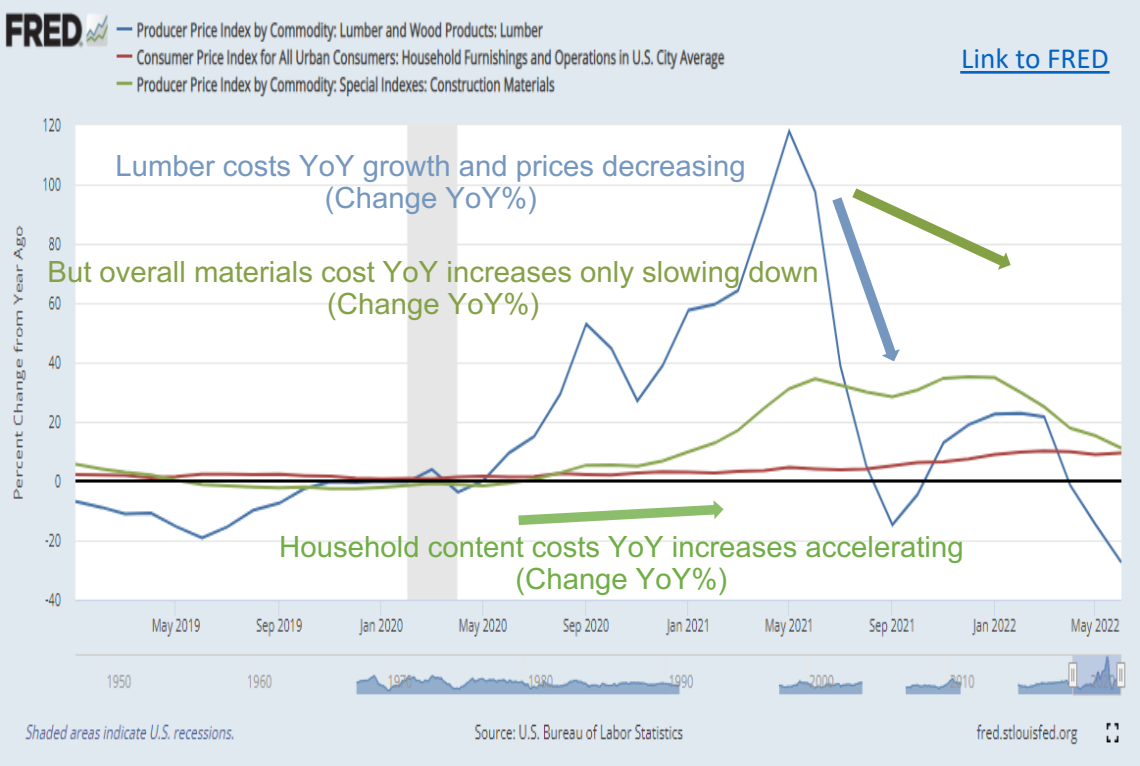
Homeowners	2020 Midwest	2021 Midwest	2022 Midwest	2022 Missouri	2022 U.S.
Underlying Growth	**0.1%**	10.8%	1.4%	7.1%	0.5%
Housing Units Started	2.4%	19.9%	6.2%	15.5%	3.2%
All Employees Construction	-1.4%	2.9%	4.4%	7.6%	3.8%
Retail Trade	-2.9%	0.3%	-11.4%	-10.2%	-8.2%
Replacement Costs	**1.8%**	11.8%	12.8%	12.8%	12.3%
Shelter	2.5%	3.1%	5.0%	5.0%	5.1%
Household Furnishing & Supplies	1.3%	5.6%	11.0%	11.0%	9.5%
Construction Materials (US)	1.5%	26.8%	22.3%	22.3%	22.3%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Homeowners Structure and Content

PPI for Lumber (Change YoY%)
PPI for Constructions Materials (Change YoY%)
CPI for Homeowners Content (Change YoY%)



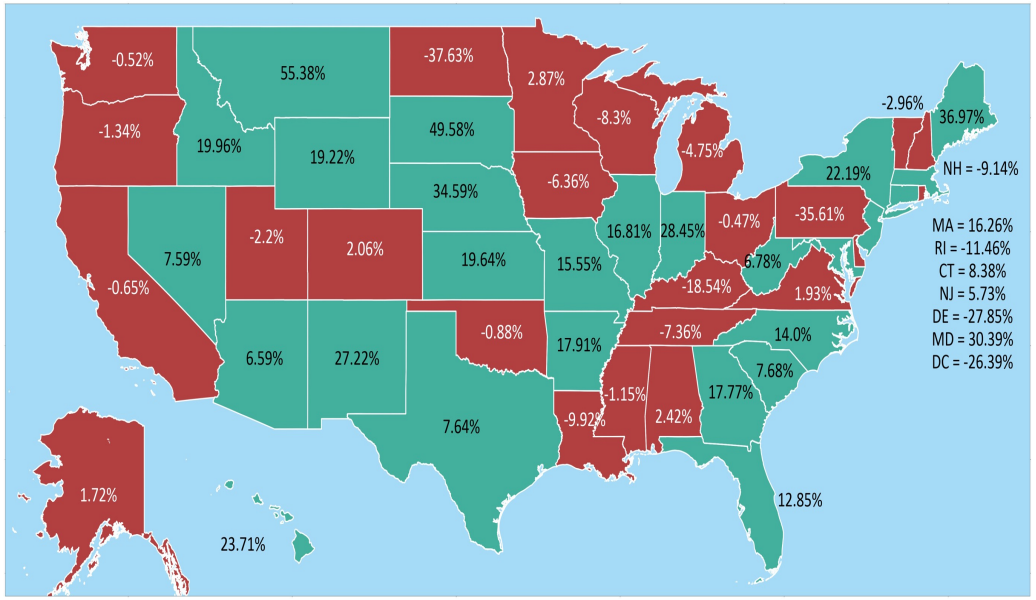
Lumber's prices decrease more so than other construction materials

Homeowners replacement costs recalibrating from structure to content
Supply chain and inventories may be stabilizing

Source: Economic Data: FRED; Analysis: Triple-I

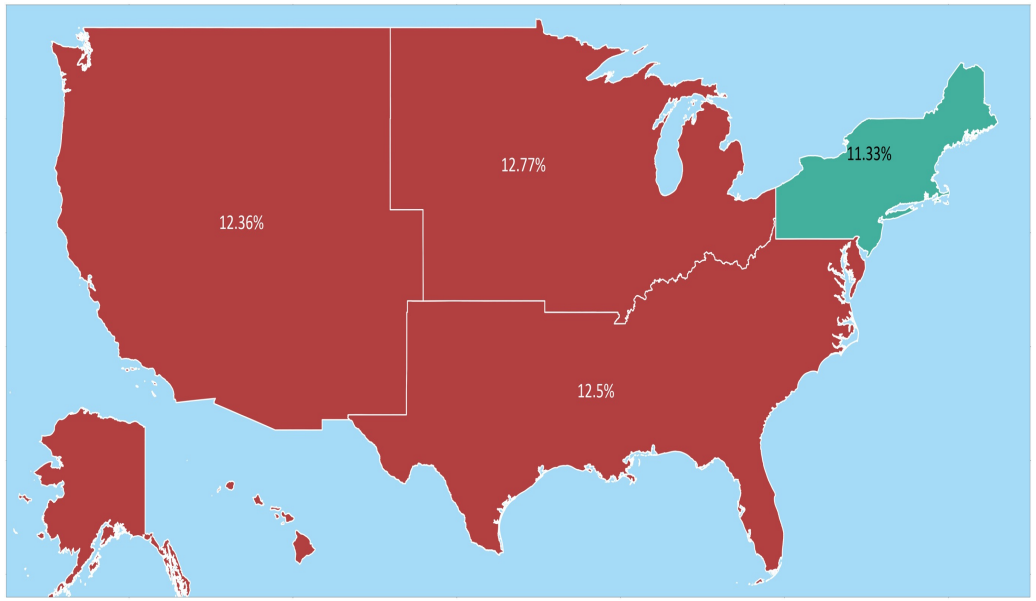
Residential Housing

Housing Starts
(Change YoY% 2021-2022)



U.S.: 3.20% | Midwest: 4.90%

Homeowners Replacement Costs
(Change YoY% 2021-2022)



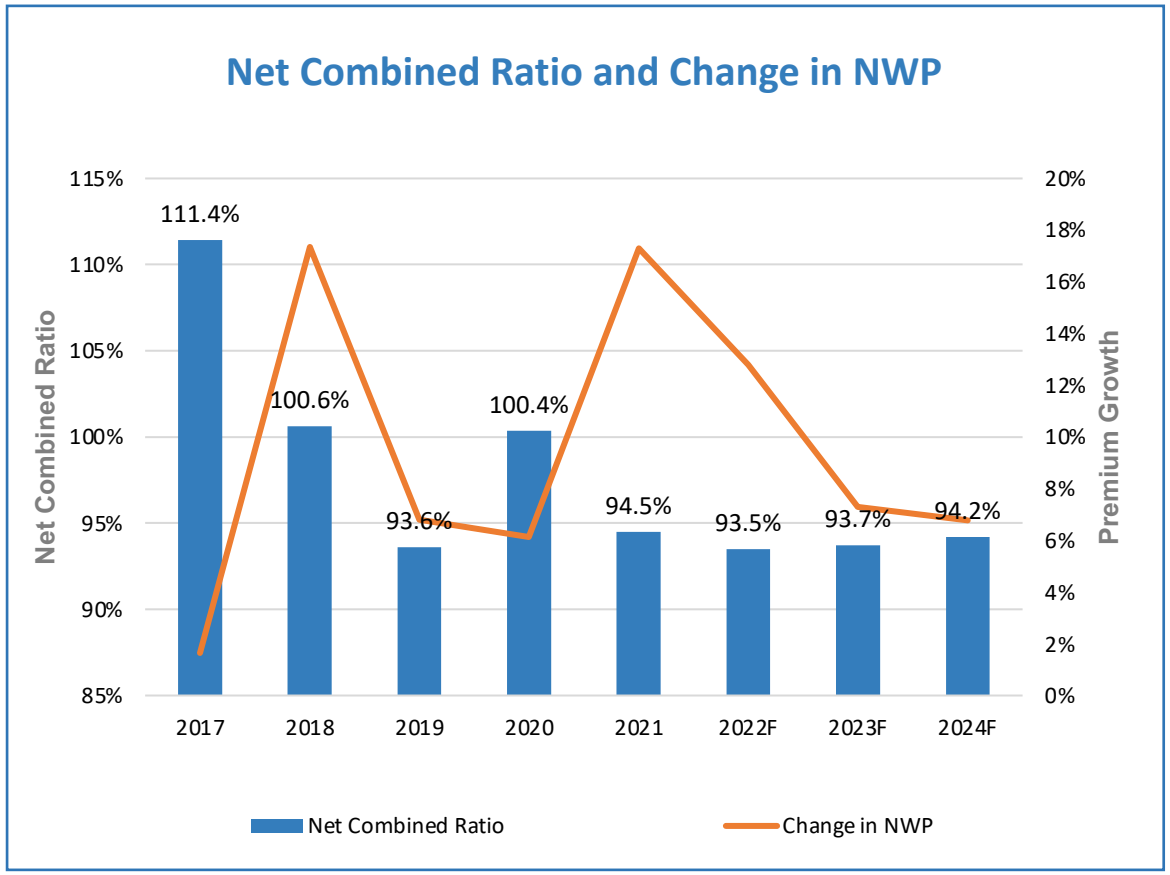
U.S.: 12.30% | Midwest: 12.36%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Commercial Property

Commercial Property Underwriting Forecast



2021 Net Combined Ratio of 94.5 was strongly aided by 17.3% growth in Net Written Premium from 2020

Forecast for 2022-2024 reflects sufficient rate increases to balance loss pressures and maintain underwriting profitability

Commercial Property: Growth & Replacement Costs

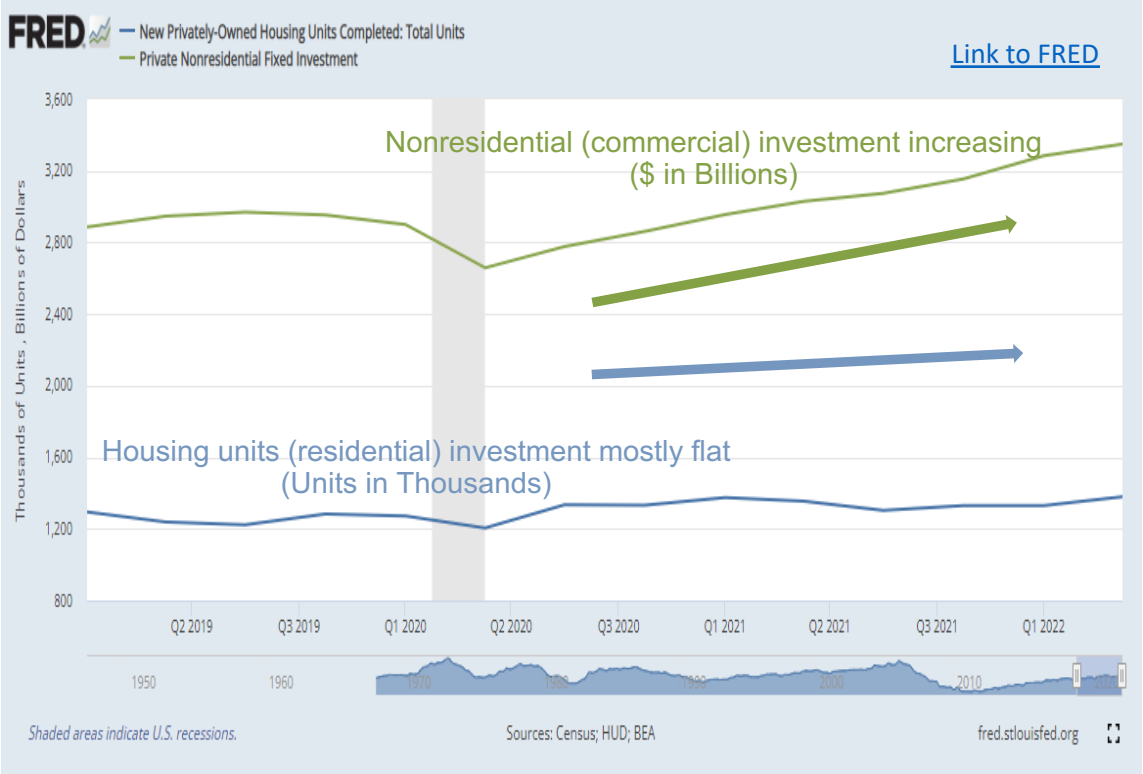
Commercial Property	2020 Midwest	2021 Midwest	2022 Midwest	2022 Missouri	2022 U.S.
Underlying Growth	-2.6%	1.4%	-2.0%	-1.4%	-0.02%
Real Estate, Rental & Leasing	-1.3%	1.9%	2.8%	3.1%	4.2%
Retail Trade	-5.1%	0.3%	-11.4%	-10.2%	-8.2%
Replacement Costs	0.2%	10.8%	12.6%	12.6%	12.6%
Construction Materials (US)	1.5%	26.8%	24.6%	24.6%	24.6%
Equipment & Other Capital Goods (US)	0.1%	5.2%	12.5%	12.5%	12.5%
Information Technology Prices (US)	-0.9%	0.6%	0.7%	0.7%	0.7%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Residential and Commercial Construction

Nonresidential Investment ($ in Billions)
Housing Units Completed (Units in Thousands)



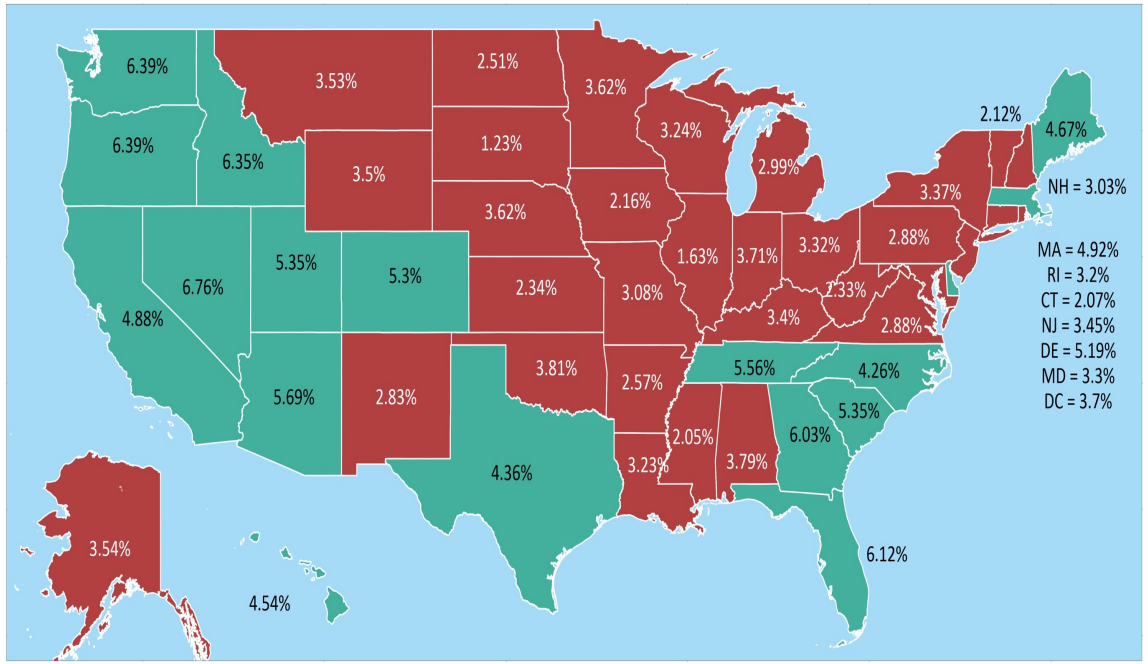
Commercial investment increasing while residential's remains mostly flat

Interest rates impacting homeowners more than commercial investments
Labor disruptions may be abating

Source: Economic Data: FRED; Analysis: Triple-I

Real Estate, Rental and Leasing Growth

(Change YoY% 2021-2022)



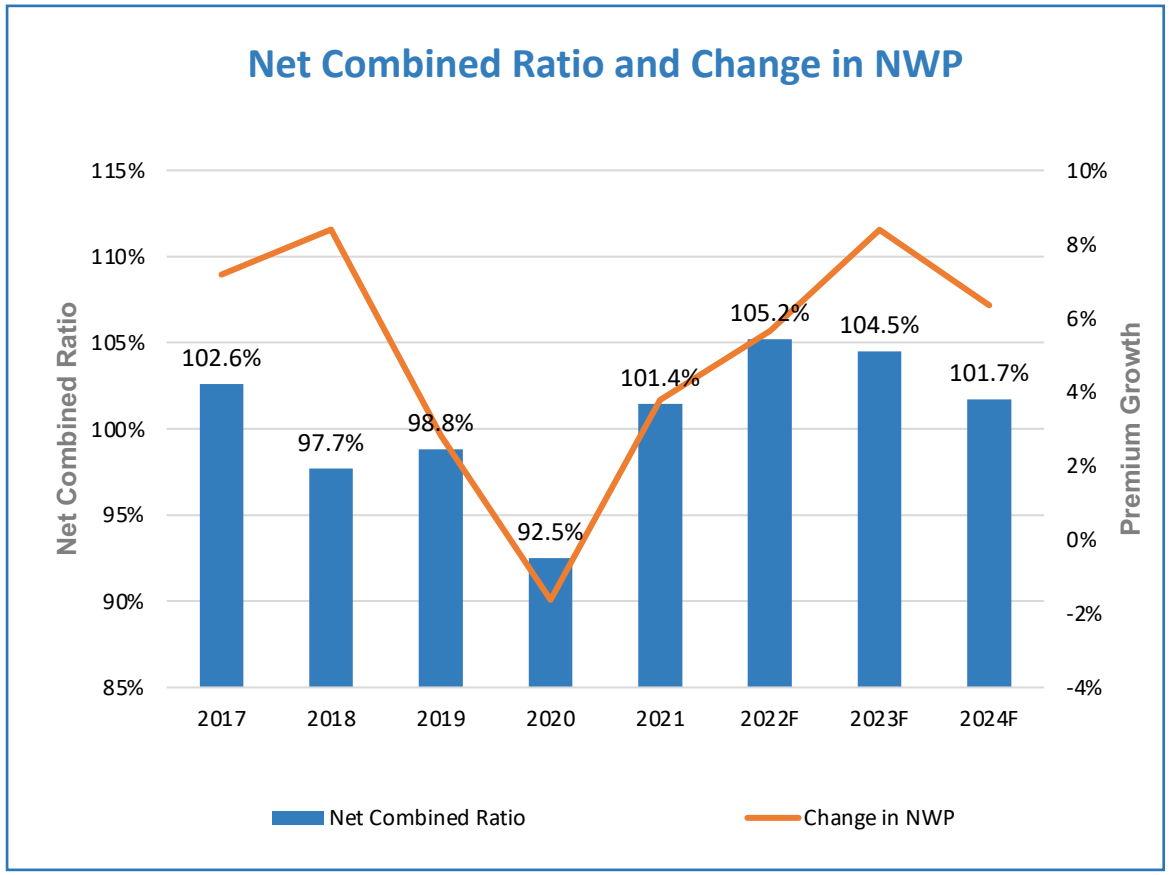
U.S.: 4.20% | Midwest: 2.80%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Personal and Commercial Auto

Personal Auto Underwriting Forecast

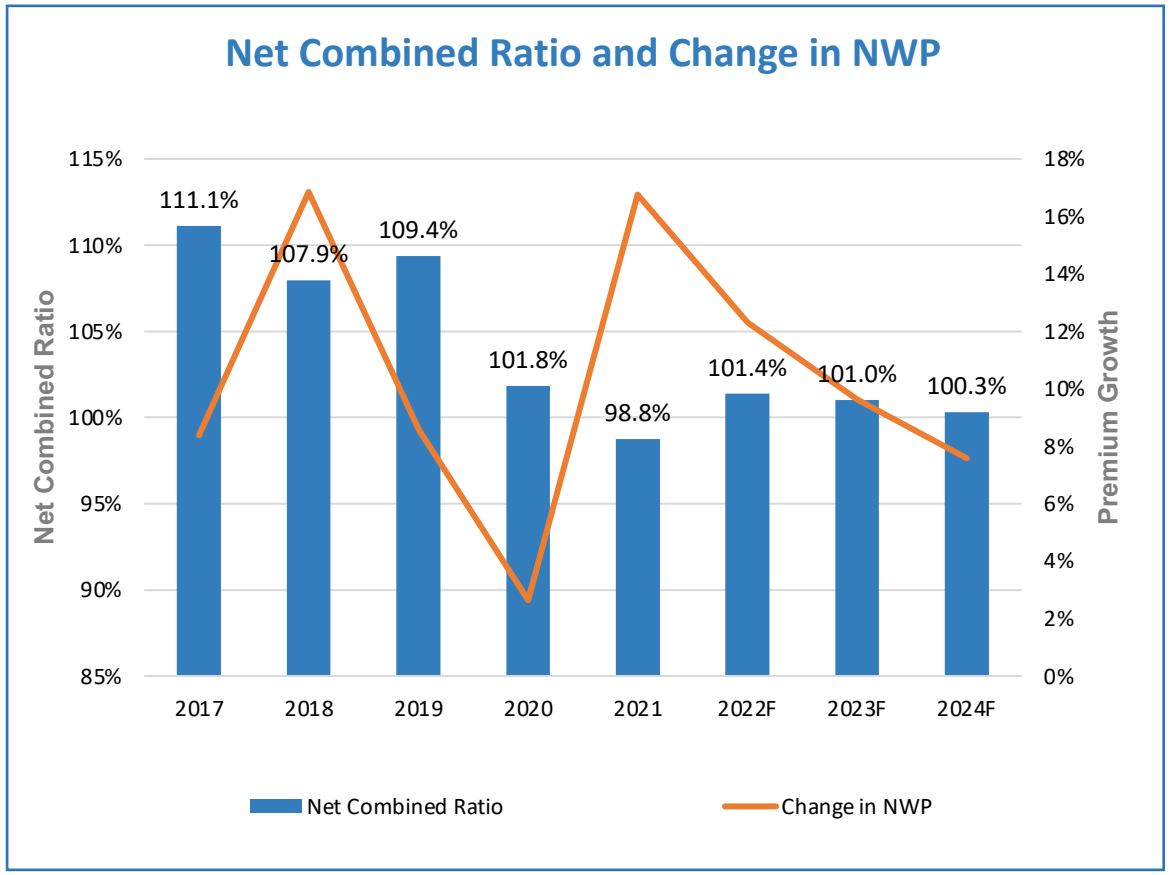


2022 Net Combined Ratio forecast at 105.2, 3.8 pts worse than 2021 and 12.7 pts worse than low miles driven 2020

Loss pressures cause 2022–2024 to remain at an underwriting loss

Premium growth expected to be higher in 2022–2024 primarily due to rate activity

Commercial Auto Underwriting Forecast



Forecasting underwriting loss in 2022-2024 due to inflation, loss pressure, and prior year adverse loss development

Personal & Commercial Auto: Growth & Replacement Costs

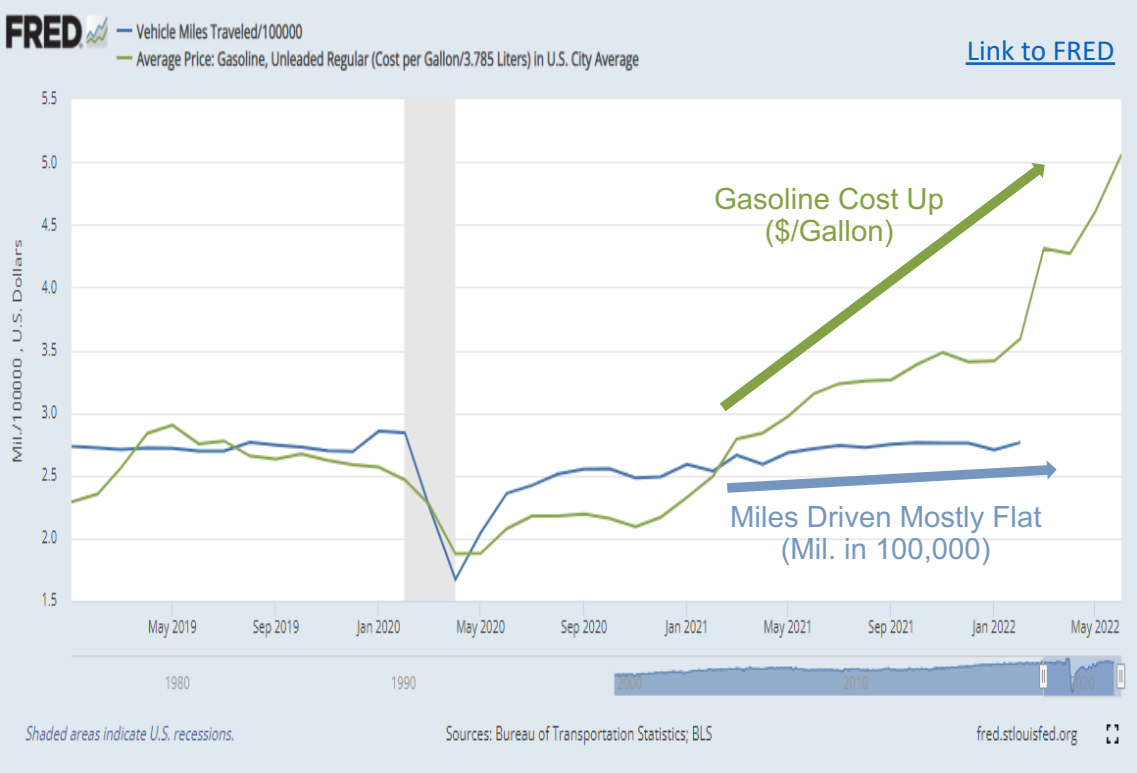
Personal Auto	2020 Midwest	2021 Midwest	2022 Midwest	2022 Missouri	2022 U.S.
Underlying Growth	-7.9%	18.8%	6.9%	8.4%	6.1%
Auto & Parts Retail Sales	-14.7%	11.2%	0.1%	2.4%	-1.1%
Total Private Exp., All Autos (U.S.)	5.4%	33.4%	20.0%	20.0%	20.0%
Replacement Costs	1.6%	12.6%	19.5%	19.5%	19.3%
New Vehicles	0.5%	5.8%	11.9%	11.9%	12.6%
Used Vehicles	3.2%	27.2%	32.4%	32.4%	31.2%
Parts & Equipment (US)	1.1%	4.8%	14.2%	14.2%	14.2%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Gas Prices and Miles Driven All Vehicles

Gasoline Cost ($/Gallon)
Vehicle Miles Traveled (Mil. in 100,000)

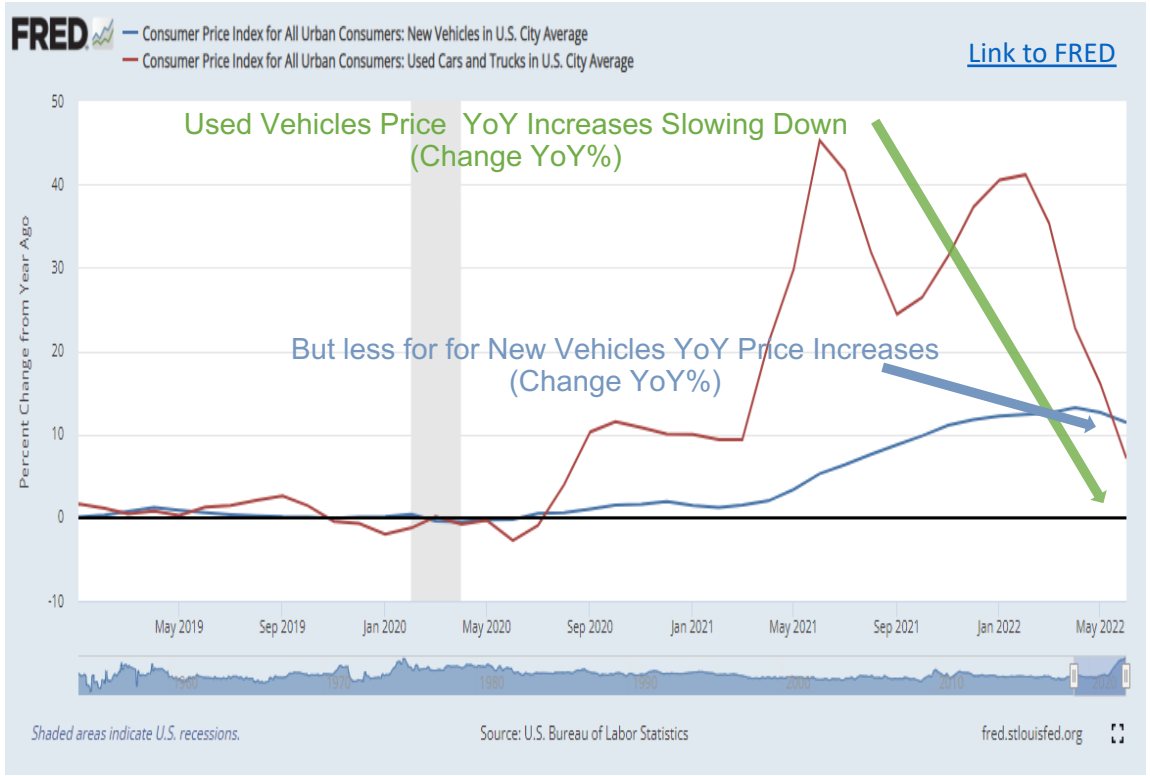


Miles driven did not go down as much as expected as gas prices increased

Higher gas prices likely reduced summer travel spike

New and Used Vehicle Prices

CPI for Used Cars and Trucks (Change YoY%)
CPI for New Vehicles (Change YoY%)



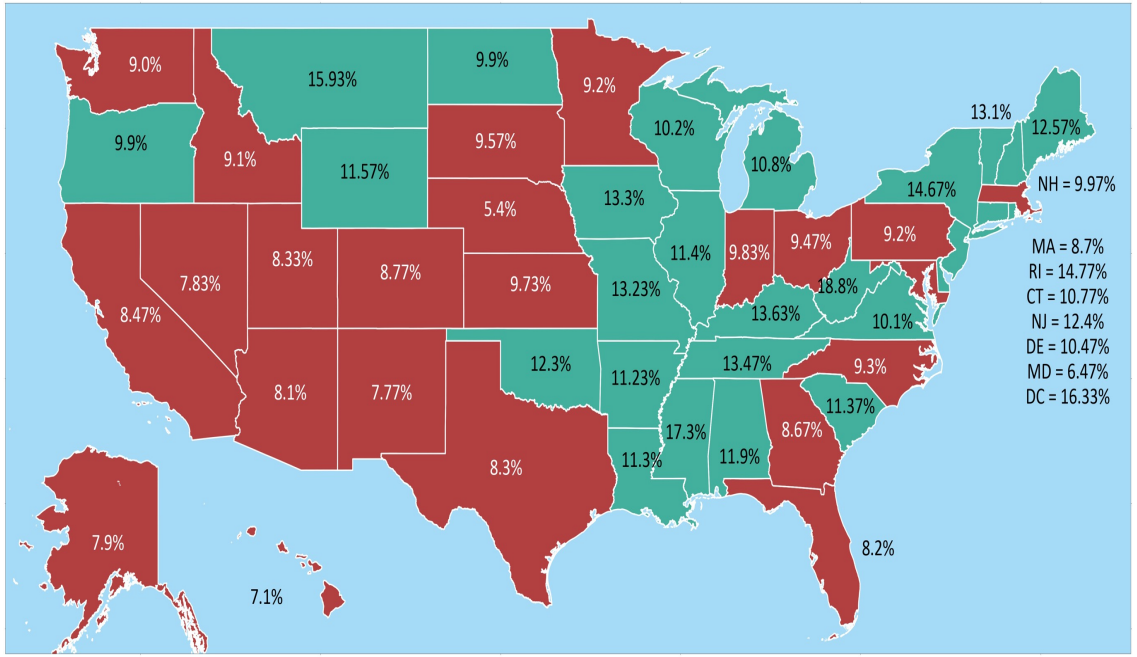
Consumers shifting from used to new vehicles

Usually indicates recovery, but may be due to inventory replenishing

Source: Economic Data: FRED; Analysis: Triple-I

Auto Parts & Retail Sales

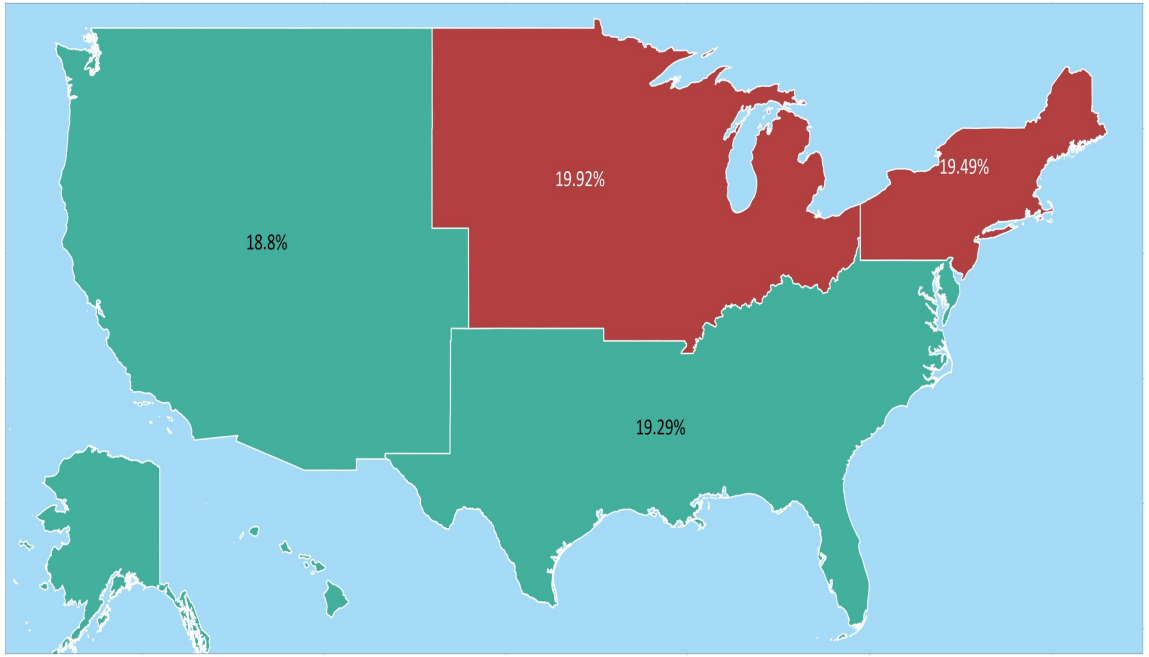
(Change YoY% 2021-2022)



U.S.: 9.80% | Midwest: 10.20%

Personal Auto Replacement Costs

(Change YoY% 2021-2022)



U.S.: 19.30% | Midwest: 19.92%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Farmowners

Farmowners Growth & Replacement Costs

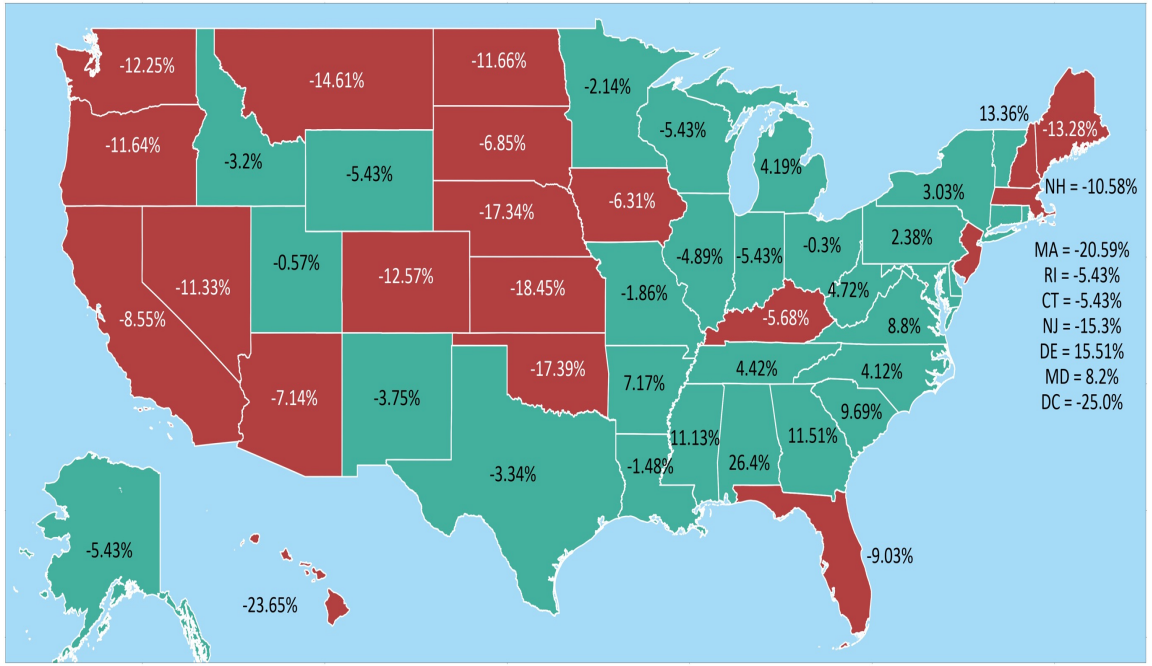
Farmowners	2021 Midwest	2022 Midwest	2022 Missouri	2022 U.S.
Underlying Growth	45.9%	11.6%	12.3%	15.2%
Proprietors' Farm Income	112.4%	41.1%	36.9%	48.9%
Agriculture, Forestry, Fishing, Hunting	27.6%	-8.2%	-1.9%	-5.4%
Farms Employment (US)	-2.3%	2.2%	2.2%	2.2%
Replacement Costs	14.3%	26.3%	26.3%	26.3%
Animal Food Manufacturing (US)	12.0%	13.6%	13.6%	13.6%
Pesticides, Fertilizers, Agr., Chemicals (US)	24.5%	48.2%	48.2%	48.2%
Farm Machinery and Equipment (US)	6.3%	17.0%	17.0%	17.0%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Agriculture, Forestry, Fishing and Hunting Growth

(Change YoY%)



U.S.: -5.40% | Midwest: -7.60%

Green = Outperforms U.S. average
Red = Underperforms U.S. average

Source: Economic Data: FRED; Analysis: Triple-I

Inflation, Interest Rates, and Insurance Performance

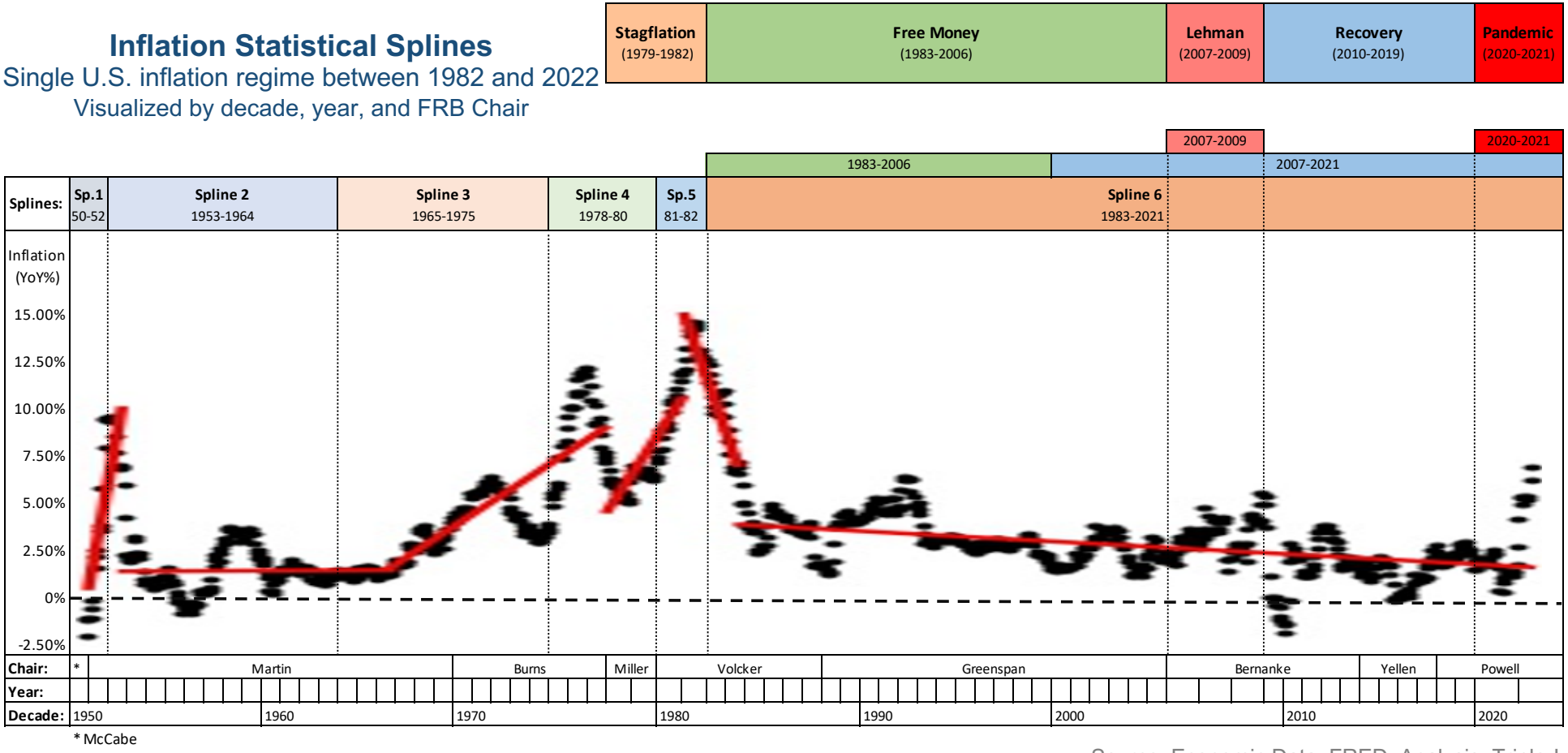
Inflation Cycles from 1950 to 2022

Current U.S. inflation not 1980 level yet - but insurance replacement costs are

Inflation Statistical Splines

Single U.S. inflation regime between 1982 and 2022

Visualized by decade, year, and FRB Chair



* McCabe

Source: Economic Data: FRED; Analysis: Triple-I

Stagflation: 1979 to 1982

Stagflation			
Average Yearly Inflation 1979 to 1982 (YoY%)			
Rank	Key Component	Per Item (YoY%)	Per Tier (YoY%)
1	Gas, All Types	14.1%	13.4%
2	Used Vehicles	13.7%	
3	Electricity	13.6%	
4	Transportation	12.2%	
5	Housing	10.9%	10.8%
6	Medical	10.7%	
	All Urban	**10.7%**	
7	Durables	9.1%	7.5%
8	Food	8.6%	
9	Construction	8.1%	
10	New Vehicles	7.3%	
11	Apparel	4.6%	

Pandemic	
Ave. Inflation 2020-21 (YoY%)	
Key Component	Per Item (YoY%)
Used Vehicles	14.9%
Gas, All Types	11.0%
Construction	8.7%
Durables	5.7%
Transportation	5.3%
New Vehicles	3.2%
Food	3.2%
All Urban	**3.0%**
Housing	2.7%
Electricity	2.4%
Medical	1.8%
Apparel	-1.1%

Source: Economic Data: FRED; Analysis: Triple-I

1978-98 average yearly CPI 10.7%, three+ times the pandemic's 3.0%

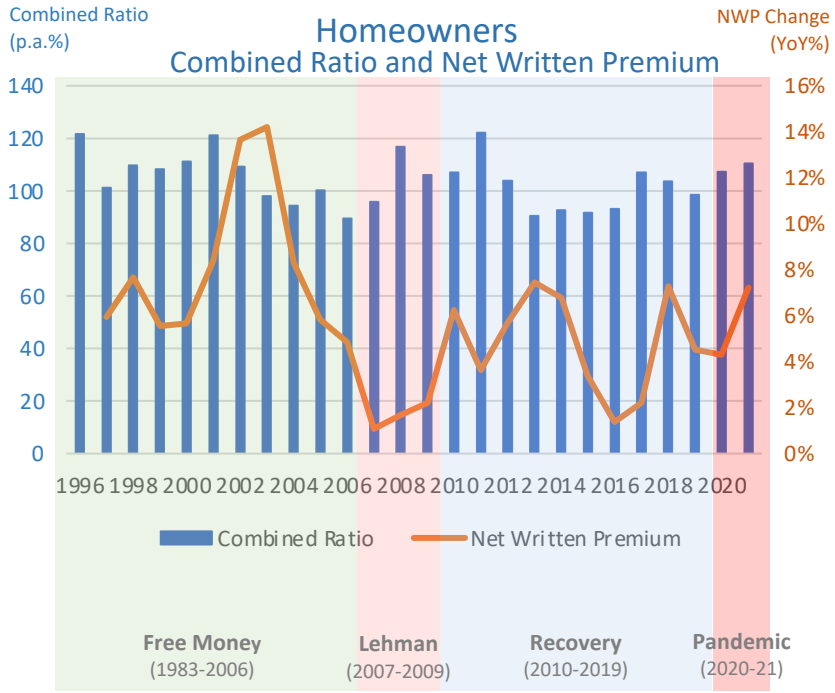
However, average inflation for used vehicles and construction comparable at app. 14% and 8% respectively

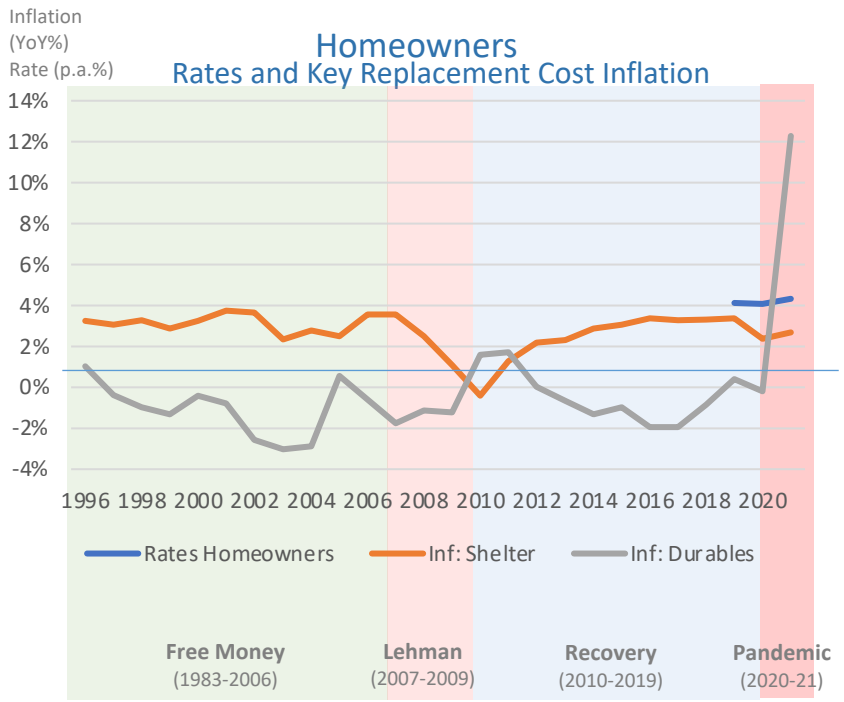
Food, energy, and medical not elevated during pandemic as they were during stagflation

CPI Drivers
High
Medium High
Average
Medium Low
Lowest

Homeowners & Inflation Correlation

CR relationship to durables prices stronger than to shelter's *(unexpected)*
NWP relationship to durables prices stronger than to shelter's *(unexpected)*
CR outperforming during low inflation volatility as opposed to CPI trend *(expected)*





Source: Analysis: Triple-I; Economic data: FRED; Insurance Data: NAIC through S&P and Market Scout.

Monetary Policy Outlook

Federal Funds Rate Projection | Federal Reserve				
	2022	2023	2024	Longer Run
Real GDP	1.7% 2.8%	1.7% 2.8%	1.9% 2.0%	1.8% 1.8%
PCE	5.2% 4.3%	2.6% 2.7%	2.2% 2.3%	2.0% 2.0%
Core PCE	4.3% 4.1%	2.7% 2.6%	2.3% 2.3%	
Federal Funds Rate	3.4% 1.9%	3.8% 2.8%	3.4% 2.8%	2.5% 2.4%

Source: Economic Data: FRED; Analysis: Triple-I

Policy rate v. expectation settings

Medicine must fit the disease

Required rate target for inflation: 7.5% to 8.25%

Tightening Cycle and Industry Performance

Combined ratios under stress from lower growth, high replacement costs, and constrained rate increases

1. Constrains overall premium written growth
2. Further constrains premium growth for homeowners and personal auto
3. Adverse impact on liability and social inflation
4. Combined impact of extreme weather events and higher replacement costs in rate setting

Replacement Costs: Return to Normal Timeline

Replacement Costs: Return to Trend Obstacles & Forecasts							
	Return to Trend Obstacles			Forecasts (YoY%)			
	Shipping	Labor	Geo Political	2022E	2023F	2024F	2025F
U.S. Inflation (CPI)	•	•	•	4.30%	2.70%	2.30%	2.00%
P&C Lines	•	•	•	9.91%	6.74%	3.84%	2.50%
Homeowners	•	•	•	11.50%	7.50%	5.17%	3.17%
Personal Auto	•		•	11.00%	7.67%	3.17%	2.50%
CMP	•	•	•	13.83%	10.00%	7.17%	3.17%
Commercial Auto	•		•	6.17%	4.45%	2.47%	1.48%

Source: Economic Data: FRED; Analysis: Triple-I

Track these green/red flags to decipher month-to-month CPI data:

1. Oil & Gas
2. Construction Materials
3. Vehicles

Michel Léonard, PhD, CBE, leads the Triple-I's Economics and Analytics Department. He is responsible for providing analysis and insight on industry economics and business performance, as well as other forward-looking, data driven insurance insights.

Michel brings more than twenty years of insurance experience to Triple-I, including senior and leadership positions such as Chief Economist for Trade Credit and Political Risk at Aon; Chief Economist at Jardine Lloyd Thompson; Chief Economist and Data Scientist at Alliant; and Chief Data Scientist at MaKro LLC. In these roles, he worked closely with underwriters, brokers and risk managers to model risk exposures for property-casualty and specialty lines such as credit, political risk, business interruption and cyber.

Michel also currently serves as adjunct faculty at New York University' Economics Department. Previous academic appointments include Adjunct Faculty in NYU's Center for Data Science and Adjunct Faculty at Columbia University's Data Science Institute and Statistics Department. He was the recipient of a grant from the Spencer Educational Foundation to develop a course in data analytics for insurance. In these capacities, Michel provides a key link between the Triple-I, its Non-Resident Scholars and academia.

Michel holds a Bachelors of Arts from McGill University, a Masters of Theological Studies from Harvard University, and a Masters of Arts and Doctorate of Philosophy in Political Economy from the University of Virginia, focusing on qualitative and quantitative risk modeling. He is a member of the Insurance Research Council Advisory Board.

E: michell@iii.org | T: 646 498-9607